

University of Texas at Arlington

MavMatrix

Doctor of Nursing Practice (DNP) Scholarly
Projects

Department of Graduate Nursing

Spring 2024

Using the 4Ms Framework to Prevent Falls

Gina L. Edgeworth

University of Texas at Arlington

Follow this and additional works at: https://mavmatrix.uta.edu/nursing_dnpprojects



Part of the [Critical Care Nursing Commons](#), [Family Practice Nursing Commons](#), [Geriatric Nursing Commons](#), [Nursing Administration Commons](#), [Nursing Midwifery Commons](#), [Occupational and Environmental Health Nursing Commons](#), [Palliative Nursing Commons](#), and the [Psychiatric and Mental Health Nursing Commons](#)

Recommended Citation

Edgeworth, Gina L., "Using the 4Ms Framework to Prevent Falls" (2024). *Doctor of Nursing Practice (DNP) Scholarly Projects*. 3.

https://mavmatrix.uta.edu/nursing_dnpprojects/3

This Thesis is brought to you for free and open access by the Department of Graduate Nursing at MavMatrix. It has been accepted for inclusion in Doctor of Nursing Practice (DNP) Scholarly Projects by an authorized administrator of MavMatrix. For more information, please contact leah.mccurdy@uta.edu, erica.rousseau@uta.edu, vanessa.garrett@uta.edu.

Using the 4Ms Framework to Decrease Falls

Gina L. Edgeworth, DNP, RN

College of Nursing and Health Innovation, The University of Texas at Arlington

NURS 6621

May 16, 2024

Acknowledgements: God in Heaven and Keith Edgeworth
Kirsten Drake DNP, RN, NEA-BC, OCN
Statistician: Dr. Kao

Table of Contents

Title Page.....	1
Introduction.....	3
PICOTS.....	5
Review of Literature of the intervention.....	6
Framework.....	16
Question/Objectives.....	17
Setting.....	18
Population.....	18
Role on Team.....	19
Education of Team.....	19
Implementation of the intervention.....	21
Exact data to be collected.....	22
Statistical methods and the ethics paragraph.....	24
Discuss dashboard.....	25
Tools.....	25
References.....	31
Appendix A: Evidence Table.....	37
Appendix B: PDSA Framework.....	62
Appendix C: Site Approval.....	63
Appendix D: Organizational Change Readiness Assessment.....	64
Appendix E: Budget.....	65
Appendix F: GANTT.....	66
Appendix G: E-mail of Project Description.....	67
Appendix H: Script for Registered Nurses.....	68
Appendix I: Script for RN to use with Patient.....	70
Appendix J: Inservice of Project to Team Members Power Point.....	71
Appendix K: SWOT.....	75
Appendix L: Risk Management Plan Table.....	76
Appendix M: Chart Audit Tool for 2022 Demographics and Falls.....	79
Appendix N: Chart Audit Tool for 2023 Demographics and Falls.....	80
Appendix O: Chart Audit of 4Ms Framework.....	82
Appendix P: Legend.....	84
Appendix Q: Human Subject Certificate.....	85
Appendix R: Demographic Audit Results.....	86
Appendix S: 4Ms framework Audit Results.....	89

Using the 4Ms Framework to Decrease Falls

The 4Ms framework is an evidence-based practice in geriatric care that includes care tailored to what matters to the patient, medication, mentation, and mobility (Lesser et al., 2022). This framework was developed as the core of the Age-Friendly Health Systems (AFHS) initiative that was launched in 2017 by The John A. Hartford Foundation and the Institute for Healthcare Improvement (IHI) in partnership with the American Hospital Association (AHA) and the Catholic Health Association (CHA) of the United States (Institute for Healthcare Improvement, 2019). The 4Ms framework has been adopted nationally by 615 facilities, and all address mobility, mentation, and medications for each patient upon admission in some way; using this framework pulls it all together to organize care in that the whole health of the patient is being treated (Emery-Tiburcio et al., 2021). Implementing the 4Ms framework and addressing what matters to the patient, reviewing medications, and assessing mobility and mentation may decrease falls during hospitalization.

Providing the nurses with the tools to use a specific framework tailored to the adult age 65 years and older population can guide their questions in their assessments and care during the admission and care process, allowing for better care while decreasing falls on the unit. Nationally, total medical costs related to falls in and outside healthcare facilities account for over \$754 billion (Florence et al., 2018). The Centers for Disease Control (CDC) reported that nationally 52% of patients over 65 have a fall during their hospitalization (CDC, 2018). In an economic analysis by Dykes et al. (2023), the average cost of a fall that occurs in a hospital is around 64 thousand dollars. According to the Agency for Healthcare Research (AHRQ, 2022), adult inpatient areas, including medical-surgical units across the nation, account for 51.4% of falls; of this 51.4%, 0.5% had a sitter, 7.8% had an alarm on, and 20.3% had an assistive

device. In 2018 the United States population aged 65 and older numbered 52.4 million, with the aging adult being 15.6 percent of that population (Fulmer et al., 2021). According to the Agency for Healthcare Research and Quality (2023), there are between 700,000 and one million hospital falls annually. Using the 4Ms framework, the nurse will be able to apply the knowledge learned, and apply it to the care given, which could decrease in falls in this facility.

With a total population of 3.018 million people, the state of Arkansas contributes to 28.8-33.9% of the nation's falls occurring in and outside of a hospital, with 29.5% occurring in adults over the age of 65, at a total cost of over 436 million dollars (CDC, 2018). According to the Centers for Medicare and Medicaid (2019) quality measures for Arkansas, 14.1% of Arkansans live in poverty, and 13.1% of the populations are without health insurance, which could create a heavy burden financially to the aging adult that incurs a fall.

There is a gap in care resulting in patients falling on the unit; educating the nursing staff on the 4Ms framework and applying that knowledge may decrease falls. Lesser et al. (2022) wrote that there is a lack in nursing staff knowledge when implementing care and best practices for the hospitalized aging geriatric population. Nurses are not properly trained in the questioning, assessments, and care of aging adults (Fulmer et al., 2021). Nurses need more general knowledge of specific disease processes that aging adults may have, which impedes their ability to implement appropriate evidence-based person-centered care strategies (Soun et al., 2023). Using the 4Ms framework, the nursing staff will influence the geriatric environment to deliver high-quality, safe, and reliable care by evaluating the needs and mobility safety of the patient, which can preserve their function and reduce falls (Lesser et al., 2022).

In an article by Greenberg (2021) with 144 phone visits in over 47 adults 65 years and older, the 4Ms framework resulted in an improvement over 12 weeks in overall health such as

activities-specific balance confidence scale ($P=.0006$), self-reported behavior changes included improving balance and endurance (93%); increasing fluid intake (43%); being more observant of the environment (43%); using sleep hygiene techniques (36%); implementing changes to home environment (21%); engaging in more exercise and activity (21%); making medication changes, carrying a phone, and adjusting mood (each 7%). In an article by Hendrick (2021), after following a patient who had fallen numerous times in a hospital unit, implementation of the 4Ms framework was initiated, and the patient was discharged home with no further falls, even weeks after being at home. There is a deficit in nursing staff knowledge when implementing care and best practices for the hospitalized aging geriatric population that has led to an increase of falls in the medical-surgical unit by 50% this past year (K. Wilcox, personal communication, August 29, 2022). The facility has 7.2 falls per 1,000 patient days (W. Michaels, personal communication, August 10, 2023). With the increase in falls from 4.2 falls per 1,000 patient bed day in 2022 (W. Michaels, personal communication, August 10, 2023), this knowledge deficit supports a change in current practice for the facility. If the nurse is educated on best care practices using the 4Ms framework by framing care to address what matters, medication, mentation, and mobility, better care outcomes will follow for the elderly population, thus reducing falls (Lesser et al., 2022).

PICOTS

P: Population

The population (P) is adult inpatients on a medical surgical unit who are age 65 and older.

I: Intervention

The intervention (I) is the implementation of using the 4Ms framework to guide geriatric care (what matters, medication, mentation and mobility).

C: Comparison

Compared (C) to the current practice.

O: Outcome

Decrease falls with or without injury by improving care using the 4Ms framework.

T: Time

The time frame for implementation will be eight weeks.

S: Setting

The setting (S) is an adult medical-surgical unit in a small hospital in Northwest Arkansas.

PICOTS Question

In adult inpatients aged 65 and older, will implementing the 4Ms framework to guide geriatric care including what matters, medication, mentation and mobility, compared to current practice, decrease falls with or without injury by improving care using the 4Ms framework on an adult medical-surgical unit in a small hospital in Northwest Arkansas over eight weeks?

Literature Review

The search strategy for this review of literature includes CINAHL, Cochrane Library, Joanne Briggs, PubMed, and Science Direct (Elsevier), using the key terms hospitals, medical-surgical unit, inpatients, falls, 4Ms framework, elderly, adults, reduced mobility, mobility, fall prevention, and methods, mentation, medication, what matters, and ageism. The Boolean operators used were “or,” and “and” in combination with the keywords or individually to search all sections of the PICOTS. The search results included over 300 articles. Duplicate articles and inclusion/exclusion criteria were used to narrow the articles. Exclusion criteria included adults under age 65. In contrast, inclusion criteria included 65 years or older adults, inpatient units, articles less than five years old, what matters, mobility, medication, mentation, and falls. This

narrowed the search to 14 articles that focused on inpatient units, using the framework of what matters, medication, mentation, and/or mobility that led to interventions resulting in decreased falls. The articles used include seven systematic reviews, a random control trial, one evidence-based practice article, two quasi-experimental designs, one survey, and two qualitative designs, including a retrospective qualitative study.

In a quasi-experimental study with a non-randomized control group, Montejano-Lozoya et al. (2020) showed evidence that 85.8% of people in the study had fallen after age 65. In this article, the intervention group that had their medications reviewed during their hospital stay had a lower probability of falling than the control group that did not have their medications reviewed (OR: 0.127; IC95%: 0.013-0.821) (Montejano-Lozoya et al., 2020). Addressing this 4Ms framework will address the patient's needs and decrease their risk of falls by addressing what matters: medications, mobility, and their mentation; this minimizes the risks associated with hospitalization and improves outcomes for older adults and their families (Emery-Tiburcio et al., 2021).

Falls in aging adults are multifactorial, with over 400 risk factors including physical deficits, reduced strength, gain and balance impairments, difficulty in activities of daily living (ADLs), and prescribed drugs and medications (Racey et al., 2021). In several studies completed by Schoberer et al. (2022), significant reductions in falls (four studies, RR 0.69, 95% CI [.49, 0.96], I^2 59%) with low confidence in the evidence were shown. Because of the significant reduction of falls in this article, the panel rated this article as significant in that the monitoring of mobility, mentation, medications, and what matters to the patient did reduce falls (Schoberer et al., 2022). In a randomized control study of 95 trials, medication was an essential fact that reduced the risk of falls (Cameron et al., 2018). In a Lesser et al. (2022) article, over 90% of

clinicians (n=1684) agreed that there must be a different approach when caring for older patients. An evidence-based framework may reduce the aging adults from falls.

While there are many similarities and some differences in the approach to reducing falls in the inpatient units, evidence is consistent with the results of decreasing falls in that using the 4Ms framework will aid in this reduction, while even using most standard approaches such as rounding, using alarms, and reviewing medication and mobility may reduce falls as well.

4Ms Framework

The 4Ms framework is based on a foundation of existing geriatric care models and provides a structure to guide nurses and the health care team to organize care (Emery-Tiburcio et al., 2021). The 4Ms framework is designed to organize care for older adults, including patients aged 65 years and older, ensuring that all components of care are given consistently and, in every setting where care is given, using four evidence-based elements of high-quality care (Institute for Healthcare Improvement, 2019), and aligns care with each older adult's health outcome goals and preferences (Institute for Healthcare Improvement, 2019).

There are 615 facilities that have implemented the 4Ms framework and are addressing mobility, mentation, and medications for each patient upon admission in some way; using this framework pulls it all together to organize care in that the whole health of the patient is being treated (Emery-Tiburcio et al., 2021). Older adults have more chronic conditions, serious illnesses, and complex healthcare needs than younger adults and require specialized care (Emery-Tiburcio et al., 2021). In an article by Lesser et al. (2022), more than 90% (n=1684) of clinicians agreed that older patients require a different approach to their care, and they make sure that those considerations are made when planning their care. This article had evidence that clinicians did see the benefits of using the 4Ms framework when providing care that allowed for

addressing the ongoing needs of aging adults with providers asking what mattered the most to them; 77% addressed mobility limitations; 87% screened for medication concerns and use; and 83% screened for mentation (Lesser et al., 2022).

The literature review indicates that educating nursing staff on the 4Ms framework and applying the knowledge during the implementation of care, may reduce falls on the unit. Discussing what matters, reviewing medication, assessing mentation, and monitoring mobility may reduce the patient's risk of falling by addressing this 4Ms framework. According to Morris et al. (2022), a significant reduction in fall rates (RaR=0.70 [0.51-0.96], $P=0.03$) was seen in studies where medications were adjusted, and management of cognitive impairment or mentation changes were identified and addressed. In an article by Morris et al. (2022), the education being given to the patients and the review of their medications in fall reduction showed positive results for the rate of falls RaR was 0.70 [0.51-0.96], $Z= -2.19$, $P=0.03$, with the overall summary being 0.62 [0.47-0.83], $Z= -3.20$, $P=0.001$. There is evidence that multifactorial intervention may reduce falls. In a randomized control trial by Cameron et al. (2018), reviewing and reducing medications (ratio of ORs=0.92 (95% CI=(0.21, 1.01); $Z=0.11$; $p=0.91$) showed a reduction in falls of approximately 10%; and a reduction in falls from patients that had their mentation addressed (RaR 0.23, 95% CI 0.12 to 0.44; 49 participants).

What Matters

The first part of the 4Ms framework asks patients 65 years old and older what matters most to them. The concept of "what matters to you" was introduced by Dr. Barry and Susan Edgman-Levitan to facilitate shared decision-making that would increase clinicians' awareness of important issues in the patients' lives that would drive customized care plans (Institute for Healthcare Improvement, 2019). When asked what matters to them, patients participating in their

care can result in compliance with participating in their care by calling for help, decreasing their risk of falling (Montejano-Lozoya et al., 2020). In an article by Fowler & Reising (2021), the patients who participated in what mattered to them, including not experiencing a fall, were knowledgeable about their risk of falls and how to prevent a fall during a hospital admission with a statistically significant ($p=0.001-0.05$). Building a trusting relationship influences what matters to the patient, including their safety (Fehlberg et al., 2020; Guo et al., 2023). In an article by Li et al. (2021), the clinicians expressed that the needs of older adults in applying what matters to them are much different from those of younger adults. Li et al. (2021) shared that preventing patients from falling is essential to maintain their best health. Recovery from a fall in an aging person can be lengthy and expensive. According to the Centers for Disease Control and Prevention (CDC, 2023), evaluating your risk for falling includes if a patient is having lower body weakness, difficulties with walking and balance, use of medications, vision problems, foot pain or poor footwear, or home hazards, can all reduce a person risk of fall risk factors.

What matters to the patient must be considered when providing care. Quality of life without the fear of falling is on the minds of older patients. The fear of falling leads to a subsequent restriction of activities, leading to a downward spiral of inactivity, deconditioning, loss of confidence, and further increased risk of falling (Schoene et al., 2019). In an article by Karavatas et al. (2020), a statistically significant article showed that a patient's quality of life presented with negative and significant correlations with depression and not treated was (36.19 ± 18.78 to 71.22 ± 21.20 , $P<.001$), however, when medications are reviewed and adjusted to treat mentation or other cognitive concerns in an article by Li et al. (2021), falls decreased (RE $RR=0.57$, 95% CI 0.32; 1.00, $p=0.05$). Changes in physical, mental, and functional dimensions during the aging process caused by illness, multimorbidity, and cognitive impairments affect

patients' quality of life, as do significant life transitions, such as retirement and the loss of essential life partners (Schoene et al., 2019). Patients with less social interaction and participation and becoming homebound can experience physical and mental problems, reducing their quality of life and what matters to them (Schoene et al., 2019), and increasing their risk of falling.

