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# Stepping up to prevent falls: a fall prevention program for post-acute rehabilitation

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Doctoral Project

# STEPPING UP TO PREVENT FALLS:

# A FALL PREVENTION PROGRAM FOR POST-ACUTE REHABILITATION

by

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## DEDICATION

I would like to dedicate my doctoral project to my mom who has always supported me on whatever journey I have taken. She has provided me encouragement on the days I was not sure I could make it she knew I could. Thank you for your support on this amazing journey.

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**STEPPING UP TO PREVENT FALLS:**

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## ABSTRACT

Older adults who experience a fall will often sustain injuries which impact on their mobility and their ability to perform functional activities. Having one fall can lead to an increased risk of having another fall, and may also lead to a fear of the participating in functional activities, especially the activity that caused the fall. Every year, 3 million older adults are treated in the emergency room for falls, and at least 300,000 people are hospitalized due to falls (Centers for Disease Control, 2017). After hospitalization, some individuals require a stay in post-acute rehabilitation. In post-acute rehabilitation, these patients are at risk of having another fall, as they are in a new, unknown environment, and because they regularly practice mobility and functional activities with the goal of becoming independent. Preventing falls in the post-acute rehabilitation setting is critical because research has demonstrated that those who experience a fall in this setting have decreased functional outcomes and are less likely to return to their prior living environment.

*Stepping Up to Prevent Falls: A Fall Prevention Program for Post-Acute Rehabilitation* is an interprofessional and multi-modal fall prevention program. The program consists of staff education, patient education, and implementation of

environmental fall prevention interventions. The staff education component will include an in-service discussing the definition of a fall, the risk factors for falls, a fall risk assessment tool and interventions to prevent falls. Non-clinical staff will be educated on fall prevention strategies through posters in the breakroom. Patients will be educated via handouts and one-to-one discussions on how to prevent falls, the risk factors for falls, the consequences of a fall and what to do if a fall occurs. The goal is to decrease falls in order for patients to have better functional outcomes and be able to return to prior level of functioning.

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| | |
|---|---|
| ADLs | Activities of Daily Living |
| AOTA | American Occupational Therapy Association |
| BI | Barthel Index |
| FIM | Functional Independence Measure |
| IRF | Inpatient Rehabilitation Facility |
| LPNs | Licensed Practical Nurses |
| OT | Occupational Therapy / Occupational Therapist |
| PEOP Model | Person-Environment-Occupation-Performance Model |
| RNs | Registered Nurses |
| SEM | Social Ecological Model |
| SLUMS | St. Louis University Mental Status Examination |

# CHAPTER ONE: Introduction

## Falls Across the Continuum of Care

A fall occurs when an individual has an unintentional descent to the floor with or without injury (American Nurses Association, 2009). It may be due to intrinsic (fainting) or environmental (slippery floor) factors. At times, health professionals may lower a patient to the floor for safety reasons, which is known as an 'assisted fall'.

Falls occur across the continuum of care. It has been reported that in the community setting, 3.2 million older adults seek medical attention for injuries due to falls (American Occupational Therapy Association, 2017). These injuries can lead to decreased independence and the need for increased support. Statistics on falls in post-acute rehabilitation are variable due to varying definitions of falls across facilities, however, it has been reported that hundreds of thousands of patients fall in hospitals with 50% resulting in injury (The Joint Commission, 2015). Once a fall has occurred, patient length of stay increases by an average of 6.3 days and costs $14,000 to treat when an injury is sustained (The Joint Commission, 2015). For every 1,000 patient days, it has been reported that between 2.2 and 25 falls occur (Spoelstra, Given and Given, 2012).

In the acute care and post-acute rehabilitation settings, falls are problematic because they can lead to longer length of stays for the patient. Having a longer length of stay can have a financial impact on the facility, the individual and their family. For example, if insurance stops covering a patient's stay but the family is not ready to take their loved one home then the patient and their family will have to pay privately for the patient to stay. The facility also incurs increased financial burden due to having to treat

any injuries that may have occurred and any legal action from the family. Additionally, once a person experiences a fall, they are at a higher risk for having another fall. Research has shown that once a patient falls, their fear of falling and anxiety around mobility increases, which can lead to the person becoming less mobile (Delbaere, Crombez, Vanderstraeten, Willems, and Cambier, 2004). Reduced mobility will then impact on the patient's ability to return home post-discharge. It is evident that falls in post-acute rehabilitation require further attention given the impact it has on patients' recovery and the cost to health care services.

## Fall Prevention Programs

To address the issue of inpatient falls, many facilities have implemented fall prevention programs which aim to decrease falls but end up of falling short due to staff not being invested and the culture of the facility. Creating a fall prevention program in post-acute rehabilitation is a challenge due to the fact that falls occur for multiple reasons. When a patient falls, the reasons are multifactorial. At times, it is difficult to pinpoint one particular reason why the patient falls. Risk factors for falls can be both intrinsic and extrinsic. Intrinsic risk factors include polypharmacy, decreased cognition, orthostatic hypotension, balance impairments and decreased safety awareness (Evans, Hodgkinson, Lambert and Wood, 2001). Extrinsic risk factors include being in a new environment, poor lighting, clutter in patients' room and lack of mobility devices nearby.

There has been much attention in the literature on falls and fall prevention in acute care setting and the community; however, there is a gap in addressing fall prevention in post-acute rehabilitation. In the post-acute rehabilitation setting, it is critical

to prevent a patient from falling since falls in this setting can have significant impact on the plan for discharge home. The ultimate goal of creating a fall prevention program in post-acute rehabilitation is developing a partnership between health professionals, patients and their caregivers in order to promote safety and decrease falls. Therefore, when designing a fall prevention program in post-acute rehabilitation not only does it need to include the staff but it also needs to include the patient and their perspective on fall prevention.

The primary aim of a successful fall prevention program is that patients would have fewer falls, optimizing recovery from their presenting issue. The secondary aim is that individuals take the information they learned in the fall prevention program and apply it to the home setting. It has been shown that when a fall occurs during a particular activity a person tends to be fearful to complete that activity (American Occupational Therapy Association, 2017).