The nurse assesses what matters to them and their mobility by asking the patient how they are active, including relationships with family and friends, social media, or other ways to stay connected, including their mobility limitations. The nurse considers asking how the aging adult is staying connected. According to the National Institute on Aging (2021), aging adults are at higher risk for social isolation and loneliness due to changes in health and social connections that come from getting older, hearing, vision, memory loss, disability, and mobility issues, which can all increase a person's chance of falling. This increases the risk of falling as it can lead to a higher risk of blood pressure issues, heart disease, obesity, anxiety, depression, dementia, and even death (NIA, 2021). The nurse takes this opportunity to talk about what matters to the patient, including their support system, whether they are alone, have assistance, or need assistance, whether they are active, are there mobility concerns (Institute for Healthcare Improvement, 2019), and place appropriate consults if needed.

What matters for patients 65 years and older includes educating nurses to address goals of care conversations. Engaging patients in conversations about their personal goals of care planning, including completing advance directives, eliciting treatment preferences, managing emotions, using silence, discussing cancer diagnosis and prognosis, code status, advance care planning, life-sustaining treatment, and palliative or hospice care for end-of-life care (Cripe et al., 2022). This can be challenging for many nurses as they must clearly understand their role in

this conversation as part of what matters in the 4Ms framework. If a patient falls and incurs a head injury, the importance of completing conversations with the patient and family can become overwhelming. Nationally, 70% of Americans do not have an advanced directive (CDC, 2018). In adult day service centers, the Northeast region of the US has the highest percentage of advanced directive documentation at 92.9%, the South at 88.2%, the Midwest at 77.6%, and the West at 58.8% (Lendon et al., 2018). Using the 4Ms framework, the nurse can take the opportunity to ask about advance directives and life care goals. If needed, the RN will place appropriate consults with a chaplain or palliative care practitioner.

Medication

The next part of the 4Ms framework is reviewing the patient's medications. Using the 4Ms framework, if medication is necessary for patients 65 years and older, the nurse must review and ensure that the medications taken do not interfere with what matters, mentation or mobility (Emery-Tiburcio et al., 2021). Nurses must take their time and ask the appropriate questions when reviewing medication with admitted patients. The Centers for Disease Control and Prevention (2021) report that more than 84.6 thousand hospital visits, having a standard error of (2.2), are from an aging adult with one or more chronic conditions, leading to 41.9% of the 65 and older population taking prescriptions. To meet this need, nursing staff must review for high-risk medication use, work with physicians to deprescribe and dose-adjust high-risk medication, and avoid their use whenever possible (Emery-Tiburcio et al., 2021). This will reduce adverse effects on mentation and mobility, thus facilitating optimal care after discharge home and decreasing the risk of falls (Emery-Tiburcio et al., 2021). Using the 4Ms framework, the RN will review all medications, including over-the-counter, prescribed, and as-needed medications. The

RN will work with the physician and pharmacist to address concerns and needs, ensuring that only medications needed are given at discharge.

Medications can interfere with a patient's mobility or mentation. This makes it essential to review all medications that the patient takes. Patients with polypharmacy, or many medications, are at risk for geriatric syndromes that can lead to mobility and fall issues (Cameron et al., 2018; He et al., 2022). In an analysis of 12 studies that examined the effects of medication reviews and how they related to falls, the rate of falls for those with medication reviews dropped by 10%. In contrast, another addressing mobility during patient care recorded zero falls in their trial (Cameron et al., 2018).

Karavatas et al. (2020) stated that there is a statistical significance between geriatric depression and falls from the administration of depression medications that significantly increases the risk of falls and must be reviewed and monitored. Medications significantly increasing fall risk include anticonvulsants, antipsychotics, sedatives, antidepressants, vasodilators, or taking more than three drugs (Schoberer et al., 2022). Using part of the 4Ms framework by addressing medications, mobility, and what matters to the patient in this systematic review by Schoberer et al. (2022), the fall rate showed a significant reduction (four studies, RR 0.69, 95% CI [0.49, 0.96], I² 59%). In a systematic review and meta-analysis by Albasha et al. (2023), due to an increase in medication assessments being completed (2% to 6%, $p=.34$), there was a 21% decrease in falls that resulted from decreasing the use of sedative-hypnotics (19% to 12%, $p=.04$).

Mentation

The third part of the 4Ms framework is assessing the patient's mentation and questioning if the patient has noticed any changes in their mentation. For adults aged 65 and older, this is

important. Addressing medications, mentation, mobility, and what matters to the patient may reduce falls as a patient with an issue with mentation is at increased risk from cognitive impairment (Emery-Tiburcio et al., 2021). A quasi-experimental study showed that risk factors for falls include limited mobility, altered mentation, advanced age, or sensory deficits and that having more than one of these risk factors increases the risk of falling (Montejano-Lozoya et al., 2020). As falls are caused by various factors, including depression, cognitive impairment, and aging, screening and giving attention to mentation may prevent the patient from falling (Albasha et al., 2023). It is crucial to screen for and recognize mentation changes in the older population of patients. In a systematic review by Albasha et al. (2023), recognizing a mentation change and adjusting care showed a decrease in falls of pre-implementing addressing mentation and post-trial (4.58 vs. 0.38, $P < 0.05$). In a systematic review by Karavatas et al. (2020), the article revealed that those with mentation changes or depression had statistically significant correlations with increased risk of falls due to decreased activities of daily living (Mean=3.20±2.86, $P < 0.001$). In another article by He et al. (2022), there was a 43% reduction in the risk of falls among patients in a delirium prevention intervention group compared to the control; however, confidence intervals were wide (RE RR=0.57, 95% CI 0.32; 1.00, $p = 0.05$) which is statistically significant to significant levels ($z > 1.96$).

Nurses should assess mentation changes such as delirium, depression, and dementia (Emery-Tiburcio et al., 2021). Delirium is present in one-third of hospitalized patients over 70, with half having delirium upon admission, which increases their risk of falls (Emery-Tiburcio et al., 2021). In a systematic review by He et al. (2022), monitoring for delirium across five randomized controlled trials showed a 43% reduction in falls. Nationally, over 15 million people have a depressive disorder, with 11.4 per 100 visits with a standard error of 1.6 being over 65

(CDC, 2021). As the aging adult is already 1.24 times the rate of having adverse consequences if not treated appropriately, once depression is diagnosed, it is very treatable (Karavatas et al., 2020). Once treatment is started, it has been seen to be 65-75% effective in older adults, which decreases their risk of falling (Karavatas et al., 2020). Using the 4Ms framework to screen for cognitive impairments and ask about memory patterns, depression, or a family history of dementia, the Registered Nurse (RN) can better plan for appropriate care that may decrease the patient's risk of falling (Emery-Tiburcio et al., 2021).

Mobility

The last part of the 4Ms framework is questioning and assessing the mobility status of patients aged 65 years and older, so that anticipation of needs can be planned. Assessing overall mobility and functional status goals, including fall risk, is essential for all older adults (Emery-Tiburcio et al., 2021). Assessing the patient's mobility is vital when admitting a patient. In a systematic review of two studies by Schoberer et al. (2022), addressing mobility and encouraging the patient to ambulate during their hospitalization showed a significant reduction in falls (four studies, RR 0.69, 95% CI [0.49, 0.96], I² 59%) with low confidence in the evidence. In a systematic review by Albasha et al. (2023), facilities focused on mobility and medication reviews had a 54% decrease in fall rates over four months.

Nationally, 39.3% of Americans over 65 have difficulty walking or climbing steps (CDC, 2021). Upon hospital admission, overall mobility, functional status, and fall risk should be assessed. The patient is recommended to get out of bed thrice daily and ambulate to the best of their ability to help reduce falls (Emery-Tiburcio et al., 2021). With 3.018 million people, Arkansas contributes to 28.8-33.9% of the Nation's falls, with 33.1% in adults over 65, at the cost of over \$4.36 billion (CDC, 2018). The RN should screen for mobility limitations, inquire

about mobility aids used at home, ask about driving and transportation concerns, and inquire if they are active in the home or community (Institute for Healthcare Improvement, 2019).

He et al. (2022) wrote that early mobilization to maintain physical functioning would reduce the risk of falls. An article by Cameron et al. (2018) assessing mobility and ensuring the patient is up and mobile during care showed that falls were reduced. In another article over 12 weeks, Cameron et al. (2018) showed there were no falls compared to a rate of falls of 0.8 per patient per month in patients who participated in mobility ($P < 0.001$). In an evidence-based practice study by Spano-Szekely et al. (2019), with an evaluation of mobility and making necessary adjustments and safety precautions, there was a 54% reduction in falls, from 2.51 falls per 1,000 patients to 1.15 per 1,000 patients. In a quasi-experimental article by Montejano-Lozoya et al. (2020), 85.7% of patients older than 65 were autonomous in their mobility but still encountered a fall caused by a catheter. This article also found that more people fall when patients are standing or sitting, entering/leaving the room, and getting up or out of bed (Montejano-Lozoya et al., 2020). Addressing mobility early may prevent the patient from falling.

Framework

Introduced by Shewhart as an approach to continuous, systemic improvement, the plan-do-study-act (PDSA) is among the most familiar frameworks used in quality improvement (Terhaar, 2018). The PDSA framework (Appendix B) was used to implement the 4Ms framework. This framework is used broadly in healthcare because it is a logical cycle for improvement that supports ongoing adjustment and refinement to the plan (Terhaar, 2018). This allows for changes to be completed to improve the process. Using the plan-do-study-act framework allows the process to be iterative, focusing on small-scale change executed within rapid cycles completed sequentially to accomplish sustainable improvement (Terhaar, 2018).

Allowing for adjustments to be made in small increments, helps with subtle change and improvement which facilitates small changes. The PDSA cycle is a four-step model for improving a process and is one of the most commonly used tools in quality improvement (Christoff, 2018).

The PDSA framework considers that change must occur for any improvement effort to be successful (Christoff, 2018). The first part of the cycle is a plan. This allows us to define the purpose or aim of the improvement effort clearly. Plan means developing a plan with identified tasks and task owners and identifying when, how, and where the plan will be implemented. Specific objectives, as well as predictions of outcomes, should be stated in this phase (Christoff, 2018). Do means to carry out the plan and document relevant data that identify successes, problems, or unexpected outcomes (Christoff, 2018). Study or evaluate the entered data to determine if the plan is working. Results are compared to those predicted and those of previous performances, and learnings are discussed and documented (Christoff, 2018). The last is the Act, which means the intervention being tested is adopted, adapted, or abandoned based on the evaluation of the data in the prior phase. This is where the next problem-solving steps are described (Christoff, 2018). Using this framework, implementing the 4Ms framework will be easier to follow, and changes can be made when necessary.

Project Question

In adult inpatients aged 65 and older, will implementing the 4Ms framework to guide geriatric care including what matters, medication, mentation and mobility, compared to current practice, decrease falls with or without injury on an adult medical-surgical unit in a small hospital in Northwest Arkansas over eight weeks?

Objectives

The following were the objectives for the project:

1. Increase the acute care nurses' awareness of specific care needed for the aging population.
2. Implement the 4Ms framework.
3. Decrease falls on the unit by individualizing care plans using the 4Ms framework to meet the aging populations needs.

Setting

The project was implemented in a medical-surgical unit at a small Northwest Arkansas hospital. The unit had 27 beds available, and the average daily census was 15 patients per day. The average length of stay on the unit is 2.03 days, with approximately 160 patients being admitted each month to the medical-surgical unit. The unit was staffed with approximately 30 nurses and 30 nursing assistants. The available services include mental health (inpatient and outpatient), an intensive-care unit, a hospice and palliative care unit, a medical-surgical unit, a surgical suite, hearing and vision services, multiple primary care physician clinics, and community-based clinics.

Population

The population served under this project included adult patients 65 years and older admitted to the 27-bed medical-surgical unit. Exclusion criteria for this project included patients under 65 years of age or those who were currently inpatients when the implementation of the project began.

Team Member Roles

The success of this project involved the participation of multiple team members. Outside of the unit, the role of the medical center director and the assistant director of patient care services was included for their support of the project See Appendix (C). Unit team members included me as the project lead and leader and all other registered nurses on the unit. An Organizational Change Readiness Assessment (see Appendix D) was completed and supported that the facility and leadership believe and support positive change in best practices for the facility. A budget was also completed (see Appendix E) that included minimal dollars needed to support the project, including a total of only \$50.00 that covered the cost of copy paper and printer ink.

My job as a Project Lead was implementing, participating, and monitoring the project. This Project Lead provided the in-services about the project and was available for questions. This Project Lead rounded thrice weekly and monitored for fall incidents. Data was kept by this Project Lead, including demographics such as the patient's age, the possible cause of the fall, as it could relate to the 4Ms framework, and if an injury was sustained.

There were 30 registered nursing staff that worked the medical-surgical unit at the time of implementation. The role of each RN was to implement and carry out the 4Ms framework for each 65-year-old or older patient admitted to the medical-surgical unit. Using this framework, all RN staff tailored the plan of care to meet those answers of what is essential to the patient and document accordingly. Chart audits were implemented by this Project Lead after each fall, noting that the 4Ms framework was used or not used as part of the implementation of the project with documentation in the care plan once every 12 hours.

Education of Team

A GANTT (see Appendix F) was completed that offered a projected implementation timeline for this project. This gave a timeline of what occurred during each week. A week before the implementation of the project, an email was sent out (see Appendix G) with information about the project. The script that included the project description was emailed to all medical-surgical RNs, including the medical physician team (see Appendix G), and used when teaching/promoting the project. This allowed all RN and medical staff to be given information about the project, including those who may have been on leave and could not attend an in-service during the project's implementation phase. Education included why the 4Ms framework is a best practice. The RN staff used a script with each qualifying patient (see Appendix H). Each RN had a copy of this; extra copies were kept at the nurse's station. Several in-services were given during the day shift tour starting at 07:00 a.m. and night shift tour starting at 7:30 p.m. in person by myself to all RNs regarding what the project is, what it will take for the project to be a success, and how this project will benefit the patient and their caregivers (see Appendix I).

This project happened over four phases. First, an assessment of the strengths, weaknesses, opportunities, and threats (SWOT) (see Appendix J) was completed for the medical-surgical unit. Strengths included support from the medical staff and senior leadership and increased awareness among our aging adults. Weaknesses included providing this framework specifically for those aged 65 and older versus those less than 65, the average length of stay being 2.03 days, and making time extra time for the patient, as this may be stressful due to time constraints. Opportunities included improving the overall health of our patients and reducing falls. Threats included reduced staffing, time constraints, and patients seeking care at other facilities, resulting in a low census. Using the SWOT allowed for monitoring of the progression

and potential setbacks of the projects. Phase one was implemented with the hospital's support for this project. Phase one covered the two weeks prior to implementing the project. During this time, this Project Lead emailed the RN and physician staff (see Appendix G) explaining who I was and my intent for the project. The email included the date and time of verbal in-services held so that staff knew when to attend. This Project Lead was available via email to answer questions or receive feedback from staff.

The week before implementation included the education of staff. During this time, this Project Lead gave verbal in-services on the medical-surgical unit in a conference room at 0700 to the day and night shift staff. Education included why the 4Ms framework is a best practice. This Project Lead used the Power-Point (see Appendix I) and talked about the 4Ms framework to RN and physician staff. Specifically, for RNs, a script was used and read during each in-service (see Appendix H). The RNs were instructed that extra copies were at the nurse's station. Time was allotted for questions and discussion when warranted. Six in-services to the day and night shift staff were held at 0700 and 1930 on Monday, Wednesday, and Friday before implementation, lasting approximately 30 minutes each.

Implementation of the Intervention

Phase two included weeks one through three of implementation. All RN staff were reminded to include the 4Ms framework in their care plans with each admission during this time. Each RN was given the script for each qualifying patient (see Appendix I). This Project Lead routinely observed three nursing staff during admission for utilization of the 4Ms framework. Auditing for falls began that week. This Project Lead sent reminders periodically regarding using the framework and documenting accordingly in the care plan section of the electronic chart. Auditing for falls was routinely done. When a fall occurred, the chart was audited for

documentation of the 4Ms framework. The cause of the fall was documented, along with if an injury was sustained. This Project Lead monitored for barriers to utilizing the 4Ms framework during week three. A risk management plan table (see Appendix L) was completed to identify the risk for the project on the unit. Some of these risks include using the 4Ms framework for those 65 and older only, cost of supplies, patient length of stay, nursing staff not being available to spend time with patients to educate, reductions in staffing, and other risks that could have a minimal, moderate and potential critical effect on the success of the project. This Project Lead monitored for barriers during these phases.

Phase three included weeks four through six; this Project Lead continued to monitor staff to see if there were barriers to using the 4M framework. This project lead reiterated any best practices and evidence-based findings to encourage using the framework related to best practices. As with the previous week, periodic reminders of using and documenting the 4Ms framework were completed those weeks. This Project Lead routinely observed four nursing staff those weeks during the admission process to monitor for compliance, barriers, and concerns.