## Occupational Therapy and Fall Prevention

Occupational therapists can assist in developing strategies on making activities safer. According to the American Occupational Therapy Association (AOTA), one of the roles of occupational therapy is to help prevent falls while allowing individuals to continue to participate in the activities they enjoy (AOTA, 2017). Occupational therapists are in the unique position to assess the factors that cause the falls and then implement physical, environment and behavioral modifications to improve safety and fulfill their roles that reflect their values and identity (AOTA, 2017). The AOTA website provides fact sheets for consumers on: (i) how falls can impact independence; (ii) how

occupational therapists can assist with preventing falls; and (iii) what consumers can do after having a fall. For clinicians, AOTA provides PowerPoint presentations that can be presented to community dwelling adults. These presentations include topics such as risk factors and fall prevention strategies.

Developing fall prevention program with patient education as one component allows for the patient to be empowered in the prevention of falls by implementing various strategies. For patients who have cognitive impairments which impact their understanding of falls, incorporating the patient's caregiver becomes crucial so the caregiver can assist in fall prevention. In post-acute rehabilitation, the main goal of health professionals is to increase patients' independence in a safe manner in order for them to return home. When an individual is no longer able to perform the roles and occupations they were doing before the hospitalization, the person is at risk for developing depression and losing their sense of identity (AOTA, 2017).

Fall prevention can be viewed through the lenses of the Person-Environment-Occupation-Performance (PEOP) model (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1996). This model allows fall prevention to be looked at in a holistic manner showing that falls have an internal component (Person) along with an external component (Environment) which impacts on their ability to perform or participate in meaningful activities (Occupational Performance). By addressing these components, individuals maybe able to continue to perform the occupations that are meaningful and purposeful to them. When a person enters the post-acute rehabilitation setting, they may feel apprehensive since they are unsure if they will be able to get back home safely.

Developing a fall prevention program is critical in order to prevent falls in rehabilitation but is has further implications outside the rehabilitation facility.

When health professionals collaborate with patients on fall prevention, patients have a better understanding of the risk of falls and how to prevent them which is information they can utilize in the home setting. Developing a successful fall prevention program involves the participation of all professionals on the team including nursing, therapy (e.g. occupational therapy and physical therapy) and the support staff of the facility. Each department can play a role in implementing fall prevention strategies and preventing falls by assessing fall risks and either addressing the risk factor or ensuring the appropriate team member is informed of the risk factor to decrease the fall risk. Fall prevention programs cannot occur in discipline silos, but rather it is up the entire team to develop a culture of safety and collaboration to ensure patients has decreased rates of falls.

## Key Factors Contributing to Falls in Post-Acute Rehabilitation

The literature has identified several key factors which influence falls in post-acute rehabilitation:

a. Intrinsic risk factors for falls include side effect of medication, cognition, orthostatic hypotension, multiple comorbidities
b. Extrinsic risk factors for falls include new environment, poor lighting, thresholds, no mobility device nearby
c. Barriers to implementing a fall prevention program include financial and health regulations, social context (interest from colleagues), organizational context

(support from upper management)

d. Factors that facilitate fall prevention program: knowledge about the topic, data including financial data supporting fall prevention programs,
e. Lack of coordinated approach within interprofessional teams to identify and implement fall prevention interventions

## Core Elements

The approach presented in this dissertation to address falls in post-acute rehabilitation includes three core elements: staff education, patient education and caregiver education.

**Staff education** will involve:

1. *Presentation of the definition of fall*

   A fall is usually defined as a descent to the floor with or without injury and includes intrinsic (fainting) and environmental reasons (slippery floor) as well as assisted falls which means a staff member lowered someone to the floor.

2. *Presentation of a fall assessment tool*

   Marianjoy Fall Risk Assessment Tool for Inpatient Rehabilitation (Marianjoy, 2007). Refer to Appendix A.

3. *Discussion of falls prevention interventions and their evidence in the literature*

   For example,

   - Mobility: Increase staff assistance during transfers and ambulation, ensure that the bed height and toilet height are correct, proper wheelchair positioning.

- Low vision: Ensure there is adequate lighting, large signs, contrasting colors, reduce glare and proper eyewear.
- Orthostatic hypotension: Provide patient with education on changing positions slowly, and to stand slowly along with proper hydrations.

**Patient education** will involve:

1. *Discussion about the patient's perception of falls*

   Many times patients who are cognitively intact understand why they are a fall risk and are aware of preventative interventions; however, they may still get up on their own to use the restroom. Clinicians need to ensure their view of risk of falling matches the patient (Hill, et al, 2016; Radecki, Reynolds and Kara, 2018)
2. *Provision of handouts of fall prevention strategies and expectations of the staff*

   Handouts will contain clear and concise information on risk factors how to remove them and coping strategies after the fall. Handouts for family members include information regarding risk factors how to avoid them, how physical activity helps and how to motivate individuals to be active (Schoberer, Eglseer, Ruud and Lohrmann, 2018)
3. *Discussion about how they can utilize the fall prevention information at home*

**Caregiver education** will involve:

1. Discussion about how they can help family while they are at the rehab facility.
2. Provision of strategies they can implement if their family member is asking for help.

## CHAPTER TWO: Theoretical Base to Support the Project

### Utilizing a Social Ecological Model to Frame Fall Prevention

An ecological approach was selected to understand the problem of falls occurring in inpatient rehabilitation. An ecological approach considers how behaviors can be influenced from multiple levels. It has been noted that multilevel interventions are most effective in changing behavior (Dibardino, Cohen, & Didwania, 2012). It has been found that when educational interventions are designed to change beliefs, they work better when there are policies and environmental supports (Stokols, 1996). There are various versions of the ecological model; however, the Social Ecological Model will be explored in this chapter. The Social Ecological Model (SEM; Bronfenbrenner, 1979) conceptualizes the factors which influence the way an individual interacts with their environment. Specifically, the SEM identifies five layers of influence; directed at changing the individual, interpersonal, organizational, community and public policy factors which support and maintain healthy behaviors. The models assume that changes in the social environment can influence and will produce changes in the individual. The environment, organization and public policy factors need to support the individual in order for changes to occur.