Phase four included weeks six through eight. During this time, three nursing staff observations occurred for ten observations. After the conclusion of week eight, an audit was completed to determine the project's results, including total falls on the unit, if the framework was used, and its effectiveness.

Data Collection

Data collection completed by this Project Lead was systematic to decrease the risk of error. The sample size was 80 patients. A retrospective chart review was completed to obtain the data for 2022 and included all patients who had a fall during that eight-week time frame (See Appendix M). This was compared to 80 patients' data in 2023 admitted to the unit during the

implementation of the 4Ms framework. The 2023 year's data started with reviewing seven to ten patients per week for a total of 80 patient audits admitted to the medical-surgical unit during eight weeks from September to October of 2023 (see Appendix N), and included all falls that occurred. This Project Lead collected demographics including gender and marital status, race, age, length of stay, mobility status, whether they had experienced a fall during their hospitalization, if an injury was occurred, and the circumstances surrounding the fall regarding if they were on medications that can increase the risk of falls, or if they had mentation changes. Data collection also included if any part or if all of the 4Ms were documented on each patient audited. Data collected was given numerical values results (see Appendix O).

Care plans were audited to monitor for compliance of all four components of the 4Ms framework that was being charted if what matters only was documented, if medications only were documented, if mentation only was documented, or if mobility only was documented. The patient's privacy and confidentiality were protected, and all data collected were de-identified using a master coding system (alphabetical coding) for their ID (see Appendix P). So that patients are not identifiable or replicated, each alphabet letter will be assigned a number, starting with 5-for example, A=5, B=6, and so on. The patient's identification (ID) is the initial of their first name-initial of their last name they joined the project-participant number (will start with 001). For example, Santa Clause, who was admitted on July 5, 2023, would be assigned code 23-7-5-001.

The patient's electronic data was stored on an Excel dashboard in a locked computer that is password protected that only this Project Lead knows. The computer was stored in an office with a locked door. This Project Lead kept all in-person observation notes in a locked drawer in a locked office and manually added observations to the dashboard. After placement into the

dashboard, all observation notes were manually shredded by this Project Lead using a shredder machine. The data collected from the dashboard, including demographics and fall data, were analyzed in a summary report as aggregated data for statistical analysis using a two-way chi-square test. This gave the average length of stay, how many falls occurred, how many injuries occurred with a fall, and what documentation was completed. A two-way chi-square test was completed along with an analysis of demographics and of the 4Ms framework being documented. For example, if 50 patients are admitted to the unit in a month and eligible to receive the 4M framework, if 20 charts are audited, and 10 received 4Ms care documented, the calculation would be $(10/20) \times 50 = 25$. This would be 25 older adults receiving 4M care in the month (estimated).

Statistics and Ethics

This eight-week quality improvement project used an analysis of data that compared results from the retrospective chart review for eight weeks in 2022 and compared it to eight weeks during the intervention of implementing the 4Ms framework. A statistician was consulted and suggested that for the data analysis, a two-way Chi-squared test for independence (two-way) would be best to measure the data as it is simple and allows for the testing of the relationship between the number of falls before and after the implementation of using the 4Ms framework (Y. Kao, personal communication, July 5, 2023). An Excel spreadsheet was used to collect the data, and with the assistance of the statistician, SPSS was used to analyze the data.

Descriptive statistics describing an analysis and summary included the data's mean, median, and mode. It included gender, marital status, race, the average length of stay, and the mobility status if the patient fell. This revealed the characteristics of the sample data set. Outcome variables addressed included the fall rates and documentation of the 4Ms framework;

length of stay was compared to the fall rate; mobility status was compared to the fall rate; and age was compared to the fall rate.

Ethics was observed throughout this project by abiding by all rules and conduct set forth by the University and the hospital facility by maintaining anonymity and confidentiality. This Project Lead completed the required Training for Human Subject Certification (see Appendix Q), ensuring all investigators meet the human subjects' protection requirements and that humans are ethically cared for (American Medical Association, 2018). This ensures safe practice when human subjects are part of a project. This Project Lead protected the rights of all patients and staff by abiding by privacy rules and HIPPA, with privacy and dignity maintained. All data was kept confidential, including patient names and demographics, and maintained by this Project Lead in a locked area. This Project Lead maintained high levels of integrity to ensure that the data collected was accurate, reliable, and free from bias. This Project Lead ensured that all work was free of plagiarism or misconduct and that the results were accurately represented. This Project Lead maintains accountability for the data gathered and ensures that principles of beneficence were adhered to. According to the American Nurses Association (ANA, 2015), all nurses are ethically obligated to prevent harm, promote human dignity, support the right to self-determination, and protect privacy and confidentiality. This project proposal was submitted to the General Nursing Review Committee (GNRC), which is a sub-committee of the University of Texas at Arlington (UTA) Institutional Review Board (IRB). This project started when this Project Lead received approval from the GNRC to start the project.

Tools

Data collection methods should be identifiable, transparent, and repeatable (Sullivan-Bolyai & Bova, 2018). Information was taken from the electronic health record to determine if

implementation of the 4Ms framework decreased falls in the unit. The chart audit tool that was used (see Appendix M and N) assesses patient demographics, fall-related outcomes, and care plan documentation using face validity. The 2022 Dashboard of Demographics (see Appendix M) is an audit of patient falls from the eight-week time frame last year. This included gender, marital status, race, age, length of stay, if the patient fell, if there was an injury, what the cause was, and notes the patient's mobility, medication, and mentation status. The 2023 year was audited (see Appendix N), and the same information was found, including the patient's length of stay, mobility status, fall status, cause of fall, and if an injury was sustained. Appendix O contains the chart audits that were conducted, including the 4Ms framework. The factors listed in the sections were based on the iterative discussion in the literature. Appendix O includes auditing the 4Ms framework being documented in the care plan. This includes if all 4Ms of the framework were documented, if only what matters was documented if medications were documented if mentation was documented, or if mobility only was documented. A number for yes or no regarding the documentation was given in each area.

This chart audit tool was completed after the patients had been discharged from the unit. The information was obtained from the chart and then documented in the chart audit tool. Frequencies for all items in the chart audit tool were calculated using SPSS software, version 29. Appendix M and Appendix N are most pertinent to the evaluation of implementing the 4Ms framework (1=Yes, 2=NO) related to falls (1=Had a fall, 0=Did not have a fall). The higher ratings for the 4Ms framework indicate that it was used and documented. The relationship of the scores obtained (see Appendix M, N, O) was calculated. There is no reliability testing of this tool because it has not been used before. There is no statistical testing for validity, but the tool could

be considered valid by face validity because it measures the outcome variable to answer the PICOTS. This test produced accurate results.

Descriptive statistics was used to describe and summarize the data that included gender, marital status, race, age, residency state, length of stay, mobility status, if they had a fall, the cause of the fall, if they sustained an injury, if the 4Ms framework were documented and if any or all parts of the framework were included. Descriptive statistics included measures of central tendency, such as mean, median, and mode; measures of variability, such as range and standard deviation (SD); and correlation techniques, such as scatter plots (Sullivan-Bolyai & Bova, 2018). This project measured the mean, median, and mode of the 4Ms framework being documented or observed and the number of falls that had the 4Ms framework documented versus not having the framework documented. A frequency distribution was completed to show the grouped data and the frequency of each group reported.

Results

Of the 80 participants, (see Appendix R), 94% were men, and the other 6% were women. Of the participants, 5% were single, 45% were married, 28.7% were widowed, and 21.3% were divorced. There were zero patients of Asian heritage, 5% African American, zero Hispanic, and 93.8% Caucasian. Age ranges were 22.7% being 65-70, 56.4% being 71-80, and 21.4% being 81-100. Patients that stayed on the unit for greater than 96 hours were 43.8% of the time, with 8.8% being 96 hours. Only 20% of patients stayed on the unit for 48 hours, and 27.5% were on the unit for 72 hours. Mobility status showed that 33.8% of patients were ambulatory, while 21.3% required a walker or aid. Of the 80 audits, 2.5% of falls occurred. This is compared to 2.5% from the previous years' time frame. 50% of the falls occurred due to the patient being confused, while the other 50% were due to mobility issues. 97.5% did not sustain an injury,

while 2.5% sustained an injury. The 4Ms framework was reviewed (see Appendix S). Only 36.3% of staff documented all 4Ms framework. In comparison, 46.3% documented what matters, 88.8% documented that medications were reviewed, 87.5% documented mentation issues or concerns, and 92.5% documented mobility status. 15% of in-person observations were completed. The average length of stay was 3.76 days. The two falls that occurred averaged 8.4 days on the unit and were an average of 78.5 years of age. The mobility status of both falls required the assistance of a person or device.

Summary

Discussion

The falls during the eight-week time frame occurred with circumstances involving the patient being confused and the other patient having mobility issues. Both fallers were over 70 years old and were on the unit for more than 72 hours. The patients who incurred a fall did not have the 4Ms framework documented as being implemented during admission or in their care plans.

Strengths include staffing ratios being within safe care limits. Of the 36.25% who documented all 4Ms framework, those patients did not experience a fall. This indicates that the 4Ms framework can help decrease falls. Opportunities included the need for more participation from the nursing staff in discussing the 4Ms framework with qualifying admission. This could reflect most nurses refusing to participate in the project as part of bargaining unit employees who did not want to participate. It is unknown if both patients who fell could use a call light or if they tried to call for help due to a lack of documentation. The project does not require revisions and will remain the same as there is an opportunity to sustain this project. This student believes that

if there had been full participation from the staff, implementing the 4Ms framework may have prevented the falls.

Limitations

Project limitations that were unforeseen by this student were the refusal of staff to participate as they were bargaining unit employees and refused to participate in the project. Another limitation that occurred was the lack of participation in the informational meetings. Other limitations included the project only being implemented for eight weeks as this is a short time frame. Another limitation is that this project was geared toward providing care for those 65 and older admitted to the unit. For permanent implementation, this student will require AFGE (Union) approval before being allowed to implement it as part of daily care.

Upper leadership buy-in, support, and frequent team reminders improved the staff's motivation to use the 4Ms framework. Having management show support and be available to answer questions and promote the change could have influenced the staff's buy-in to participate. For a similar project in the future, significant support from staff that is willing to provide evidence-based practices is needed. As there is a gap in knowledge and care that our nurses are providing our aging patients, they also must be willing to learn the evidence, support the greater good of giving evidence-based care, and implement the best practices. The knowledge gap was addressed by providing information and leading the practice; however, if staff are willing to change and be open to the best evidence for their patients, it could be easier to implement and sustain further.

Conclusion

The project's overall objective was to reduce patient falls in the Medical-Surgical unit. The nursing staff is now aware of the increased needs of the aging population. They are also

aware of what the 4Ms framework is and how the implementation of this framework can reduce falls on the unit by individualizing their care plans and being better responsive to their needs as aging adults. Educating the nurses on the 4Ms framework and applying the knowledge learned with the patients may decrease falls in the medical-surgical unit. Studies continue to show that talking to the patient about what matters to them, addressing their medications to allow for unneeded medications to be discontinued, monitoring mentation and questioning mood changes, and assessing their mobility are all important factors to address during an inpatient stay. Addressing these evidence-based practices during the admission process will allow for the implementation of necessary precautions to decrease a patient's fall risk. This framework allows for gaining geriatric knowledge when assuming the aging adult's care, which could decrease falls on the unit.

References

- Agency for Healthcare Research and Quality. (2023). Retrieved June 10, 2023, from <https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html>
- Albasha, N., Ahern, L., O'Mahony, L., McCullagh, R., Cornally, N., McHugh, S., & Timmons, S. (2023). Implementation strategies to support fall prevention interventions in long-term care facilities for older persons: A systematic review. *BMC geriatrics*, 23(1), 47. <https://doi.org/10.1186/s12877-023-03738-z>
- American Medical Association. AHC MEDIA. Create more thorough, efficient new IRB member training. *IRB Advisor*. 2018;18(3):13-N.PAG. Accessed August 12, 2023. <https://search-ebsochost-com.ezproxy.uta.edu/login.aspx?direct=true&db=ccm&AN=128189488&site=ehost-live>
- American Nurses Association. (2015). Code of ethics for nurses with interpretive statements. Silver Spring, MD: Nursesbooks.org. Retrieved from <https://www.nursingworld.org/practice-policy/nursing-excellence/ethics/code-of-ethics-for-nurses/coe-view-only/>
- Cameron, I. D., Dyer, S. M., Panagoda, C. E., Murray, G. R., Hill, K. D., Cumming, R. G., & Kerse, N. (2018). Interventions for preventing falls in older people in care facilities and hospitals. *The Cochrane database of systematic reviews*, 9(9), CD005465. <https://doi.org/10.1002/14651858.CD005465.pub4>
- Centers for Disease Control and Prevention. (2018). *Give peace of mind: Advance care planning*. Retrieved June 3, 2023 from <https://www.cdc.gov/aging/advancecareplanning/index.htm>

Centers for Disease Control and Prevention. (2023). *Emotional Wellbeing*. Retrieved June 2, 2023, from

<https://www.cdc.gov/emotional-wellbeing/social-connectedness/loneliness.htm>

Christoff, P. (2018). Running PDSA cycles. *Current problems in pediatric & adolescent health care*, 48(8), 198–201. <https://doi-org.ezproxy.uta.edu/10.1016/j.cppeds.2018.08.006>

Cripe, L. D., Vater, L. B., Lilly, J. A., Larimer, A., Hoffmann, M. L., & Frankel, R. M. (2022). Goals of care communication and higher-value care for patients with advanced-stage cancer: A systematic review of the evidence. *Patient Education & Counseling*, 105(5), 1138–1151. <https://doi-org.ezproxy.uta.edu/10.1016/j.pec.2021.08.016>

Dykes, P. C., Curtin-Bowen, M., Lipsitz, S., Franz, C., Adelman, J., Adkison, L., Bogaisky, M., Carroll, D., Carter, E., Herlihy, L., Lindros, M. E., Ryan, V., Scanlan, M., Walsh, M. A., Wien, M., & Bates, D. W. (2023). Cost of inpatient falls and cost-benefit analysis of implementation of an evidence-based fall prevention program. *JAMA health forum*, 4(1), e225125. <https://doi.org/10.1001/jamahealthforum.2022.5125>

Emery-Tiburcio, Erin E. PhD, ABPP, Mack, Laurin PhD; Zonsius, Mary C. PhD, RN, Carbonell, Ellen LCSW, Newman, Michelle MPH. The 4Ms of an age-friendly health system. *AJN, American Journal of Nursing* 121(11): p 44-49, November 2021. | DOI: 10.1097/01.NAJ.0000799016.07144.0d

Fehlberg, Elizabeth, PhD, RN, Cook, Christa, PhD, RN, Bjarnadottir, Ragnhildur, McDaniel, Anna, et al. (2020). Fall prevention decision making of acute care registered nurses. *The Journal of Nursing Administration*, 50, 442-448.

<https://doi.org/10.1097/NNA.0000000000000914>

- Florence, C. S., Bergen, G., Atherly, A., Burns, E., Stevens, J., & Drake, C. (2018). Medical costs of fatal and nonfatal falls in older adults. *Journal of the American Geriatrics Society*, 66(4), 693-698. <https://doi.org/10.1111/jgs.15304>
- Fulmer, T., Reuben, D. B., Auerbach, J., Fick, D. M., Galambos, C., & Johnson, K. S. (2021). Actualizing better health and health care for older adults. *Health Affairs (Project Hope)*, 40(2), 219–225. <https://doi.org/10.1377/hlthaff.2020.01470>
- Greenberg, S. (2021). Making the most of awvs, fall prevention, and the 4Ms-what matters, medication, mention and mobility. *Geriatric Nursing*. 2021;42(3):681-686.
- Guo, X., Wang, Y., Wang, L., Yang, X., Yang, W., Lu, Z., & He, M. (2023). Effect of a fall prevention strategy for the older patients: A quasi-experimental study. *Nursing Open*, 10(2), 1116–1124. <https://doi.org/10.1002/nop2.1379>
- He, S., Rolls, K., Stott, K., Shekhar, R., Vueti, V., Flowers, K., Moseley, M., Shepherd, B., Mayahi-Neysi, M., Chasle, B., Warner, B., Chroinin, D. N., & Frost, S. A. (2022). Does delirium prevention reduce risk of in-patient falls among older adults? A systematic review and trial sequential meta-analysis. *Australasian Journal on Ageing*, 41(3), 396–406. <https://doi-org.ezproxy.uta.edu/10.1111/ajag.13051>
[Healthy-ageing/social-isolation-and-loneliness](#)
- Institute for Healthcare Improvement. (2019). Age-friendly health systems: Guide to using the 4Ms in the care of older adults. Retrieved from <https://www.ihl.org/Topics/WhatMatters/Pages/default.aspx>
- Karavatas, S. G., Eugene, R., & Evans, B. S. (2020). The link between geriatric depression and functional mobility in older adults: A systematic review. *Journal of the National Society of Allied Health*, 17(1), 36–45.