### Components of the Social Ecological Model

Individual factors include intrinsic characteristics of the individuals such as their biological characteristics and their personal characteristics including; knowledge, attitudes and motivators. Interpersonal factors relate to an individual's social network and support networks. When in a rehabilitation facility an individual's support network will

include the health care providers. The relationship an individual develops with the provider will promote safety and decrease fall prevention. If the person feels they can trust the provider, then the individual may be more likely to ask for help and not feel embarrassed. Institutional factors include organizational characteristics which influence an individual's functioning such as institutional rules, policies, protocols and regulations. Community factors include relationships between organizations and informal networks within boundaries. Community factors also address the values and belief an individual has. Public policy includes local, state and national legislation and policies which articulate the community expectations and the structural systems of operation which influence the way individuals interact with their environment.

When developing a fall prevention program, there are multiple levels that need to be examined in order for the program to be successful. The SEM provides a framework to consider the breadth of factors which influence why patients have unintended falls on post-acute rehabilitation units, and the points for intervention to prevent falls occurring in this setting. This is necessary given that single intervention strategies have largely been unsuccessful in effecting change, and thus a multifactorial approach is warranted.

**Components of the Social Ecological Model in Relation to Fall Prevention**

At the individual level, an individual's cognition, hypotension, medical co-morbidities, and medication will influence their risk of falling. Similarly, their own knowledge about fall risks and attitude toward use of mobility aid will also influence whether they adopt safer mobility strategies.

The interpersonal level examines the relationship and interaction between patient

and health care provides. If the patient has a certain level of trust with their providers, they are more likely to ask for help and let the provider know if there are any barriers to their safety. This level also examines the interprofessional communication that needs to occur between disciplines to ensure that fall prevention strategies are successful. Fall prevention programs cannot be successful based on one discipline, each discipline needs to take part to promote a culture of safety.

At the organizational level, the culture surrounding fall prevention, and openness to developing a program impacts the success of fall prevention. Values of the individual also need to be examined. In Western culture, independence is highly valued. Due to this, an older adult may be hesitant to ask for help or admit they had a fall if they are afraid that their independence will be taken away. Due to individuals valuing their independence and not wanting to admit they need help, they may be less likely to ring the call bell for assistance. Another factor to consider is that many times older adults do not want to be considered a burden, so they may not push their call bell for help because they feel they are being a burden to the staff. The individual may also feel that once they relinquish their independence they will never get it back (Roe et al., 2008). This is where education is critical to explain to the patient the goal is to keep them safe while maintaining their independence. For this reason, educating patients about their risk for falls and what they can do to prevent falls allows them to feel empowered and in control. The organizational level also includes the physical environment of the unit. The physical environment includes items such as clutter, thresholds, poor lighting, and if an assistive device is nearby.

At a public policy level, insurance mandates, funding and state regulations support or do not support fall prevention. In Connecticut, for example, there is legislation supporting research which: (1) studies older adults who have a high fall risk, (2) designs fall prevention programs, (3) improves intervention strategies identifying barriers to implementing fall prevention, and (4) develops intervention programs for those in long term care and other settings. When the problem of fall prevention is viewed through this lens it can be seen that a successful fall prevention program requires changes at multiple levels including increasing safety and changing the culture of a facility can lead to successful fall prevention program. When attempting to prevent falls and create a successful it is not only important to educate patients about falls, but it is equally important to change the environment.

## Overview of Explanatory Model

Informed by a SEM perspective on fall prevention, an explanatory model illustrating the factors contributing to patient falls in an inpatient rehabilitation setting was developed by the author. The explanatory model involves four key factors: (1) intrapersonal factors which include cognition, hypotension and medical co-morbidities; (2) environmental factors which include thresholds, lighting, and if mobility devices are nearby; (3) organizational factors which looks at the culture of the organization regarding fall prevention; and (4) policy factors including funding, stage regulations and facility policies. The explanatory model is presented in Figure 2.1.

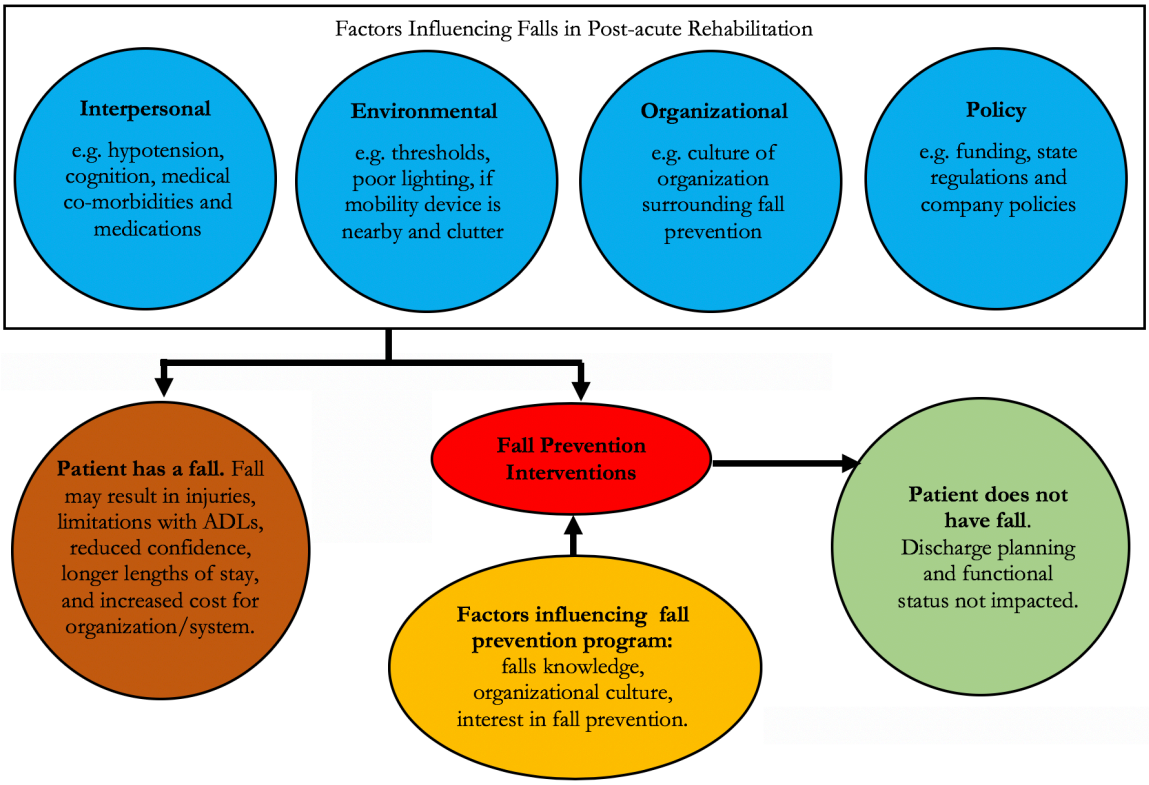



*Figure 2.1:* Explanatory Model of the Problem

The goal of a successful fall prevention program is to develop strategies to address these factors to decrease falls. When these factors are not addressed the individual is more likely to sustain a fall at the facility. This fall can lead to injuries which will often impact the individual's performance with ADLs, their confidence, lead to longer length of stays and incur financial consequences for both the patient and the facility. When designing a fall prevention program, the factors that facilitate a successful program need to be examined. Such factors include knowledge about falls, company culture surrounding falls and in interest in creating a fall prevention program. When fall prevention interventions are successfully implemented, then the facility should see a reduction in falls and better functional outcomes.

## Synthesis of the Evidence Supporting the Explanatory Model

### Personal Factors

Aizen, Shugaev and Lenger (2007) examined risk factors for patients at risk for falls. This particular study noted that vertigo and use of hypertensive drugs often lead to falls (Aizen, Shugaev, & Lenger, 2007). Along with these risk factors it was also noted that patients who participate in high risk activities attributed to cognitive deficits or not understanding their own limitations are at a higher risk for falls (Aizen, Shugaev, & Lenger, 2007). The risk factors that the authors identified in this study fall under the category of intrapersonal factors. A systematic review completed by Vieira, Freund-Heritage and Costa (2011) noted similar risk factors. Additionally, the systematic review found that those who had a previous fall were at a higher risk and along with hypertensive medications, anti-seizure medications along with tranquilizers put patients at risk for falling.

### Environmental Factors

Vieira, Freud-Heritage and Costa (2011) discussed the environmental factors that cause falls (e.g. carpeting in poor condition). Considering that environmental factors are well known and often addressed by OTs, it is surprising that there is very little other studies which explore the impact of environmental factors.

### Organizational and Policy Factors

This literature review highlighted that much of the research on falls in post-acute rehabilitation has taken place in Australia. When examining organizational and policy factors it can be noted that both these factors contribute to a successful fall prevention

program in Australia but there is not enough research in the United States to make the same assumption. Johnson, Kelly, Sirc, Tran & Overs (2015) completed a study utilizing an e-learning system for nursing which focused on fall risk screening, fall prevention strategies, post-fall management and management procedures. This program was well received by the nursing staff and many of the nurses implemented fall prevention strategies they learned during the education. This study shines a light on the impact of policy has on fall prevention. When this study was being conducted in Australia, there was a state-wide policy on falls in the local health district which lead to increased nursing education and initiation of fall audits in buildings that had high fall rates. Another factor was that there was an increase in knowledge surrounding risk factors for falls due to the multitude of research being published. Von Renteln-Kruse, & Krause (2007) introduced a multifactorial intervention program to reduce falls in a facility where there was geriatric multidisciplinary care in place. This particular fall prevention program demonstrated a reduction in falls and increase in function. This study speaks to the organizational factors that support or hinder fall prevention. This particular facility which is located in Germany already has a team in place to address the multiple risk factors of falls.

When a patient experiences a fall there are consequences for the patient and a financial burden to facility. Haines and Johnson both noted that falls can lead to injuries, increased length of hospitalization, increased dependency on nursing staff and increased risk of institutionalization. After a fall is sustained the patient also suffers psychological issues. These issues include fear of falling, anxiety, depression and a loss of confidence (Delbaere, et al., 2013). As falls can lead to substantial morbidity and additional

healthcare costs it is critical to find solutions to prevent falls (Haines et al, 2004). Johnson (2015) have also noted that falls can lead to delayed recovery from hospitalization, poorer health outcomes, increased length of stay and usage of health resources. The research demonstrates that falls can have catastrophic effects on the patient and has a negative impact on facilities and for this it is important to develop an evidence-based fall prevention program.

**Implications from the Evidence-Base**

The majority of research articles on the topic have found a reduction in falls when a multifactorial fall prevention program is put into place. Hill et al. (2009) conducted a fall prevention study examining patient education and how patients absorb the material. The researchers noted that when fall prevention information was presented in a multimedia format (DVD) over the workbook the participants were better able to identify strategies to prevent falls. By providing patients with fall prevention education it can lead patients to make safer decisions which leads to less falls. Von Renteln-Kruse, & Krause (2007) conducted a study that utilized a multifactorial fall prevention approach and showed a significant reduction in falls. Not only did this research demonstrate a fall prevention program can prevent falls it also showed an increase in functional status as demonstrated by the Barthel Index. Haines et al. (2004) also investigated the use of a multifactorial intervention program and saw a reduction in falls by 30%. The program designed by Haines et al. included an educational brochure, an exercise program and falls risk alert card. Haines' et al. multifactorial program had similar elements to Von Renteln-Kruse, & Krause (2007) who utilized patient education, and hip protectors as well.

Cummings (2008) also conducted a study utilizing a multifactorial intervention to prevent falls however this research found that this type of intervention did not have an impact on the number of falls. This could have been due nurses being more aware of falls and in this particular study the length of stay was shorter.