- Lendon, J. P., Caffrey, C., & Lau, D. T. (2018). Advance directive documentation among adult day services centers and use among participants, by region and center characteristics: National study of long-term care providers, 2016. *National health statistics reports*, (117), 1–8.
- Lesser, S., Zakharkin, S., Louie, C., Escobedo, M. R., Whyte, J., & Fulmer, T. (2022). Clinician knowledge and behaviors related to the 4Ms framework of age-friendly health systems. *Journal of the American Geriatrics Society*, 70(3), 789–800.
<https://doi-org.ezproxy.uta.edu/10.1111/jgs.17571>
- Li, Y., Chen, M., Lin, R., & Li, H. (2021). Perceptions and expectations of advanced geriatric nursing role development in primary health care: A qualitative study exploring staff's perspectives. *Journal of multidisciplinary healthcare*, 14, 3607–3619.
<https://doi.org/10.2147/JMDH.S343622>
- Montejano-Lozoya, R., Miguel-Montoya, I., Gea-Caballero, V., Mármol-López, M. I., Ruíz-Hontangas, A., & Ortí-Lucas, R. (2020). Impact of nurses' intervention in the prevention of falls in hospitalized patients. *International Journal of Environmental Research and Public Health*, 17(17), 6048. <https://doi.org/10.3390/ijerph17176048>
- Montgomery, A., Riley, T., Tranter, S., Manning, V. & Fernandez, R.S. (2018). Effect of an evidence-based quality improvement framework on patient safety. *Australian Journal of Advanced Nursing*, 35 (4), 6-16.
- Morris, M. E., Webster, K., Jones, C., Hill, A. M., Haines, T., McPhail, S., Kiegaldie, D., Slade, S., Jazayeri, D., Heng, H., Shorr, R., Carey, L., Barker, A., & Cameron, I. (2022). Interventions to reduce falls in hospitals: a systematic review and meta-analysis. *Age and ageing*, 51(5), afac077. <https://doi.org/10.1093/ageing/afac077>

Racey M, Markle-Reid M, Fitzpatrick-Lewis D, Ali MU, Gagne H, Hunter S, Ploeg J, Sztramko R, Harrison L, Lewis R, Jovkovic M, Sherifali D. Fall prevention in community-dwelling adults with mild to moderate cognitive impairment: a systematic review and meta-analysis. *BMC Geriatr*. 2021 Dec 10;21(1):689. doi: 10.1186/s12877-021-02641-9. PMID: 34893027; PMCID: PMC8665555.

Schoberer, D., Breimaier, H. E., Zuschnegg, J., Findling, T., Schaffer, S., & Archan, T. (2022). Fall prevention in hospitals and nursing homes: Clinical practice guideline. *Worldviews on Evidence-Based Nursing*, 19(2), 86–93.

<https://doi-org.ezproxy.uta.edu/10.1111/wvn.12571>

Schoene, D., Heller, C., Aung, Y. N., Sieber, C. C., Kemmler, W., & Freiberger, E. (2019). A systematic review on the influence of fear of falling on quality of life in older people: Is there a role for falls. *Clinical interventions in aging*, 14, 701–719.

<https://doi.org/10.2147/CIA.S197857>

Soun, S., Hunter, K. F., & Dahlke, S. (2023). Nursing care management of responsive behaviors for persons living with dementia in acute care settings: An integrative review. *Journal of Gerontological Nursing*, 49(2), 19–25.

<https://doi-org.ezproxy.uta.edu/10.3928/00989134-20230106-04>

Spano-Szekely, Lauraine DNP, RN; Winkler, Anne MA, RN, CCRN; Waters, Cathy MSN, RN, OCN, NEA-BC; Dealmeida, Susana MHA, RN-C; Brandt, Kathy RPh; Williamson, Marsha MSN, RN-BC, ANP-BC, CCRN-K; Blum, Christina BSN, RN; Gasper, Lori BSN, RN; Wright, Fay PhD, RN, APRN-BC. Individualized fall prevention program in an acute care setting: An evidence-based practice improvement. *Journal of Nursing*

Care Quality 34(2):p 127-132, April/June 2019. |

DOI:10.1097/NCQ.0000000000000344

Sullivan-Bolyai, S., and Bova, C. (2018). Data analysis: Descriptive and inferential statistics. In G. Lobiondo-Wood & J. Haber (Eds.), *Nursing Research: Methods and critical appraisal for evidence-based practice* (p. 282). Elsevier.

Terhaar, M. (2018). Ethical responsibilities of translation of evidence and evaluation of outcomes. In G. LoBiondo-Wood & J. Haber (Eds.), *Nursing research: Methods and critical appraisal for evidence-based practice*. (9th ed., pp 230-241). Elsevier.

Appendix A

Evidence Table

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
1	Albasha et al., 2023 CINAHL	Design: systematic review and meta-analyses Aim: To synthesize the evidence on implementing strategies and outcomes included in fall prevention intervention studies (Albasha et al., 2023). Major Variables: Staff working with older people, mixed population,	Population & setting: Adults within a mixed age population older than 65. Rehabilitation units, long term care units, in the United states, Spain, Poland, Sweden, Belgium, Germany, Scotland, Australia, New Zealand, Japan (Albasha et al., 2023). Sample size: 27 studies	Intervention: Fall prevention interventions were implemented compared to usual care or other interventions. Single fall-prevention, multi component intervention and interventions that tailored the intervention to the needs of the participants and the residents, training and educating stakeholders, supporting clinicians, tailoring to context, engaging	Measurements: Systematic search, two independent researchers completed title/abstracts and full-text screening, quality appraisal assessment, data abstraction and coding of the implementation strategies and outcomes. Clinical vignettes and chart abstraction in a cross-sectional study within CRCT (Albasha et al., 2023). Quality study was done comparing staff descriptions, and the use of social constructivist	Results: 7 out of 27 studies were cluster randomized controlled trials (CRCTs), 20 were quasi-experimental studies, 14 of which were peer-reviewed journal articles and six were published theses. Two out of 4 additional papers were protocol papers while the other two referred to a single intervention. Eleven out of 27 studies developed and implemented tools for quality monitoring. Six studies purposefully re-examined the implementation to access interventions	Strengths: Clear outline of intervention and participant Tables are clearly relevant, 12 studies determined that there was a decrease in the number of falls, 2 had no reduction or statistical significance between groups (Albasha et al., 2023). Limitations: Lack of the blinding of participants and of those who administered the intervention, lack of studies	Level III QR: B

mixed setting, staff in rehabilitation units were included, reporting of falls indices such as fall rates, the number of fallers, programs, English or Arabic language

consumers, providing interactive assistance, utilizing financial strategies (Albasha et al., 2023).

learning processes and outcomes between the intervention and control group. Pre and posttest.

and to track progress. 6 studies continued audits and provided feedback, 2 conducted audits without feedback, 5 studies developed and organized monitoring systems noting the outcomes using software programs or tracking report. 4 conducted local needs assessments. 1 study assessed readiness, and 1 included 5 small cyclical test change to complete a fall risk intervention tool with refinement in each cycle (Albasha et al., 2023).

used (Albasha et al., 2023).

Recommendations:
Further research on fall prevention must describe the effective outcome and clinical outcomes

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality ³⁹ Rating
---	------------------------------	--	------------------------------------	--------------	--	---------------------------	-------------------------	---

(Albasha et al., 2023).

2	Cameron et al., 2018 Cochrane	<p>Study Design: Randomized controlled trial</p> <p>Aim: To assess the effects of interventions designed to reduce the incidence of falls in older people in care facilities and hospitals (Cameron et al., 2018).</p> <p>Major Variables: Physical exercise, medications taken and reviewed, sensor alarms, social environment</p>	<p>Population & Setting: 138,164 participants, Care facilitates and hospitals</p> <p>Sample Size: 95 randomized controlled trials</p>	<p>Intervention: Patients exercising, medication interventions that include vitamin D supplementation (Cameron et al., 2018), review of drugs, reviewing environment and assistive technologies, use of bed or chair alarms, low beds, social environment interventions, change in organizational system, knowledge interventions.</p>	<p>Measurements: Literature search of 95 trials measured with an intervention compared to a control group.</p>	<p>Results: Supervised mobility exercises: (RaR 0.59, 95% CI 0.26 to 1.34; 215participants, 2 studies; IK = 0%), Reduces risk of falling (RR 0.36, 95% CI 0.14 to 0.93; 83 participants, 2 studies; IK = 0%). Bed and chair sensor alarms rate of falls (RaR 0.60,95% CI 0.27 to 1.34; IK = 0%); Risk of falling (RR 0.93, 95% CI 0.38 to 2.24; IK = 0) Multifactorial interventions; (RaR 0.80, 95% CI 0.64 to 1.01; 44,664 participants, 5 studies; IK= 52%). Reducing falls (RaR 0.67, 95% CI 0.54 to 0.83; 3747participants, 2 studies; IK = 0%).</p>	<p>Strengths: 95 trials including 138,164 participants, mean age of 78 years in the hospital.</p> <p>Limitations: Lack of blinding, high risk of bias, poorly reporting of adverse events including falls.</p>	<p>Level II QR: B</p>
<p>Recommendation: Report each fall and</p>								

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
3	Fehlberg et al., 2020 CINAHL	Design: Qualitative semi structured interviews Aim: To examine acute care registered nurses' (RNs) fall prevention decision-making skills and how they made the determination of fall precautions (Fehlberget et al., 2020). Major Variables: Nine fall prevention	Population: Adult Registered Nurses Setting: Medical surgical units in a Magnet tertiary referral medical center in southeast region of the United States Sample Size: 8 medical surgical units, 12 participants.	Interventions: Data collection including 4 phase iterative discussions, interviews were audio recorded, field notes were collected, and interviews were transcribed, interviews lasted for 60-90min. Interviews of nursing staff using alarms, rounding, professional judgement and education (Fehlberg et al., 2020).	Measurements: Critical-Decision Method (CDM) was used to explore how RNs made decisions to prevent falls, Recognition-Primed Decision Model (RPDM) and the Quality Health Outcomes Model (QHOM) was used to guide interviews and decided a course of action. NVivo 11 was used to organize and manage transcripts. A consensus process was used to confirm the completeness of the evaluation	Results: Interviews revealed nine themes: compliance with hospital fall prevention policies, fear of discipline for not adhering strictly to the procedures, staffing and workload, the value that the unit placed on bed alarms, trust with patients and families, duty to maintain patient dignity and independence, evaluation of the risk of not implementing fall prevention interventions versus the benefit of doing so, overall	Strengths: Reward of payment. Limitation: Nurses were paid to participate which could have led to dishonesty for payment, small sample size, study done in one medical-surgical unit within one hospital, homogeneity of the sample which varied slightly by race, sex, and education level, culture	Level IV QR: C

	<p>themes, patient acuity level/setting</p>			<p>framework (Fehlberg et al., 2020).</p>	<p>judgment of the patient, fall prevention activities including rounding (Fehlberg et al., 2020).</p> <p>Recommendations: Consider a multilevel approach to fall prevention, that includes promoting a practice environment that embraces self- reporting adverse events. Evaluating unit-level practice and technology acceptance and usability and supporting autonomous nursing practice (Fehlberg et al., 2020).</p>	<p>and policy within the hospital may not be like that of the hospitals, interviews probed the RN participants for information which could have made them feel coerced to talk (Fehlberg et al., 2020).</p>
--	---	--	--	---	---	---

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
---	---------------------------------------	---	--	--------------	--	------------------------------	----------------------------	--

4	<p>Guo et al., 2023</p> <p>PubMed</p>	<p>Design: Longitudinal quasi-experimental quantitative design</p> <p>Aim: Implemented to explore the effect of a fall prevention strategy on older patients based on the Patient Engagement Framework (Guo et al., 2023).</p> <p>Major Variables: Morse fall scale high risk, stable condition versus no medical diagnosis of serious heart, brain, lung and mental disease, cognition</p> <p>Exclusion</p>	<p>Population: 65 years and older</p> <p>Setting: China, geriatric oncology, neurology and cardiology departments of a teaching general hospital.</p> <p>Sample Size: 116 cases using more than 6,000 open beds (Guo et al., 2023).</p>	<p>Intervention: Intervention group were given fall prevention strategy (N=58), Control group was given conventional measures (N=58), and the indicators were compared between the two groups after intervention: Number of falls, knowledge-attitude-practice score, modified fall efficacy scale (Guo et al., 2023).</p>	<p>Measurements: Data analysis was performed using SPSS Version 26.00 (IBM), Chicago, IL, USA (IBM Corp, 2012), t-test, chi-square test and rank-sum test were performed, KAP scale with Cronbach's alpha = 0.952 and contact validity = 0.945 (Guo et al., 2023).</p>	<p>Results: After implementation of an intervention strategy in older patients, the number of falls decreased from 3 to 0 with ($p < 0.5$), a more individuated and patient centered approach to fall prevention may improve the effectiveness of fall interventions and reduces the number of falls (Guo et al., 2023).</p> <p>Recommendations: The intervention process could be optimized, and the evaluation results done to personalize fall prevention plan sheets, automatically generated fall plan sheets could be utilized (Guo et al., 2023).</p>	<p>Strengths: Fall risk assessments were completed on everyone, understanding of the risk of falls and this helped prevention behaviors, patients understood the severity of fall risk (Guo et al., 2023).</p> <p>Limitations: Study did not employ a randomized method to recruit study subjects, a single center study with relatively limited study time and sample size may not represent</p>	<p>Level III</p> <p>QR: B</p>
---	---------------------------------------	--	--	---	---	--	---	-------------------------------

included
severe
intellectual,
visual, or
hearing
impairment,
or absolute
bed rest,
education
degree, living
conditions,
income,
payment
category,
main
caregiver
during
hospitalization
, fall history

other non-
urban
centers,
limiting the
generalizabili
ty of the
study, the
interventions
can be
refined based
on an
evidence-
based
approach,
increasing
their
scientific and
practicality,
economic
benefits
should be set
to evaluate
the overall
effect of an
intervention
strategy
reflected in
different
fields
(Guo et al.,
2023).

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
5	He et al., 2022 PubMed	Study design: Systematic review with trial sequential meta-analysis Aim: To determine whether delirium prevention interventions reduce the risk of falls among older hospitalized patients (He et al., 2022). Major Variables: Preexisting conditions, cognitive impairment, polypharmacy, decreased functional	Population & setting: Hospital setting, Older adults 65 years or older Sample size: 1,878 patients	Intervention: screening for mentation, orientation activities, therapeutic activities, mobility interventions, feeding and hydration assistance, prevention of sensory deprivation, sleep hygiene, pain management and urinary retention and constipation.	Measurements: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (He et al., 2022). gsDesign and Idbounds packages from the R-statistical language. Cumulative z-statistics were based on Hietanen and Nieminen. Bayesian approach used to estimate prevention intervention (using a skeptical prior, RR = 1.0 and only a 5% change of observing a RR < 0.70).	Results: N=1878, fall intervention (0.32), control (0.66) 43% reduction in risk of falls in the delirium prevention study. CI were wide (RE RR = 0.57, 95% CI 0.32; 1.00, p = 0.05). Statistically significant (z > 1.96). Reduced the risk of falls by 10%, 20% and 30% were 0.86, 0.63, and 0.29 (He et al., 2022). Recommendations: Monitor for mentation across the hospital settings to prevent falls.	Strengths: No studies were excluded in the assessment. Good sample size, statistical heterogeneity (I2 = 26%) among the studies. Limitations: Only RCT or cluster-randomized controlled studies were included in this meta-analysis.	Level I QR: A

							level, frailty, differences in hospital care.	
#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
6	Karavatas et al., 2020 CINAHL	Study Design: Systematic review with an observational research design that utilizes cohort, cross sectional or case control methods (Karavatas et al., 2020). Aim: Examine the association between geriatric depression and older adult's functional mobility	Population & Setting: Adults age 65 and older, Inpatient setting Sample Size: 1,000 adults, 10 articles (n=10),	Intervention: Measuring mobility, hand grip strength, measuring activities of daily living including eating, bathing, dressing, transferring, and continence (Karavatas et al., 2020), ambulation, stair climbing, evaluating quality of life of patient.	Measurements: Geriatric depression scale, Barthel Index, Health Related Quality of Live index, European quality of life tool and the Kidney Disease Quality of Life tool (Karavatas et al., 2020).	Results: Depression and falls: Faller: 5.70±3.32 Non fallers: 5.35±3.67, P=0.45. Self-reported injurious falls= P=0.05. Interview based report of falls: P<0.05. Health quality of life: European quality of Life tool: mean=65.2±16.8, P<.001. The Kidney Disease Quality of life: with depression: 36.19±18.78 to 71.22±21.20, P<.001 Without depression:	Strengths: Indicates depression interferes with mobility, good sample size. Limitations: specific indexes of measurement used, other disease processes, limited number of articles used, samples were not homogeneous, use of cross-sectional study design	Level II QR: B

		Major Variables: Geriatric forms, medical conditions, physical performance ability, Falls evaluation tools				47.29±20.03 to 92.13±9.26, P<.001. Geriatric depression scale: mean=62.4±18.2, P<0.01. Significant correlation between depression and fall risk.	was used. Used articles only published in English. Strengths & Limitations	
						Recommendations: Using wider range of indexes for studies regarding depression.		
#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
7	Lesser et al., 2022 PubMed	Study Design: Survey Methodology Aim: To examine clinicians' attitudes,	Population & Setting: Adults 65 years and older. Primary care clinics Sample Size: 1684 primary care	Intervention: Screening management of depression, dementia, delirium, and cognitive impairment, review and document high	Measurement: Survey using Medscape database, measured differences in cohorts using proportions tests	Results: Response rate of 09%. 43% of physicians strongly or somewhat agreed that it was up to the	Strengths: Large sample including 1,684 clinicians. Limitations: Sample was	Level III QR: B

<p>knowledge, and practices concerning the Age-Friendly Health Systems (AFHS) and 4Ms Framework.</p>	<p>clinicians, Physicians (n=575), nurse practitioners (n=613), and physician assistants (n=496).</p>	<p>risk medications, deprescribe high risk medication, ensure appropriate prescribing, limit polypharmacy, screening tools used for mobility, accesses impairment, evaluate environment, set individualized goals for daily mobility.</p>	<p>and logistic regression models.</p>	<p>patient to tell them their needs. 40% of clinicians strongly or somewhat agree that older patients are more proactive than younger in managing their own health (Lesser et al., 2022). 50% of clinicians always take age of patient into consideration with care. NPs 69% always considers age and PA's at 50-55%. 40% of physicians and Pas are slightly or not at all family for 4M framework and NP is 32%. Recommendations: -Clinicians take age of patient into consideration when determining care -Teach the 4Ms framework for modification of care.</p>	<p>not demographically representative of actual clinician populations. Oversampled and weighted underrepresented groups to minimize variability of results due to sampling errors. Low response rate of 0.09%. Small sample period of time, one database used.</p>
<p>Major Variables: Medscape database used, clinician of MD, NP, and PA, demographic variations, age, sex, region, and ethnic diversity of health occupation.</p>					

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
8	Li et al., 2021 PubMed	Study design: Qualitative study Aim: To explore multidisciplinary members' perceptions and expectations of advanced geriatric nursing role development in primary health care. Major Variables: Sex, age, education level, work setting, length of time in geriatric care	Population & setting: 35 hospitals, 284 community and 253 long-term care facilities in China Sample size: 45 staff including 29 RNs, six general physicians, and 10 managers	Intervention: Interviews and questions conducted in elderly care, RN completed elderly's medical checkup, take blood pressure, electrocardiogram, height and weight, questionnaires about medicine, RNs follow chronic disease management, give health education for the elderly to prevent them from falling, pay attention to hygiene, communication management,	Measurements: Joanna Briggs Institute qualitative Assessment and Review Instrument, Consolidated Criteria for Reporting Qualitative research (COREQ), NVivo 11,	Results: A great need on skill-mix RNs equipped with advanced gerontological nursing knowledge and competency. Increase in ageing adult knowledge is greatly needed and should be taught (Li et al., 2021). Recommendations: Consideration of integrating gerontological nursing, public health nursing, and nursing management to better meet the integrated and complex needs of older adults in the primary health care system. Supporting and advocating for vulnerable groups	Strengths: Large number of participating cares facilitates. Limitations: Small study size, geographic distribution was limited. Data collection was performed by a single researcher with a nursing background and may introduce bias. Majority of participants were recruited	Level III QR: C

						(Li et al., 2021).	from community health centers and township health centers, and the staff in long-term institutions were not included (Li et al., 2021).	
#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
9	Montejano-Lozoya et al., 2020 PubMed	Study design: Quasi-experimental study with a non-randomized control group (Montejano-Lozoya et al., 2020). Aim: Assess the effect of an educational intervention	Population & setting: Average age of 68.3 Setting: a third level hospital in Spain, neurology/neurosurgery floor, general internal medicine floor, nephrology/vascular surgery floor, and traumatology and urology floor. Sample size: 581 patients	Intervention: reviewing medication education program was given to the intervention group (n=303), and control group was included for comparison (n=278). In the intervention group, the nurses participated in a training activity on the systematized	Measurements: Bayesian logistic regression model, calculation made by Odds Ratio with a Credible Interval (CI) of 95%. Database used was Statistical Package for Social Science (SPSS) version 20.0 (IBM Corporation) (Montejano-	Results: 85.8% of people that fell were 65 years and older. The overall incidence of falls was 1.2% (0.3% in the intervention group and 2.2% in the control group). Most of the falls occurred in people ≥65 years old (85.7%). The intervention group had a lower	Strengths: Carried out over eight months. Had reliable measurement Limitations: “Hawthorne effect” or observer effect bias from patients being monitored, not all nurses received	Level II QR: B

aimed at hospital nurses in reducing the incidence of falls.

Major Variables:
 patient units, sex, age, nursing unit, assessment on admission, assessment of risk of fall, length of stay, degree of mobility, surgical intervention, altered consciousness, nutritional status, supply of oxygen, has a catheter or tube.

assessment of the risk of falls (Montejano-Lozoya et al., 2020).

Lozoya et al., 2020). and R version 3.5.1,

probability of falling than the control group (OR: 0.127; IC95%: 0.013–0.821). Patient-centered interventions, in addition to tailored patient education, may have the potential to be effective in reducing fall rates in acute care hospitals. Nurses that had an advanced training intervention improved outcome and reduced adverse events, including falls. Recommendations: Mandatory advanced training of nurses in fall prevention improves patient outcomes (Montejano-Lozoya et al., 2020).

training, no information about patients' baseline was given.

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
10	Montgomery et al., 2018 PubMed	Design: Retrospective quantitative study Aim: This study investigated the impact of the introduction of the Productive Ward Program (PWP) on patient falls and medication errors (Montgomery et al., 2018). Major variables: two-day training program. Training consisted of	Population: Adult inpatient population Setting: Sydney, Australia at a major metropolitan acute care hospital including Medical, surgical, and two aged care wards over a 32-month time period (Montgomery et al., 2018). Sample Size: 120 inpatient beds	Intervention: 29 staff went to a two-day training program, rounding hourly using the Essentials of Care Program as a framework to improve patient care and outcomes, decluttered the workplace, reduce inefficient activities, streamline work processes and modules including preparing, assessing, diagnosing, planning, treating and evaluating the patient, “Knowing how we are doing” KHWD, implementing a WOW, maintaining a well-organized ward (Montgomery et al.,	Measurements: Data was collected from the Incident Information Management System, data was entered into Excel and analyzed using SPSS	Results: The Productive Ward Program did not have a significant reduction in falls and medication errors. Aged Care 1 had a reduction of 13 falls, results were not statistically significant (OR 1.17; 95% CI 0.86, 1.59). For Aged Care 1 ward there was a statistically significant reduction in medication errors from 66 errors pre intervention to 27 medication errors post intervention (OR 2.73;95% CI 1.71, 4.38) (Montgomery et al., 2018). Recommendation:	Strength: Safety crosses may have helped with reporting incidents, the PWP created a “no blame” platform for feedback and joint discussion regarding safety incidents, diversity of wards including medical, surgical and tow aged care wards, a pre and post implementation period was done (Montgomery et al., 2018).	Level III QR: C

three modules
 Inclusion
 criteria
 included that
 the wards
 selected were
 the PWP start
 up wards.
 Essentials of
 Care Program,
 and
 Productive
 Ward
 Program

2018).

Future research on
 the impact of the
 productive ward
 program, further
 research to address
 the sustainability of
 the PWP within the
 complex health
 system, further
 research on the
 aspect of falls that
 resulted in harm
 larger sample size
 (Montgomery et al.,
 2018).

Limitations:
 Two patient
 safety
 indicators
 were
 analyzed in
 the study,
 broadening
 the inclusion
 would have
 helped. The
 IIMS data
 relies
 strongly on
 the staff
 entering the
 falls and
 medication
 incidents, its
 unknown if
 all incidents
 were
 reported.
 Study was
 done over a
 short period
 of time
 (Montgomer
 y et al.,
 2018).

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
11	Morris et al., 2022 PubMed	<p>Study design: Systematic review and meta-analysis</p> <p>Aim: To evaluate the effects of single and multi-factorial interventions on falls rates and risk in hospitals, and to grade the strength of evidence and quality of the studies (Morris et al., 2022).</p> <p>Major Variables: Hospital studies, different fall methods, environmental modifications,</p>	<p>Population & setting: Hospitalized adults in a hospital setting</p> <p>Sample size: 43 studies</p>	<p>Intervention: Direct education of patients, environment modifications such as flooring, lighting, ramps, signs, assistive devices, call bell, alert bracelet, bed alarm, traction socks, walking frame, stick, chair assist, lowed bed, technologies, system service models, procedures to prevent falls, rehabilitation, physical activities, medication management, dietary modification. Educating patient on mobility and reducing falls (Morris et al., 2022).</p>	<p>Measurements: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), PROSPERO, Grading of Recommendation s, Assessment, Development and Evaluations (GRADE) (Morris et al., 2022).</p>	<p>Results: The overall results for assistive devices showed no significant effects on rate of falls or odds of falling (RaR=1.22, CI 0.84–1.78, Z=1.03, P=0.30; OR=1.1, CI 0.94–1.31, Z=1.19, P=0.23).</p> <p>Exercise therapies: OR=0.72, CI 0.12–4.32; Z=-0.36, P=0.72.</p> <p>Rehab study: No significant change in the rate of falls (IRR: 1.13, 95% CI 0.65–1.96, P=0.662).</p> <p>Trial by Hill et al. incorporated staff education, showing beneficial effects on falls.</p> <p>Medication review: The falls rate</p>	<p>Strengths: education of falls has most optimal effects using multi-factorial interventions.</p> <p>Limitations: Risk of bias. Did not evaluate injury data associated with falls, did not examine the effects of care-giver education on falls risk or rates, the falls intervention taxonomy that was used differed to a small extent from Lamb, limiting</p>	<p>Level II</p> <p>QR: B</p>

hourly
rounding,
medication
assessment,
exercising

per 1,000 patient days was 10.6 in the control group compared to 1.5 in the experimental. This difference was statistically significant ($P < 0.004$) [59]. Medication addition of vitamin D: Although the number of fallers was less in the intervention group ($n=36$) compared to the control group ($n=45$) this reduction was not statistically significant (RR 0.82 CI 0.59–1.16). Individual multi-factorial trials: significant reductions in the risk of falls (Healey et al. 2004, $P=0.006$); and in the rate of falls (Healey 2014: $P=0.01$). Recommendations: Engaging patients

direct comparisons with prior Cochrane review, did not review studies on falls in the home, community, or residential aged care. Only studies published in English.

						and clinicians in education and training to prevent falls, Use a combination of at least two interventions such as patient or staff education, procedures, around nurse handover, fast responses to call buttons, regular toileting, environmental modification, assistive devices, exercise therapies, safe footwear, medication management, diet or management of cognitive impairment (Morris et al., 2022).		
#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
12	Schoberer et al., 2022	Study design: Systematic review	Population & setting: Adults over 65, hospitals and long-	Intervention: Exercising, or body exercising Medication review,	Measurements: GRADE, AGREE II tool, Critical Appraisal	Results: Multifactorial interventions: significant	Strengths: Large sample, small amount	Level II QR: B

PubMed	<p>Aim: To avoid falls and their consequences and provide nurses with an overview of all relevant research literature on fall prevention, and a practice guideline on fall prevention in older adults.</p> <p>Scope: to identify effective interventions to prevent falls and provide practical and concrete recommendations for effective fall prevention (Schoberer et al., 2022).</p>	<p>term care institutions</p> <p>Sample size: 79 randomized controlled trials including 84,290 patients</p>	<p>staff education, monitoring for falls using results of medication and mobility information</p>	<p>Worksheet for Therapy Studies, CASP checklist</p>	<p>reduction in falls (four studies, RR 0.69, 95% CI [0.49, 0.96], I^2 59%) with a low confidence in the evidence.</p> <p>Body exercise interventions: significant reduction in the rate of falls (two studies, RR 0.50, 95% CI [0.27, 0.90], I^2 0%) and the rate of fallers (two studies, RR 0.38, 95% CI [0.15, 0.94], I^2 0%).</p> <p>Medication review: showed that medication did not significantly reduce the rate of falls (four studies, RR 0.75, 95% CI [0.43, 1.30], I^2 90%) or rate of fallers (six studies, RR 0.92, CI [0.74, 1.15], I^2 64%).</p> <p>Staff education on fall incidence (two studies, RR 0.90, 95% CI [0.29, 2.80], I^2 0%).</p>	<p>of measurement tools used.</p> <p>Limitations: Only four interventions studied. English and German language only studied.</p>
	<p>Major Variables: Injuries,</p>					

quality of life,
fear of falling,
exercises and
mobility

Recommendations:
Staff should be
involved in
implementation
process,
multifactorial
interventions
reduce falls, body
exercises are
strongly
recommended,
active educational
interventions for
caregivers on the
subject of falls
should be
encouraged to
increase the
employees'
knowledge and
prevent residents
from falling
(Schoberer et al.,
2022).

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
13	Schone et al., 2019 Pubmed	Study design: Systematic review Aim: To	Population & setting: 60 years and older Mean age of 75.6 years (SD=6.1); 73%	Intervention: Evaluate what matters to patient, fears, fear of fall, teach emotion and	Measurements: FoF questionnaires used related to self-efficacy, FES	Results: Patients without mobility restrictions or increased fall risk had the lowest	Strengths: Large patient sample Limitations: only English	Level I QR: B

<p>determine the impact of the fear of falling in older adults and the effect of actual fall events on this relationship (Schone et al., 2019). Major Variables: Age, gender, falls, comorbidities, health conditions, medications, use of walking aids, study design including cross-sectional studies, cohort studies, and pre-post group design studies (Schone et al., 2019).</p>	<p>women Setting: Nursing homes, retirement villages, hospital, and day services Sample size: 29,029 patients</p>	<p>balance control, monitor for physical function, general health perception, pain status, vitality, physical role functioning, and physical mobility, promote physical activity (Schone et al., 2019).</p>	<p>and its variations (FES-I and MFES), ABC scale, SAFE measuring activity restrictions, QoL scale, SF-36, SF-12, SF-8, EQ-5D, WHOQOL-BREF, modified WHOQOL-OLD, SHARP, LEIPAD, WHO (five) Well-Being Index, SPF-IL, NHP, PGMS, and CPWI</p>	<p>FoF prevalence (<30%). Higher prevalence rates of FoF were in frail patients. Strong correlation with FoF and QoL (r=0.47 to -0.80) (Schone et al., 2019). Recommendations: future studies of sufficient size are needed to determine complex relationships. Limited information about those concerned about falling and those that restrict their activities. Need for further validation of FoF instruments potentially conceptualizing different constructs (Schone et al., 2019).</p>	<p>language and full articles were included in the study. Specific disease populations were excluded, different scales and instruments were used to conceptualize the constructs of fear of falling and quality of life. Did not investigate the effect of specific or non-specific interventions on the relationship between fear of falling and quality of life. Four studies only recruited women</p>
---	---	---	--	---	--

#	Author Citation and Database	Design & aim or hypothesis & Major Variables	Population & Setting & Sample Size	Intervention	Measurements (e.g. tool to assess outcome)	Results / Recommendations	Strengths & Limitations	Evidence Level & Quality Rating
14	Spano-Szekely et al., 2019 PubMed	Design: Evidence-based practice improvement Aim: Establishing three primary goals of reducing overall fall rate, eliminate all falls with injury through an evidence-based fall prevention protocol, increase the percentage of patients who receive appropriate fall assessments and individualized	Population: Inpatient adult medical-surgical units Setting: 245-bed Magnet- and Planetree designated community hospital in northeastern United States. 2013-1017 (Spano-Szekely et al., 2019). Sample Size: Unknown	Intervention: Staff education given on preventing falls, medication and mobility assessment done on each patient, standardization of bed and chair alarm settings throughout the hospital, hourly rounds implemented, clearly defined rounding responsibilities and processes, implemented reviewing falls in real time, assessed adherence to the algorithm and provided on the spot education and solutions, instituted video monitoring	Measurements: Evidence based practice improvement model developed by Levin and colleagues, Plan, Do, Study, Act cycles, quality monitoring event tracking system database, Banner Mobility Assessment Tool (BMAT) (Spano-Szekely et al., 2019).	Results: 54% reduction in falls from 2.51 falls per 1000 patient days to 1.15 falls per 1000 patient days for inpatient medical-surgical units. There was a 72% reduction in sitter usage equating to \$84,000 in annual savings noted (Spano-Szekely et al., 2019). Recommendations: focuses on the implementation process, ask for feedback from staff, continue learning, real-time debriefs (Spano-Szekely et al., 2019).	Strengths: Real-time debriefing was a key component of sustainability, post fall huddle offers teamwork and opportunities, adequate time frame (Spano-Szekely et al., 2019). Limitations: Unknown sample size, did not specify age, group, or disease	Level V QR: C

(Schone et al., 2019).

fall prevention interventions (Spano-Szekely et al., 2019).