While most of the literature investigated the number of falls after implementation of a multifactorial program is, only one article discussed if patient's had better outcomes. VonRenteln & Krause (2007) utilized the Barthel Index (BI; Mahoney & Barthel, 1965) which showed that those who fall had a lower BI score than those who do not fall. Even though this study linked the importance of improving patient's transfers, use of the toilet, and use of mobility devices when designing a fall prevention program, it only used the mobility piece of the BI. Further study on functional outcomes related to activities of daily living (ADLs) is acutely needed. Most research studies measure the success of fall prevention programs in terms of the number of falls however less falls usually means better functional outcomes for the patient. It could be assumed that those who do not fall have better functional outcomes and discharge quicker however very few studies examine the relationship between falls and functional outcomes. Petitpierre et al. (2010) conducted a study utilizing the Functional Independence Measure (FIM) to predict fall risks. This study found that the FIM was unable to predict fall risks. Other research studies have utilized the FIM or the BI to see if there is a relationship between the score and being a fall risk; however, the research is limited in showing that a decrease in falls leads to a higher FIM or BI score. Multiple research articles have been published use of the FIM or BI to predict falls but there are seldom articles discussing a link between less

falls and higher functional status as measured by the FIM or BI.

In order for a fall prevention program to be successful it needs to have multiple components. VonRenteln & Krause (2007) and Haines et al. (2004) both noted that utilizing a multifactorial fall prevention program is critical in reducing fall rates. Haines et al., (2004) suggested that this could be because a targeted intervention strategy led to one or more risk factors being addressed. These multifactorial programs usually contain an educational piece on falls. Hill et al. (2009) conducted a study to understand how older adults best learn the information regarding fall prevention and found that using a multimedia approach over a workbook lead to better uptake of information and patients were more motivated to participate in protective health strategies which would lead to better health outcomes. In this scenario, the protective health strategy would be fall prevention strategies and the health outcome would be less falls. Haines et al. (2006) also conducted a study around patient education for fall prevention and found that utilizing patient education as part of a multifactorial program is one way to prevent falls. Haines et al. (2006) also noted that through education patients modified their behavior to reduce falls after the education. Research studies are demonstrating that in order for a fall prevention program to be successful there needs to be multiple components and the interventions that are chosen need to tailored to the individual risk factors of that patient.

Most research studies surrounding fall prevention in post-acute rehabilitation takes place in Australia. In Australia, the public has access to healthcare that is free or reduced cost due to being funded by Medicare. The Australian state, territory and federal governments all share the responsibility of funding and operating health care systems.

The federal government also subsides aged care services which include post-acute rehabilitation stays. Due to this, facilities in Australia may have more resources than those in the United States. In the United States, healthcare is not accessible for all people and at times the type of insurance a person has will determine where they are able to go for rehabilitation after a hospital stay. Additionally, since healthcare is not funded by the government, each rehabilitation facility has different resources. There is an urgent need to consider similar fall prevention programs implemented in countries such as Australia, and contextualize them in rehabilitation facilities across the United States. Due to insurance constraints in the United States, individuals have a limited number of days in a rehabilitation facility and for this reason preventing falls is critical to ensure they can discharge within the constraints of the insurance company. The components that are shown to be successful in fall prevention may be hard to replicate in the United States due to staffing, time constraints and limited length of stay. Cumming (2008) purported that a reduction of falls may not have been seen due to a shorter length of stay.

The literature review identified that there is a plethora of research regarding fall prevention in the community and in acute care, however, research is very limited in lacking in the post-acute rehabilitation settings. Fall occur across the continuum of care but for some reason research focuses mainly on the community setting and the acute care hospital. In the current literature review on fall prevention in subacute rehabilitation, sixty-five articles were located however only eight articles met the criteria. Most of the articles were related to falls in acute or community settings. While interventions in these settings may inform fall prevention programs in post-acute rehabilitation, the nuances of

a rehabilitation approach together with the operational pressures in inpatient care present unique challenges in the post-acute rehabilitation setting which evidently requires a unique approach. In the community setting, the population tends to be more medically stable which eliminates some of the interpersonal factors when considering risk factors. When considering environmental factors, in the community, individuals are in a familiar place. whereas in post-acute rehabilitation they are in an unfamiliar environment. Acute care differs from post-acute rehabilitation since in acute care patients tend to be sicker and less mobile, whereas in post-acute rehabilitation they began to feel better; hence, patients often overestimate their ability to complete tasks. Additionally, the focus in post-acute rehabilitation shifts from primarily medical interventions to improving functional outcomes. Patients are there to improve their mobility and regain independence in ADLs, among many other reasons. This approach requires patients to be active participants in their recovery — being out of bed, and practicing learned skills and techniques. Post-acute rehabilitation is a practice setting that is neglected in the research despite the fact for many individuals after post-acute rehabilitation the decision becomes home or a facility depending on their progress in therapy. Morrison et al. (2011) conducted a study examining the risk factors for falls in the community, outpatient and post-acute rehabilitation and found that the factors vary across the settings. This study found that those in outpatient settings or the home setting have a significantly lower fall rate than those in inpatient rehabilitation. This could be due to confusion, use of psychotropic drugs, history of falls, sleep disturbances, and being in an unfamiliar environment can all contribute to a higher rate of falls. There is a great need for evidence-based research in

post-acute rehabilitation on what interventions work to prevent falls and how the prevention of falls leads to better functional outcomes.

Developing a fall prevention program is a challenging process and requires a multifactorial approach in order to be successful. Research has shown what works with community dwelling residents and what interventions are successful in acute care but the same research is lacking in the post-acute rehabilitation setting. The research that has been completed has mostly taken place in Australia which makes it difficult to generalize the findings to the United States due to the various system factors at work. It has been found that the most effective fall prevention intervention includes multiple interventions but at the same is tailored to an individual's fall risk. For example, if the individual is on multiple medications that may cause dizziness or orthostatic hypotension a medication review should be completed to decrease one risk factor. Understanding falls, the risk factors and how to prevent them is a complex subject with many variables at play. Even with the research that has been done it is still not exactly clear what combination of interventions work to prevent falls. In order to close the research gap, research needs to be conducted that examines a specific set of interventions and whether these interventions lead to decreased falls. Then, the next step would be to examine how falls and fall prevention programs impact on patients' functional outcomes. This research is critical since falls lead to increased healthcare costs and poorer outcomes for the patient.