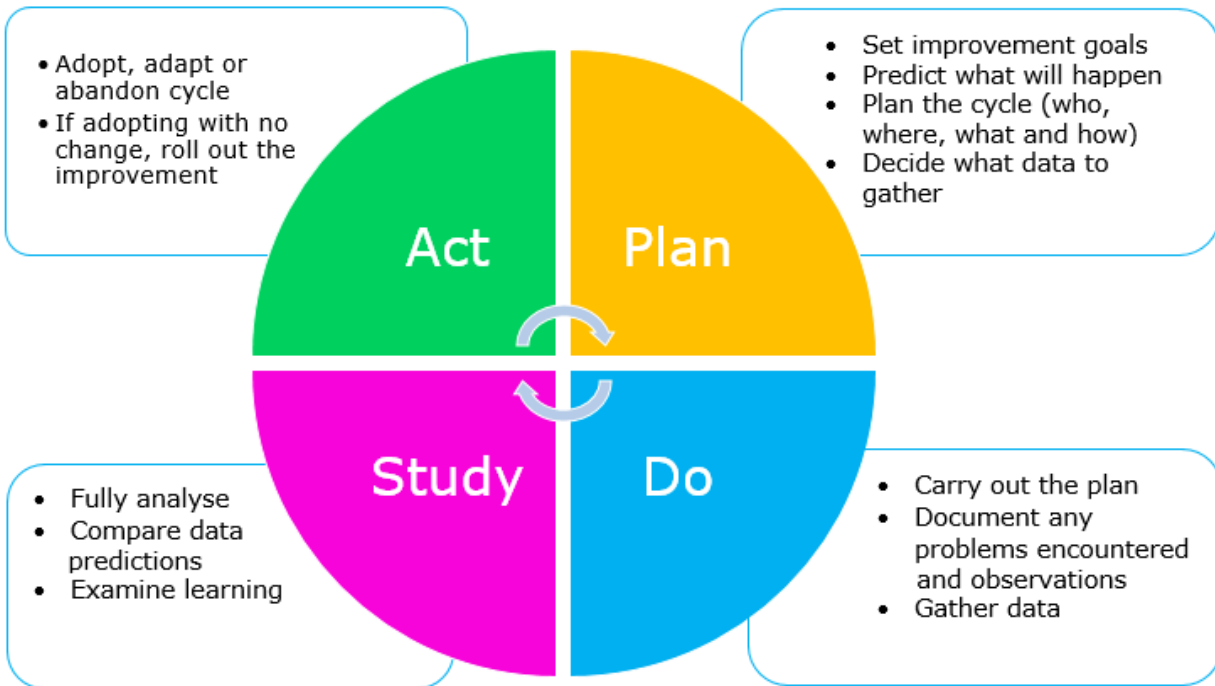
Major Variables:
EBP practice model, arm bands, door signage, bed/chair alarms, sitters, patient care team, patient care assistants, physical therapist, pharmacist, physicians, fall reduction team (Spano-Szekely et al., 2019).

(Spano-Szekely et al., 2019).

processes, did not specify barriers, did not specify a sample size (Spano-Szekely et al., 2019).

Appendix B

PDSA Framework



Retrieved from:

<https://wharaurau.org.nz/sites/default/files/Projects/QI/Resources/Images/PDSA-image.png>

Appendix C

Site Approval Letter

Department of Veterans Affairs **Memorandum**

Date: June 28, 2023
From: Amy Huycke, Associate Director, Patient Care Services (ADPCS)
Subj: Gina Bokker DNP Proposal.
To: University of Texas at Arlington, Nursing Department.

Ms. Bokker is approved, and will have the support of VHSO to work on an Quality Improvement Project titled at this time "Implementing a 4Ms Framework to Decrease Falls", in the pursuit to reduce falls on the medical-surgical unit.

If you have any further questions or concerns, please feel free to reach out to me.


Associate Director of Patient Care Services

Appendix D

Organizational Change Readiness Assessment

- 5 We are excellent at this. I am confident we would succeed.
 4 We are good at this. I believe we can manage.
 3 We are okay at this. I believe we could manage.
 2 We need help with this. I don't think we would manage very well.
 1 We have problems with this. I don't think we can do this.

Sponsorship regularly comes from a senior level such as the President.	5
Leadership is provided from the highest senior levels that have direct responsibility for change.	5
There is a strong sense of urgency for change from the senior staff.	4
Any planned change initiative has clear objectives that are consistently communicated.	5
Management strongly believe the future should look different from the past.	5
Management has a clear vision of the future and can mobilize the necessary resources.	3
The change effort connects to other major initiatives underway or being planned within the organization.	3
Management is willing to change critical business processes.	3
All employees are supported when taking risks, being innovative and looking for new solutions.	4
The organization has successfully implemented major changes in the past 12 months.	4
Organizational decisions use a participatory process, are made quickly and it's clear when the decision is made.	3
Employees view change as an opportunity.	4
Employees work across boundaries with little trouble.	3
Total Points	51

Appendix E*Budget*

4Ms Framework Revenue and Expenditures	
Expenses	Monthly
Copy paper	\$20.00
Printer ink	\$30.00
Total Budget Requested	\$50.00

Appendix G

E-mail of Project Description to Medical-Surgical Unit RN's and Medical Physicians team

Attention all staff,

My Name is Gina Edgeworth, and I am a DNP student that will implement and lead a project for the Medical-Surgical unit. I am a Doctor of Nursing Practice (DNP) student at the University of Texas at Arlington, where I am seeking your support and participation in a nurse-led evidence-based practice initiative. I have received clinical approval from the Associate Director of Nursing and my immediate supervisor (see Appendix B).

Because most of our patients are 65 years old and older, this evidence-based project will focus on using the 4Ms framework to guide best practices in geriatric care, leading to a decrease in falls. To do this, the key team players will include myself, all other registered nurses on the medical-surgical unit, and the patients that are 65 years or older.

There is a gap in knowledge and care between nursing staff and patients 65 years and older. Using the 4Ms framework, the RN staff will tailor the care plans to what matters to the patient, ensure that their medications are addressed accordingly, understand and monitor for mentation concerns, and lastly, mobility. Using this framework will allow for a trusting relationship between the nurse, the patient, and their caregiver, along with allowing the nurse to focus on what matters most to the patient. The patient and their caregiver will benefit because their care will be specific to their needs regarding care and support.

I am here to help instruct, educate, support, guide and work with each of you during the following months of implementing this project. Please come to me with questions, concerns, or ideas that you may have to help make this project a success.

If there are any questions or concerns, my email is listed above. I look forward to collaborating with you on this valuable evidence-based practice initiative.

Thank you for your valuable time.

Respectfully,

Gina Edgeworth

Appendix H

Script for Registered Nurses

You all have a vital role in the care you give our patients. As most of you know, we have had a lot of ongoing issues and concerns with the lack of education and knowledge regarding how to care for our aging population of patients relating to geriatric care. With the ongoing increase in falls, we are implementing a 4Ms framework to guide the care given. This is a quality improvement initiative. It is an evidence-based practice in geriatric care that tailors what matters to the patient, medication, mentation, and mobility. Using this framework, we will influence the geriatric environment to deliver high-quality, safe, and reliable geriatric care during each of their hospitalizations, thus decreasing our fall rates on the unit.

The 4Ms framework will allow for complete health care with each older adult's specific health outcome goals and care preferences, including, but not limited to, end-of-life care across all care settings. I want you all to be confident and comfortable in the conversations with our aging population. Now let us talk about what the 4Ms framework is.

The 4Ms start by asking the patient what matters to them. What is essential during this hospital stay? Open-ended discussions can include pain management, concerns of family or friends, pets at home, or physical recoveries. Are there barriers with language, culture, or social events going on that would hinder care? Consider the patients' connection to family and friends. Do they have a cell phone charger? If not, let's find them one. Your investigating skills will look for things like hearing loss, vision loss, mobility issues, or other concerns regarding what matters to the patient. Let us use this information to tailor their care plan and care to fit this. Evidence shows that each of these things contribute to patients falling.

Medication: Each of you will be reviewing the medications with the patient. Be their advocate regarding whether a medication is needed or can be discontinued. It is vital to be their advocate and work with the physicians to review high-risk medication use. We need to ensure that before discharge, we review each medication; if the physician changed a previous dosage, let's ask permission to dispose of the old bottle. Let us give them what they need to be successful at home.

Mentation: You are all looking at this with each patient arriving at the unit. With this part, you will be focused on the patient and their caregivers so that a whole health approach to this care is given. You are already screening for cognitive status; make sure we contact social work, mental health, or others to ensure the best care is given. Frequent reminders of who we are when we enter the room, soft touch when speaking, and slowly walking or giving care keep these patients from getting upset or confused. This will also include ensuring hydration and preventing sleep interruptions. Ask the patient about changes in memory, or in their mood. Have they noticed times of confusion?

Mobility: As of 2021, 39.3% of Americans over 65 have difficulty walking or climbing steps. You are already assessing the fall risk; with this part of the framework, we will ensure the patient is out of bed at least thrice in a 24-hour period. This is going to help with their strength and

endurance. When you all are with your patient, I encourage you to take the time to talk to them about their mobility at home. Let us promote their well-being, even after they go home. You all do a great job with the care that you already give. These questions and tools will help everyone think longer about tailoring your time and care to this aging population. Patients that qualify for this intervention includes those that are 65 years and older and are admitted to the unit after implementation of this project starts. Those that are less than 65 or are already admitted to the unit when the project is implemented will not be counted in the data.

Appendix I

Script for RN to use with patient

Hello there; before we start with your admission questions, I want you to know that we want to give you the best care and have a great experience here with no incidences that may cause you to have a fall.

Because you are 65 years or older, you are at a higher risk of falling. We do not want you to fall, I am going to talk to about a 4Ms framework that may decrease your risk of falling. This includes talking to you about what matters to you, looking at your medication and assuring that you are safely taking what is needed, considering if you have noticed any changes in your mood or if you are having trouble remembering things, and how your mobility is.

This may take a few extra minutes but will allow me, as your nurse, to understand your needs, wants, and community sources that may be needed upon discharge. We want you to be safe during your stay here and want to offer you the extra time to get to know you so that we can ensure that your health is the top priority so that you may return home at your baseline without any injuries that may result from a fall.

Examples to guide the RN in what to document in the care-plan:

What Matters

What matters to you while you are here in the hospital?

How can we give you the best care during your hospital stay?

Are there barriers with language, culture, or social events going on that would hinder care?

Do you want us to call your family and let them know you are here?

Do they have a cell phone charger?

Do you have a fear of falling?

Medication

Do you take any over-the-counter medications?

Do you take any high-risk medications?

Do you have any medications that you want us to dispose of for you?

Mentation

Have you noticed any changes in your memory?

Have you noticed changes in your mood?

Have you noticed any times of confusion?

Have you been depressed?

Mobility

We will encourage you to get out of the bed at least 3 times a day.

Do you use or need a mobility aid?

Tell me about your mobility at home?

Let's get started with your admission process.

Appendix J

Inservice of Project to Team Members Power-point

Using the 4Ms Framework to Decrease Falls

PRESENTER: GINA BOKKER



Using the 4Ms Framework to Decrease Falls

- Introduction including project
 - Pursuit of Doctor of Nursing Practice (DNP) degree
 - Quality Improvement using Evidence-Based Practice of the 4Ms framework
- Key players
 - Myself as the student and leader
 - All registered nurses on this unit
 - The patients that we care for that are 65 years or older
- We are One TEAM
 - Success depends on teamwork with implementing the 4Ms framework



<https://clipground.com/pics/get>

4Ms Framework

- Why do we need this?
 - What is the Gap?
 - Gap in care resulting in patients falling on the unit
 - Falls on the unit have increased by 50%
 - Intervention includes educating the nurses on the 4Ms framework and applying the knowledge.
- What is the 4Ms Framework?
 - Best Practices that guide geriatric care that may reduce falls
 - Care used with patients that are 65 years or older
 - Specific care tailored to the patient addressing specific needs
 - What matters
 - Medication
 - Mentation
 - Mobility



https://www.clipartmax.com/middle/m2H7N4m2d3G6Rb1b1_thinking-clip-art-confused-cartoon/

4Ms Framework

What Matters	Medication	Mentation	Mobility
<ul style="list-style-type: none"> ▪ What matters to the patient? ▪ Have they had a fall? ▪ Are they tech savvy? ▪ Are they lonely? ▪ Are their final wishes known? 	<ul style="list-style-type: none"> ▪ Review all at home and in hospital medications. ▪ Work with pharmacy and physician to eliminate what is not needed. ▪ Review all high-risk medication use ▪ Review over-the-counter medications 	<ul style="list-style-type: none"> ▪ Screen for cognitive impairment ▪ Screen for depression ▪ Review family history ▪ Refer for further evaluation and management of cognitive impairments 	<ul style="list-style-type: none"> ▪ Screen for mobility limitations ▪ Inquire of mobility aids used at home ▪ Ask about driving and transportation ▪ Are they active in the home/community?

4Ms Framework

- Who gets the 4Ms Framework?
 - 65 years or older
 - Admitted to the medical-surgical unit
- Who doesn't get the 4Ms Framework?
 - Less than 65 years of age
 - Is inpatient during the time of implementation of the project

4Ms Framework

What Matters	Medication	Mentation	Mobility
<ul style="list-style-type: none"> ▪ What matters to the patient? ▪ Have they had a fall? ▪ Are they tech savvy? ▪ Are they lonely? ▪ Are their final wishes known? 	<ul style="list-style-type: none"> ▪ Review all at home and in hospital medications. ▪ Work with pharmacy and physician to eliminate what is not needed. ▪ Review all high-risk medication use ▪ Review over-the-counter medications 	<ul style="list-style-type: none"> ▪ Screen for cognitive impairment ▪ Screen for depression ▪ Review family history ▪ Refer for further evaluation and management of cognitive impairments 	<ul style="list-style-type: none"> ▪ Screen for mobility limitations ▪ Inquire of mobility aids used at home ▪ Ask about driving and transportation ▪ Are they active in the home/community?

4Ms Framework

- Questions/Discussion
- Thank you

Let's get to work!

https://oaces.net/news/success_stories/attachment/te-lets-get-to-work-2/

Appendix K

SWOT

Strengths	Weaknesses
<p>Support from medical staff as this framework will benefit the patients overall care.</p> <p>Support from nursing staff as they want the patients to heal and be successful in the management of their own health.</p> <p>Support from hospital administration by promoting this best practice.</p> <p>Support from ancillary staff by asking for what is needed regarding copies made or opportunities to help.</p> <p>Benefits the patient by allowing them to be part of their healthcare and make their wishes known to staff.</p> <p>Benefits the staff by increasing knowledge, skills and awareness of the aging adults care.</p> <p>Exposure to the training and awareness of the project allowing for aging adult care knowledge.</p> <p>Project is on one unit allowing for one team in one area to provide this framework of care.</p>	<p>Providing care for 65 years and older and not using framework for all ages.</p> <p>Costs of supplies can be expensive.</p> <p>Patient having a short length of stay.</p> <p>Nurses not available to spend time with patients.</p> <p>Staff is not clear of their role in the patient relationship regarding framework.</p> <p>Services too stretched for additional activity</p> <p>Multiple competing priorities.</p> <p>Implementation of project is a short length of time of eight weeks.</p>
Opportunities	Threats
<p>Improved overall health allowing for community involvement.</p> <p>More active in the community by discharging from the hospital being educated on importance of being active, mindful of medications, being social, and doing things that matter to the patient.</p> <p>Increase in the admissions of aging population to care for on the unit.</p> <p>Better patient satisfaction scores.</p> <p>Reducing falls.</p> <p>Increased staff confidence in knowledge of caring for aging adult.</p> <p>Can benefit hospital wide by using in primary care, ICU, and ER.</p>	<p>Reduction in staffing.</p> <p>Time constraints of the nurse.</p> <p>Refusal of participation by RN.</p> <p>Patients seeking care in private sector, low census.</p>

Appendix L

Risk Management Plan Table

Risk	Probability	Impact	Mitigation of Risk	Contingency Plan
Providing 4Ms framework only for 65 years and older	Occasional	Moderate	Monitor age for less than 65 years of age.	Have the RN verify the age after receiving the patient.
Costs of supplies	Occasional	Minimal	Purchase one pack of 100 white sheets to copy. Purchase ink for printer. Plan to spend \$50.00 initially on supplies.	Keep additional copies in office and monitor for use and refill needed.
Patient length of stay	Likely	Critical	Ensure that every admitted patient that meets criteria has this framework used.	Chart audits completed bi-weekly in case reinforcement of education is needed for staff nurses to use 4Ms framework on patients 65 or above, even in the event their length of stay is short.
Nurses not available to spend time with patients	Likely	Critical	Ensure that the nurse can prioritize her patient needs to give the time needed.	Monitor patient staffing load, if high acuity, reach out to management for additional staff to help. This includes myself as well.

Staff is not clear of their role in the nurse-patient relationship	Occasional	Moderate	Staff will be expected to follow the script each time a qualifying patient is admitted. They will be reminded if returning from vacation/leave.	Scripts will be kept at the nursing station and with the charge nurse for reference.
Services too stretched for additional activity	Occasional	Moderate	Educate importance of interventions and project regarding patient receiving best care.	Monitor staffing daily to account for practical patient load.
Multiple competing priorities including patient care, dressing changes, charting, time with patient	Likely	Moderate	Educate on importance of intervention to decrease falls.	Decrease workload by adding additional RN, ensuring delegation is happening.
Reduction in staffing	Occasional	Critical	Ask for additional staff to be floated to unit to decrease patient load which will increase time spent with patient.	Monitor staffing methodology throughout hospital for opportunities to ask for additional staff. Ask management or house supervisor for additional staff to allow for time to teach and educate.
Refusal of participation by RN	Occasional	Critical	Personally, encourage and educate on benefits of decreasing falls and upper management support.	Participation is needed to be successful and obtain data regarding fall rates. Involve upper management if necessary.

Low census	Occasional	Critical	Without patients coming to the facility to receive care, we will not have data or patients to implement the project on.	Thank each patient for allowing our unit to care for them in their time of illness. Reiterate that our facility is ready to give them the best care if ever needed again.
------------	------------	----------	---	---

Appendix M

2022 Demographic Data including Falls

	ID	Gender	Marital Status	Asian	Black	Hispanic	White	Age	LOS	Mobility Status	Fall	Cause of Fall	Injury	Medication	Mentation Status
1	6-5-20-001	1	2	0	0	0	1	79	5	2	1	2	1	1	1
3	17-17-20-002	1	1	0	0	0	1	65	3	1	1	3	1	1	1

Appendix N

2023 Demographic Data including Falls

1	ID	Gender	Marital Status	Asian	Black	Hispanic	White	Age	LOS	Mobility Status	Fall	Cause of Fall	Injury	Medication	Mentation Status
2	11-5-12-001	1	2	0	0	0	1	84	3	1	0	0	0	1	1
3	16-5-12-002	1	4	0	0	0	1	69	5	1	0	0	0	1	1
4	5-6-12-003	0	4	0	0	0	1	73	2	4	0	0	0	1	1
5	14-12-13-004	1	3	0	0	0	1	69	3	1	0	0	0	1	1
6	15-20-13-005	1	2	0	0	0	1	75	4	3	0	0	0	1	1
7	6-10-14-006	1	3	0	0	0	1	98	5	3	0	0	0	1	1
8	18-17-14-007	1	2	0	0	0	1	74	5	3	0	0	0	1	0
9	14-27-14-008	1	4	0	0	0	1	68	5	1	0	0	0	1	1
10	8-7-14-009	1	4	0	0	0	1	83	3	3	0	0	0	1	1
11	5-5-18-010	1	2	0	0	0	1	74	3	3	0	0	0	1	1
12	27-17-18-011	1	2	0	0	0	1	72	5	1	0	0	0	1	1
13	22-22-18-012	1	4	0	0	0	1	75	4	3	0	0	0	1	1
14	12-23-18-013	1	2	0	0	0	1	74	4	5	0	0	0	1	1
15	22-27-19-014	1	3	0	0	0	1	71	5	1	0	0	0	0	1
16	16-17-20-015	0	1	0	0	0	1	67	2	1	0	0	0	1	1
17	11-23-20-016	1	3	0	0	0	1	79	5	4	0	0	0	1	1
18	22-11-21-017	1	3	0	0	0	1	88	4	4	0	0	0	1	1
19	11-21-22-018	1	2	0	0	0	1	74	3	1	0	0	0	1	1
20	9-23-23-2019	1	2	0	0	0	1	85	3	3	1	3	1	1	0
21	6-16-25-020	1	2	0	0	0	1	69	5	1	0	0	0	1	1
22	15-20-25-021	1	3	0	1	0	0	71	3	2	0	0	0	1	1
23	8-6-26-022	1	4	0	0	0	1	68	3	1	0	0	0	1	1
24	6/8/26-023	0	3	0	0	0	1	81	5	3	0	0	0	1	1
25	14-12-27-024	1	3	0	0	0	1	79	5	3	0	0	0	1	1
26	11-7-27-025	1	2	0	0	0	1	83	2	2	0	0	0	1	1
27	14-19-27-026	1	2	0	0	0	1	80	3	3	0	0	0	1	1
28	16-17-28-027	0	1	0	1	0	0	67	5	5	0	0	0	1	0
29	9-27-29-028	1	2	0	0	0	1	77	2	1	0	0	0	1	1
30	16-12-2-029	1	2	0	0	0	1	74	2	4	0	0	0	1	1
31	27-26-2-030	1	3	0	0	0	1	93	3	3	0	0	0	1	0
32	19-27-2-031	1	3	0	0	0	1	78	5	3	0	0	0	1	1
33	22-5-3-032	1	4	0	0	0	1	74	3	5	0	0	0	1	1
34	19-6-3-033	1	2	0	1	0	0	84	3	2	0	0	0	1	1
35	24-7-3-034	1	3	0	0	0	1	82	2	3	0	0	0	1	1
36	20-6-4-035	1	2	0	0	0	1	72	2	1	0	0	0	1	0
37	22-12-4-036	1	4	0	0	0	1	76	5	4	0	0	0	1	0
38	8-17-4-037	1	4	0	0	0	1	67	3	1	0	0	0	0	1
39	16-7-5-038	1	3	0	0	0	1	91	5	2	0	0	0	1	0
40	7-6-6-039	1	4	0	0	0	1	72	5	2	1	4	1	1	0

41	27-14-6-040	1	1	0	0	0	1	71	5	1	0	0	0	2	0
42	11-24-6-041	1	1	0	0	0	1	73	5	1	0	0	0	1	1
43	17-7-10-042	1	3	0	0	0	1	65	2	1	0	0	0	1	1
44	8-11-10-043	1	2	0	0	0	1	74	2	4	0	0	0	1	1
45	6-16-10-044	1	2	0	0	0	1	69	5	4	0	0	0	0	1
46	14-5-13-045	1	3	0	0	0	1	75	5	4	0	0	0	1	1
47	6-19-13-046	0	2	0	0	0	1	65	2	1	0	0	0	1	1
48	19-8-13-047	1	3	0	0	0	1	75	5	2	0	0	0	1	1
49	19-27-16-048	1	4	0	0	0	1	78	5	4	0	0	0	1	0
50	22-14-16-049	1	2	0	0	0	1	69	3	1	0	0	0	1	1
51	11-6-17-050	1	3	0	0	0	1	74	2	1	0	0	0	1	1
52	8-27-17-051	1	2	0	0	0	1	71	5	2	0	0	0	1	1
53	9-6-19-052	1	2	0	0	0	1	74	2	2	0	0	0	1	1
54	8-8-19-053	1	4	0	0	0	1	73	2	2	0	0	0	1	0
55	8-24-19-054	1	2	0	0	0	1	79	3	3	0	0	0	1	1
56	7-27-19-055	1	2	0	0	0	1	72	4	2	0	0	0	1	1
57	6-16-20-056	1	2	0	1	0	0	68	2	3	0	0	0	1	1
58	8-16-20-057	1	2	0	0	0	1	65	3	4	0	0	0	1	1
59	17-23-20-058	1	2	0	0	0	1	77	2	1	0	0	0	1	1
60	14-6-23-059	1	2	0	0	0	1	73	3	1	0	0	0	1	1
61	23-6-23-060	1	2	0	0	0	0	71	4	5	0	0	0	1	1
62	27-14-22-061	1	3	0	0	0	1	71	5	5	0	0	0	1	0
63	10-17-23-062	1	4	0	0	0	1	78	5	4	0	0	0	1	1
64	22-19-23-063	1	2	0	0	0	1	76	3	1	0	0	0	1	1
65	8-20-23-064	1	4	0	0	0	1	80	5	3	0	0	0	1	0
66	7-22-23-065	1	4	0	0	0	1	65	5	5	0	0	0	1	0
67	23-6-24-066	1	2	0	0	0	1	71	4	2	0	0	0	1	1
68	23-7-24-067	1	2	0	0	0	1	88	5	3	0	0	0	1	1
69	8-16-24-068	1	2	0	0	0	1	65	3	1	0	0	0	1	1
70	14-15-25-069	1	4	0	0	0	1	66	5	2	0	0	0	1	1
71	7-18-25-070	1	3	0	0	0	1	71	5	4	0	0	0	1	1
72	5-23-25-071	1	3	0	0	0	1	85	3	2	0	0	0	1	1
73	11-11-26-072	1	4	0	0	0	1	79	5	5	0	0	0	1	0
74	26-17-26-073	1	3	0	0	0	1	74	5	5	0	0	0	1	0
75	22-23-26-074	1	2	0	0	0	1	76	5	2	0	0	0	1	1
76	9-6-30-075	1	2	0	0	0	1	74	5	1	0	0	0	1	1
77	16-17-81-076	1	3	0	0	0	1	81	3	1	0	0	0	1	1
78	10-27-31-077	1	2	0	0	0	1	91	5	5	0	0	0	1	0
79	5-23-4-078	1	3	0	0	0	1	89	2	1	0	0	0	1	1
80	24-26-6-079	1	2	0	0	0	1	67	3	1	0	0	0	1	1
81	27-23-8-080	1	3	0	0	0	1	93	5	2	0	0	0	1	0

Appendix O

Chart Audit of 4Ms Framework

1	4Ms Framework Documented						
2	ID	All 4Ms	What Matters	Medications	Mentation	Mobility	Observation
3	11-5-12-001	0	0	1	1	1	0
4	16-5-12-002	0	0	1	1	1	0
5	5-6-12-003	0	0	1	1	1	0
6	14-12-13-004	0	0	1	1	1	0
7	15-20-13-005	0	1	1	1	1	1
8	6-10-14-006	0	0	1	1	1	0
9	18-17-14-007	0	1	1	1	1	1
10	14-27-14-008	1	1	1	1	1	1
11	8-7-14-009	0	0	0	0	0	0
12	5-5-18-010	0	0	1	1	1	0
13	27-17-18-011	1	1	1	1	1	0
14	22-22-18-012	1	1	1	1	1	0
15	12-23-18-013	0	0	1	1	1	0
16	22-27-19-014	0	0	0	0	1	0
17	16-17-20-015	1	1	1	1	1	0
18	11-23-20-016	1	0	1	1	1	1
19	22-11-21-017	0	1	0	0	1	0
20	11-21-22-018	1	1	1	1	1	0
21	7-6-6-039	0	0	1	1	1	0
22	6-16-25-020	0	1	1	1	1	0
23	15-20-25-021	0	0	1	1	1	1
24	8-6-26-022	1	1	1	1	1	1
25	6/8/26-023	1	1	0	0	0	0
26	14-12-27-024	0	0	1	1	1	0
27	11-7-27-025	0	0	0	0	0	0
28	14-19-27-026	0	1	1	1	1	0
29	16-17-28-027	0	0	1	1	1	1
30	9-27-29-028	1	1	1	1	1	0
31	16-12-2-029	0	0	1	1	1	0
32	27-26-2-030	0	0	1	1	1	0
33	19-27-2-031	0	0	1	0	1	0
34	22-5-3-032	0	1	1	1	1	0
35	19-6-3-033	0	0	1	0	0	0
36	24-7-3-034	1	1	1	1	1	1
37	20-6-4-035	0	0	1	1	1	0
38	22-12-4-036	1	1	1	1	1	0
39	8-17-4-037	1	1	1	1	1	0
40	16-7-5-038	1	1	1	1	1	0

41	7-6-6-039	0	0	0	0	1	0
42	27-14-6-040	0	0	1	0	1	0
43	11-24-6-041	1	1	1	1	1	0
44	17-7-10-042	0	0	1	1	1	0
45	8-11-10-043	0	0	1	1	1	0
46	6-16-10-044	1	1	1	1	1	0
47	14-5-13-045	1	1	1	1	1	0
48	6-19-13-046	0	0	1	1	1	0
49	19-8-13-047	1	1	1	1	1	1
50	19-27-16-048	1	1	1	1	1	0
51	22-14-16-049	0	0	1	1	0	0
52	11-6-17-050	0	1	1	1	1	0
53	8-27-17-051	0	0	1	1	1	0
54	9-6-19-052	0	0	1	1	1	0
55	8-8-19-053	0	0	1	1	1	0
56	8-24-19-054	1	1	1	1	1	0
57	7-27-19-055	0	0	1	1	1	0
58	6-16-20-056	1	1	1	1	1	0
59	8-16-20-057	0	0	1	1	1	0
60	17-23-20-058	1	1	1	1	1	0
61	14-6-23-059	1	1	1	1	1	0
62	23-6-23-060	1	1	1	1	1	0
63	27-14-22-061	0	1	0	1	1	0
64	10-17-23-062	0	0	0	1	1	0
65	22-19-23-063	0	0	1	1	1	0
66	8-20-23-064	0	0	1	1	1	1
67	7-22-23-065	0	0	0	1	1	1
68	23-6-24-066	1	1	1	0	1	1
69	23-7-24-067	0	0	1	1	0	0
70	8-16-24-068	0	0	1	1	1	0
71	14-15-25-069	0	0	1	1	1	0
72	7-18-25-070	1	1	1	1	1	0
73	5-23-25-071	0	0	1	1	1	0
74	11-11-26-072	1	1	1	1	1	0
75	26-17-26-073	1	1	1	1	1	0
76	22-23-26-074	0	0	1	1	1	0
77	9-6-30-075	0	0	1	1	1	0
78	16-17-81-076	0	1	1	1	1	0
79	10-27-31-077	1	1	1	1	1	0
80	5-23-4-078	0	0	1	1	1	0
81	24-26-6-079	1	1	1	1	1	0
82	27-23-8-080	0	0	1	1	1	0

Appendix P

Legend

	A	B	C	D	E	F	G
1	Demographics:						
2	Variable Name	Variable information					
3	ID	Study ID Number: see legend below for Master coding system					
4	Gender	1=Male; 0= Female					
5	Marital	1=Single; 2= Married; 3= Widowed; 4= Divorced					
6	Asian	1=Asian; 0= Not Asian					
7	Black	1=Black; 0= Not Black					
8	Hispanic	1=Hispanic; 0= Not Hispanic					
9	White	1=White; 0= Not White					
10	Age	Age at Enrollment (years)					
11	Residency State	Residency State 2-letter abbreviation					
12	Length of Stay	1=24 hours; 2= 48 hours; 3= 72 hours; 4= 96 hours; 5= >96 hours					
13	Mobility Status	1= Ambulatory; 2= Ambulatory with assistance; 3= Walker; 4= Wheelchair; 5= Non-ambulatory					
14	Fall	1= Had a Fall; 0= Did not have a fall					
15	Cause of Fall	1= Toileting need; 2= Impulsive; 3= Confused; 4= Mobility					
16	Injury	1= Had an injury; 0= Did not have an injury					
17	Medication	1= Taking medications that can contribute to falls; 0= not taking medications					
18	Mentation Status	1= Alert and Oriented; 0= Confused					
19							
20	Chart Audit						
21	ID	Study ID Number: see legend below for Master coding system					
22	4Ms framework document	1= Yes; 0= No					
23	What Matters	1= Yes; 0= No					
24	Medications	1= Yes; 0= No					
25	Mentation	1= Yes; 0= No					
26	Mobility	1= Yes; 0= No					
27	Observation (in person)	1= Yes; 0= No					
28							
29	Master coding system (alphabetical coding) for the project: ID						
30	A=5	N=18					
31	B=6	O=19					
32	C=7	P=20					
33	D=8	Q=21					
34	E=9	R=22					
35	F=10	S=23					
36	G=11	T=24					
37	H=12	U=25					
38	I=13	V=26					
39	J=14	W=27					
40	K=15	X=28					
41	L=16	Y=29					
42	M=17	Z=30					
43							
44	Initial First Name-Initial Last Name-day joined project-Participant number (will start with 001)						
45	If patient name was Abraham Lincoln, his code would be 5-16-27-001						
46							
47							
48							
49							

2022 Demographics

2023 Demographics

Chart Audit

Legend



Appendix Q

Human Subject Certificate



Human Subjects Protection Training (HSP): Training Completion Certificate

This document certifies that Gina L Bokker completed the training entitled "Human Subjects Protection Training (HSP)" on July 10th, 2023.