## CHAPTER THREE: Evidence Base to Support the Project

### Intervention Informed by Risk Factor Assessment

Developing a fall prevention program that demonstrates success is a challenging process. The literature is conflicting on the best approach when implementing a fall prevention program. Some literature states that a multifactorial intervention approach is superior to a single intervention approach but the results are varied. Wong (2012) and Hou (2017) both found that risk factors first need to be identified for fall prevention strategies to be effective. Specifically, Wong (2012) found that it is important to target key risk factors such as cognitive impairment, incontinence and mobility impairment. Hou (2017) noted similar risk factors but also discussed the need to be aware of patients' balance and medications which could lead to falls. Wong (2012) and Hou (2017) utilized different risk assessment tools but had similar risk factors. Tzeng (2013) also conducted a study examining fall risk factors and grouped the risk factors into intrinsic, cognitive and demographic factors. Congruent with Wong (2012) and Hou (2017), this study identified decreased balance and medications as the most frequently observed intrinsic factors; however cognitive, affective and motivational factors (e.g. desire for independence, agitation and anxiety) along with visual impairments and hypotension were not discussed. Some of these risk factors appear to be of greater importance. Wong (2012) noted that incontinence and balance impairments are two critical risk factors when looking at fall prevention. Huey-Mint (2015) also identified these risk factors and suggested one to support in the bathroom and referred to physical therapy as necessary.

The identification of fall risk factors should inform implementation of fall

prevention interventions. Huey-Mint (2015) examined risk factors for falls and fall prevention interventions and reported on the top ten interventions. Some of these interventions included one to one support in bathroom, non-slip footwear, keep equipment out of the way, keep floors clean, keep belongings nearby, reduce clutter, reduce tripping hazards, assist with transfers and refer to physical therapy as necessary. Many of these interventions target the same risk factors that other studies have shown. Tzeng (2013) discussed that visual impairments are a risk factor if one was to implement reducing clutter and tripping hazards as an intervention then that risk factor is lessened.

Not only is it important to implement interventions specific to identified risk factors, it is also important to cultivate a culture of safety. Black (2011) conducted a study in measuring the safety climate. Safety climate refers to management, engagement, resources, overall emphasis on safety, unit safety, support safety, and fear of shame and blaming. Black (2011) noted that it is important to identify problematic areas in the safety climate so a positive atmosphere could be promoted to prevent falls.

Preventing falls in post-acute rehabilitation is a very complex process and requires a multifactorial approach. Individuals in post-acute rehabilitation need to be screened for fall risks. Once their risk factors are known the individualized intervention approaches can be implemented. These approaches can only work where there is a culture of safety. These findings suggest that the best way to target these risk factors is to complete a bundle set of interventions. The above articles all discuss the importance of identifying risk factors and implementing unique interventions, however, there is limited research which makes recommendations on intervention strategies relevant to specific

risk factors.

## Theory-Driven Fall Prevention Programming

Exploration of various theoretical models that can be utilized to frame fall prevention has been of interest to researchers; however, there is not conclusive evidence on the best theory to use. Tzeng (2011) examined the Attributional Theory of Success (Weiner, 1986; Weiner et al. 1971) to analyze barriers in fall prevention. This theory assumes that people try to determine why another person did something and can attribute one or more causes to the behavior. There is a three-stage process involved: (i) the person must perceive or observe the behavior; (ii) the person must believe the behavior was intentionally performed and, (iii) the person must determine if they believe the other person was forced to perform the behavior. This theory then classifies attributions into locus of control (internal and external), stability and controllability. Using this theory, Tzeng (2011) classified barriers to fall prevention as external and internal. External barriers include the health status of patients and support staff while the internal barriers include staff knowledge and education. This research study found that it is important to promote knowledge of implementation of fall prevention programs along with a caring attitude to maximize success of fall prevention programs. Utilizing the attributional theory to describe the barriers to fall prevention is incomplete and does not take into consideration all factors when examining a fall prevention program. Health professionals' lack of knowledge on fall prevention may be one barrier to effective program, but there are other barriers including a culture of safety, individuals not being invested in the program and environmental barriers.

Dolan (2019) conducted a qualitative study in order to understand the best theoretical framework to guide the understanding of falls in older adults in the hospital. Social Cognitive Theory (Bandura, 1989), Self-Care Deficit Theory (Orem, 2001), Theory of Self Care in Chronic Illness (Riegel, Jaarsma, & Strömberg, 2012), Self-Help Model (Braden, 1990), Common-Sense Model of Self-Regulation (Leventhan, Phillips & Burns, 2016), and the Health Belief Model (Rosenstock, 1974) were all examined to frame falls. Dolan rejected all theories except for the Health Belief Model.

Self-Care Deficit Theory (Orem, 2001) is a broad nursing theory that encapsulates the theory of self-care, theory of self-care deficit, and the theory of nursing systems. The self-care system consists of performed actions that regulate normal life when an individual is faced with a new illness new self-care demands emerge and if the individuals is unable to meet these demands then self-care deficits develop and may require nursing care. This can be applied to falls since the patient cannot manage their own fall risk then they will need nursing to intervene. However, this theory does not take into consideration an individual's health beliefs or the barriers to fall prevention.

Theory of Self Care in Chronic Illness (Riegel, Jaarsma, & Strömberg, 2012) aims to understand the individuals process of performing self-care and maintaining health during management of chronic illness. Dolan (2019) framed falls as a symptom of chronic illness however this theory does not account for the fact that falls occur among people with and without chronically illness.

The Self-Help Model (Braden, 1990) frames the experience of living with a chronic illness and assumes that learning is a fundamental process in human being and

chronic illness presents a new learning frame. The key concepts include perceived severity of the illness, and how an individual is able to provide self-help in managing their chronic illness. Uncertainty and dependency negatively affect self-help whereas enabling skills and resources have positive effects. Dolan (2019) considers falls as uncertainty and possible dependency which can lead to a person managing their fall risk. This theory fails to demonstrate how an individual learns to manage their fall risk and does not focus on barriers that prevent acceptance.