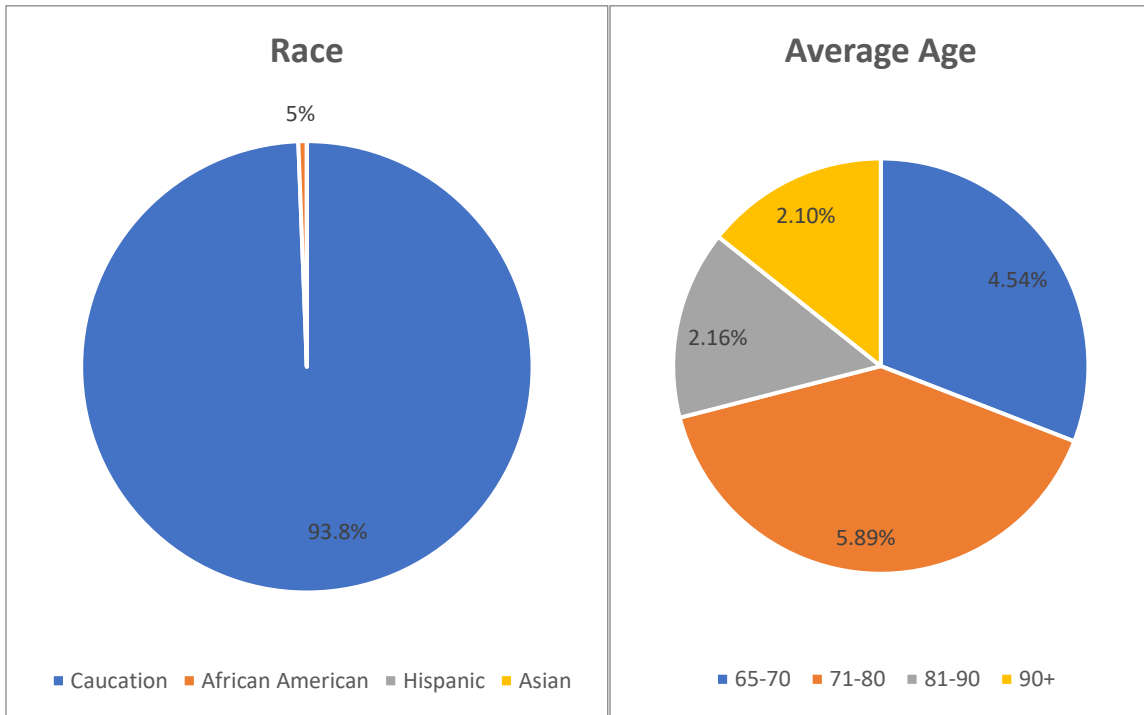
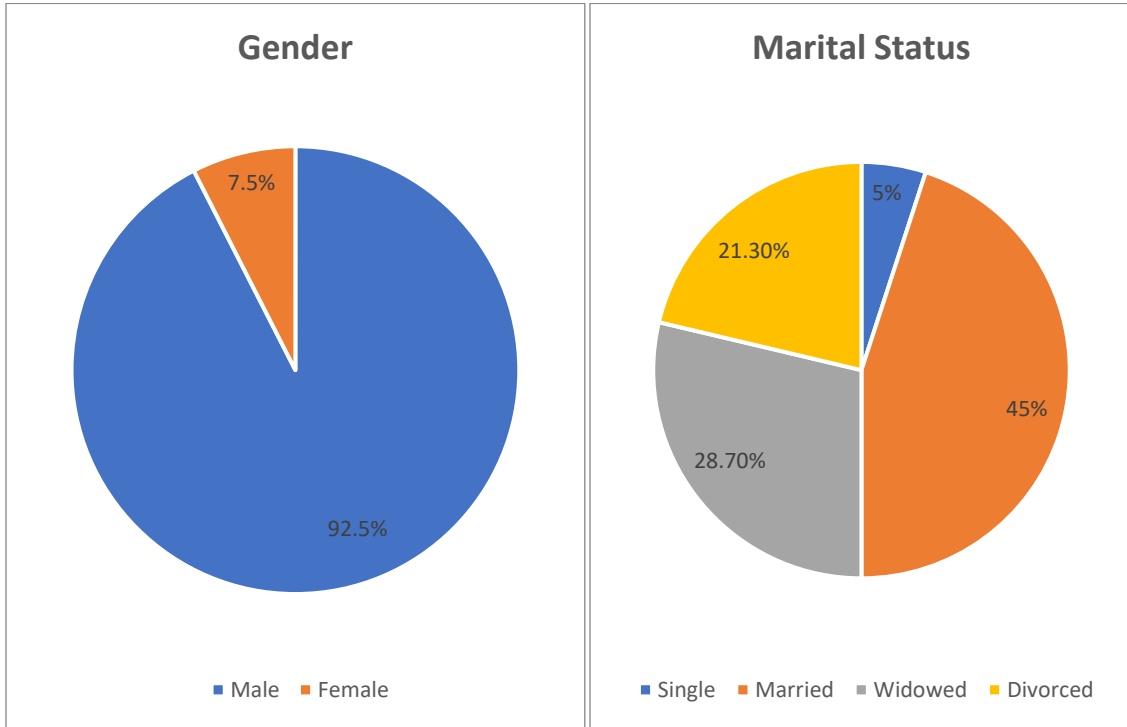
Training Start time: 07/10/2023 07:02 PM; Training End Time: 07/10/2023 07:05 PM

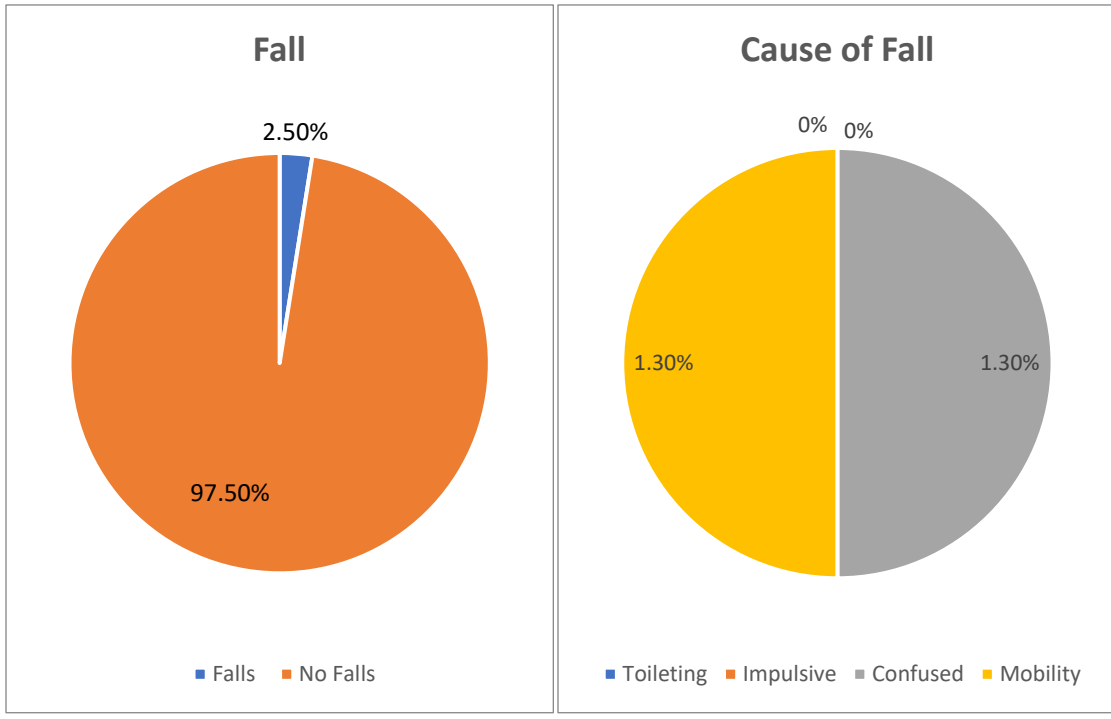
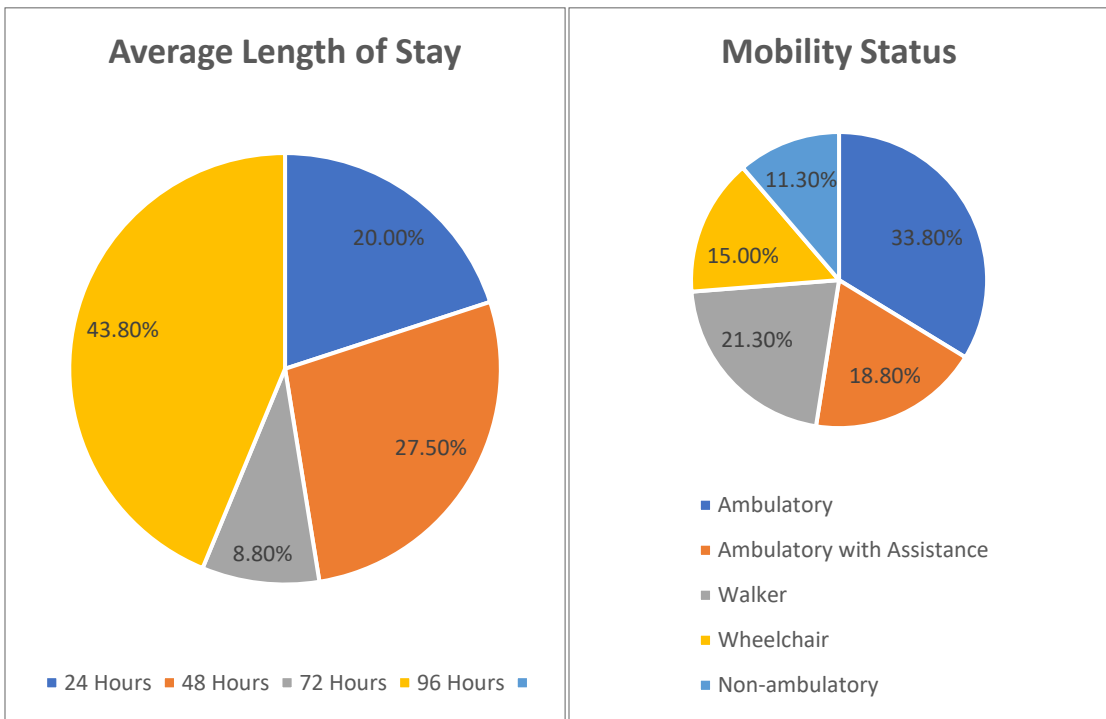
The Office of Regulatory Services
817-272-3723

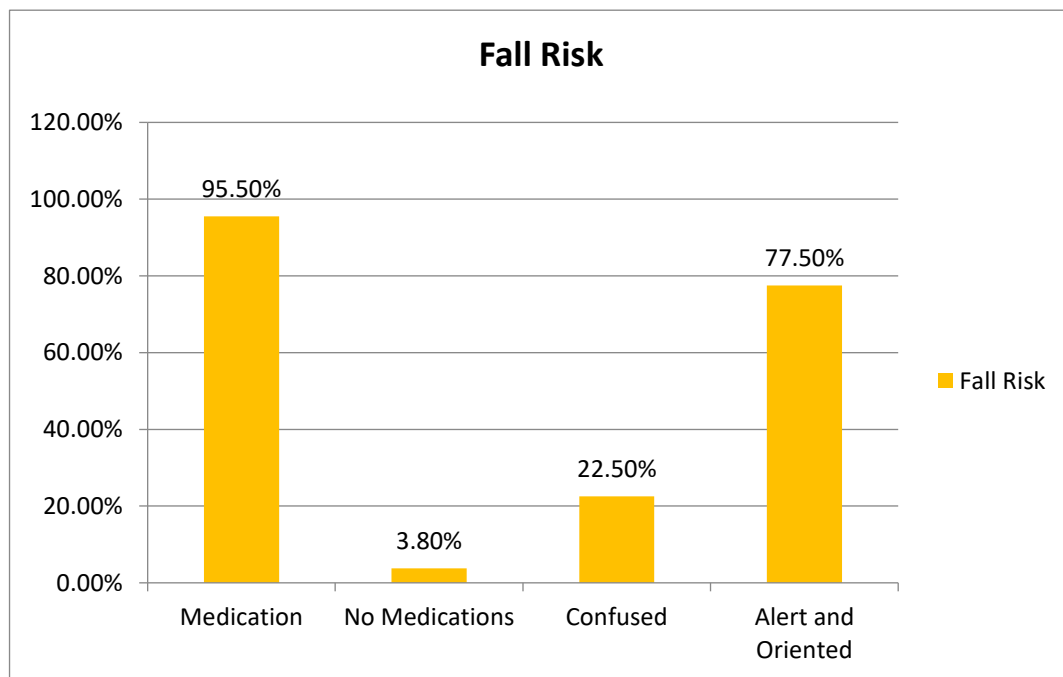
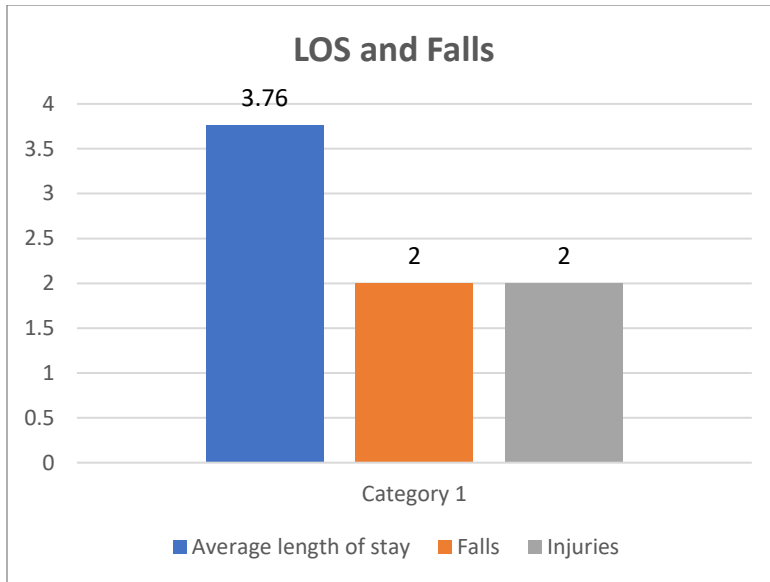
regulatoryservices@uta.edu

Appendix R

Audit Results







Appendix S

4Ms Framework Audit Results