Common Sense Model of Self-Regulation (Leventhan, Phillips & Burns, 2016) explores behavioral, cognitive and perceptual processes among individuals' self-management of current and future health threats. This theory postulates a dynamic process of how illness threats are represented and managed. A fall is looked at as a threat to normal function then one must regulate themselves to maintain homeostasis. This theory is problematic because it does not focus on the barriers to falls.

Social Cognitive Theory (Bandura, 1989) defines the term self-efficacy as the individual's judgement of their capability of certain actions that guides a specific behavior. This theory examines the relationship between the person, environment and behavior. Social Cognitive Theory can be utilized to examine falls in terms of a patient's self-efficacy in managing their fall risk however self-efficacy requires perceived confidence in reducing ones fall risk. An individual in a hospital may be lacking this confidence due to the nature of their illness.

Dolan (2019) found that the Health Belief Model (Rosenstock, 1974) was helpful in determining the wide range of emotions experienced by hospitalized adults. The basis

of this model is that an individual perceives a health threat then initiates action or does not initiate action to mitigate the threat. This model also allowed individuals to understand the benefits and barriers of a fall risk and adherence to fall prevention strategies. Even though the Health Belief Model explores the feelings of individuals participating in a fall prevention program it does not capture the whole picture including environmental and organizational factors.

Fall prevention is a complex concept that requires a theoretical framework that would address all factors of the issue. One such theory would be the Social Ecological Model (Bronfenbrenner, 1979). This model looks at how behaviors can be influenced from multiple levels. The Social Ecological Model provides a framework to consider the breadth of factors which influence why patients have unintended falls on post-acute rehabilitation units, and the points for intervention to prevent falls occurring in this setting.

## Measuring Success

In order to ensure a fall prevention program is successful, various outcome measures need to be looked at. In the current literature, the most common outcome measure utilized is fall rate. In most studies, there appears to be a neglect on functional and patient outcomes in program evaluation. Rochart (2013) examined the characteristics of individuals who had multiple falls and the relationship between falls, rehabilitation outcomes, and health service use. It was hypothesized that older persons sustaining one or more falls would have longer rehabilitation stays, lower functional outcomes and more likely to be discharged to long term care (Rochart, 2013). The study showed that those

who experience multiple falls have reduced functional outcomes as noted by the Barthel Index (Mahoney & Barthel, 1965). Additionally, longer length of stays did not necessarily mean better rehabilitation outcomes. This could be explained by individuals experiencing anxiety and fear of falling after a fall. Rochart (2013) found that those who experienced multiple falls had 50% decreased odds being discharged home and the need for long term care. Rentlen-Krause (2006) investigated the effect of a multifactorial fall prevention program on falls rates. The study utilized the Barthel Index (BI; Mahoney & Barthel, 1965) to determine functional status. It was noted that those who had falls had a lower BI score than those who did not experience a fall. The authors noted that those who participated in the intervention had a gain in functional status. The interventions utilized in this fall prevention program included frequent toileting, a commode for nighttime use, frequent checks, and education for family and patients. This education covered the need for prevention, appropriate footwear, eyeglasses, hearing aids, mobility devices, and how to avoid tripping hazards. These interventions are in alignment with the risk factors that were identified previously. When developing a fall prevention program and evaluating if the program was successful various outcome measurements need to be utilized. A decrease in fall rates should not be the only indicator of a successful fall prevention program. When a person experiences a fall, they experience many emotions including anxiety and fear of mobility which may lead to decreased ability to perform functional tasks. All of these factors need to be taken into consideration when measuring the success of a fall prevention program. An individual in post-acute rehabilitation may be less likely to be discharged home if they experience a fall and for this reasoning using the BI as an

outcome measurement is critical. Although few studies to date have used outcome measures for functional status to evaluate their fall prevention programs, it is critical that functional status is examined in future studies, as this taps into patients' ability to engage in meaningful and purposeful occupations.

Creating a fall prevention program for use in post-acute rehabilitation is a complex process that contains multiple components. The first layer of a fall prevention program is conducting a risk assessment to determine the risk factors of the individual. A BI measurement is to understand functional status prior to the fall prevention program is critical. In a post-acute setting, this is often conducted by the occupational therapist or nursing staff. Once the risk factors are understood then interventions need to be implemented to prevent falls. The interventions utilized to prevent falls are multi-faceted and occur at an individual, organizational and environmental levels. In applying this new knowledge to the fall prevention program prosed in the next chapter, at the individual level, patients will be provided with material on the importance of fall prevention, the risk factors for falls and how to prevent falls. This education will be provided in a binder along with multimedia format since research show that patients respond better to multimedia education (Hill, et al., 2009). Patients will also be provided with three 30-minute educational sessions where the occupational therapist discusses fall prevention strategies, their emotional response surrounding falls and setting goals for remaining safe while in post-acute rehabilitation. At an organization level, fall prevention requires use of an interprofessional team. It requires the use of the team to utilize a decision tree to determine the appropriate intervention depending on the risk factor, and collaborate in

ensuring successful implementation of the intervention. At the environmental level, it is important to ensure that the room is free of clutter, there is adequate lighting and that all necessary items are within the reach of the patient. Fall prevention programs cannot occur in a vacuum all staff members need to be involved and a culture of safety needs to be cultivated to ensure program success.

## CHAPTER FOUR: Description of Proposed Program

*Stepping Up to Prevent Falls: A Fall Prevention Program for Post-Acute Rehabilitation (Stepping Up to Prevent Falls)* was developed by the author with the aim to reduce the number of falls happening on an inpatient rehabilitation unit. It is envisaged that the program will be piloted at Elim Park Rehabilitation Unit, with the expectation that it will be implemented in other rehabilitation units following the pilot phase. The Elim Park Rehabilitation Unit is a 45-bed unit which provides services for patients with orthopedic, neurological, and medically complex conditions. Unfortunately, falls in this population, and in this setting, are somewhat frequent occurrences given that patients often have impaired mobility and a desire for increased independence. Falls can lead to additional functional limitations, decreased confidence, a delayed discharge and financial implications for the facility. It is hoped that this program will help reduce these occurrences, leading to better outcomes for patients and the facility.

### Description of the Program

*Stepping Up to Prevent Falls* will consist of five components:

1. Development of an evidence-based fall prevention intervention protocol
2. Implementation of a falls risk screen and fall risk intervention protocol for all patients on the unit
3. Patient education
4. Clinical staff education
5. Non-clinical staff education.

The Marianjoy Fall Risk Assessment Tool for Inpatient Rehabilitation (Marianjoy, 2007) will be completed on all individuals who enter the rehabilitation unit. Individuals who are identified as high fall risk will be flagged and then evidence-based fall prevention interventions relevant to the identified risk factors will then be implemented by the interprofessional team. As this program requires a coordinated approach from the interprofessional team, this project will include an education session for clinical staff on the fall risk assessment and evidence-based fall prevention interventions. A series of individual and group patient education sessions, together with a handout, will also be provided to patients with a high risk of falls to increase awareness of falls, and to increase self-efficacy in preventing falls on the unit. A series of posters will also be placed on the unit and in the break room to which are aimed to empower non-clinical staff to identify falls hazards on the unit, and make clinical staff aware. Even though each risk factor has specific interventions, it is important to note that there will be standard fall prevention interventions that will apply to patient regardless of high or low risk for falls. These interventions will include all necessary items are within reach, patients are wearing sturdy shoes or non-slip socks and keeping the room clutter free.

## Features of the Program

### Fall Risk Screen & Fall Prevention Intervention Protocol

The Marianjoy Fall Risk Assessment Tool for Inpatient Rehabilitation (Marianjoy, 2007) has 75.7% predicative accuracy in identifying patients at risk for falls (Ruroede, Pilkington, & Guernon, 2016). This particular assessment tool was designed with the challenges of inpatient rehabilitation in mind such as mobility issues, balance

deficits and that patients are challenged to perform to practice safe mobility techniques to reach the highest level of independence. The items on this tool has stemmed from research conducted in acute care and long-term care and then adapted to fit inpatient rehabilitation. This tool examines ten fall risk indicators and include: communication deficits, impaired cognition, altered bladder/bowel elimination, unilateral neglect, lower extremity and upper extremity paresis, sensory deficits, history of falls in the last three months, impulsive behavior and special medications (Ruroede, Pilkington, & Guernon, 2016). If the patient scores 4 or higher than they are considered a high fall risk. This assessment will be kept on the unit in the binder that has been designed for nurses. It should be completed during the first 48 hours of admission and then placed into the medical chart. Once the assessment has been completed and the fall risk factors has been identified the following decision tree can be utilized (Appendix E). This decision tree outlines the risk factors followed by the interventions to be utilize for that risk factor.

**Patient Education**

Patients who have identified as a high risk for falls according to the fall assessment will be provided with a handout that explains how to prevent falls and why it is important to prevent falls. This handout is designed for individuals that have adequate cognition which will be determined by a score on the St. Louis University Mental Status Examination for Detecting Mild Cognitive Impairment and Dementia (SLUMS). Individuals who score 27 or higher out of 30 invited to participate in the patient education. A handout will be provided to patients on an individual basis and there will a discussion about the handout. The discussion regarding the handout is important to

ensure that the patients understand the risk of falls and how the staff is trying to keep them safe. Having a discussion about the handout since the research has shown that when presenting information in a multimedia format results in better retention of information. Research has also shown that when patients take a more active role in their health care the fall risk can be mitigated (Ophsal, et al., 2017).

After individuals participate in individual sessions, group sessions will also be offered for patients. Patients may choose to participate or not participate without consequence to their care or their relationship with the interprofessional team. This group session will consist of 3–4 patients and will run for 30 minutes in the unit gym. During these times, patients can discuss their feelings regarding falls and the facilitator of the group can reinforce strategies on how to keep safe when on the rehabilitation unit.

It is important to educate patient on ways to prevent falls since many individuals feel that a fall may impact their ability to return home. The individual may also feel that once they relinquish their independence they will never get it back (Roe et al., 2008). Allowing patients to see that they can keep themselves safe allows them to feel empowered. Patient education also allows patients to understand that the staff is here is help them and ensure they can get home again. Refer to Appendix B for educational session examples and Appendix C for the patient handout.

**Staff Education**

Fall prevention programs cannot occur in silos and needs to have a team approach. Eckstrom et al. (2016) found that a team approach works best to implement the fall risk assessment and evidence-based fall prevention interventions, it is necessary to

provide education for the clinical staff. This will likely include representatives from nursing, therapies and administrators on the unit. The staff education will run for 45 minutes and will be conducted during the fall prevention committee. Education would consist of a PowerPoint presentation. Refer to Appendix D for PowerPoint Presentation. The learning objectives are listed below:

By the end of the session, staff will be able to:

1. define falls and falling.
2. be able to perform a fall risk assessment tool.
3. identify risk factors for falls.
4. implement strategies and interventions to prevent falls.
5. understand the role of each team member in the prevention of falls on the unit.

Initially education will be provided the occupational therapist and then the clinical staff in the room will then educate their peers. Clinical staff members will also be provided with a binder that they can refer to. This binder will include a copy of the fall risk assessment tool, the most common risk factors and the interventions to prevent falls. This binder will also contain a flow sheet that outlines which staff members are responsible for the various parts of the program. For example, this flow sheet will explain the role of the therapy, nursing, administration and ancillary staff.

**Non-Clinical Staff Education**

The next component is educating the non-clinical staff which includes but not limited due to housekeeping, laundry and dietary assistants. In order to provide education to the non-clinical staff posters will be posted in the break room. These posters will

include some basic actions they can take to prevent falls. These actions would include checking on patients when a call bell is going off or reporting to a nurse if they see patient performing an unsafe behavior. Unsafe behavior can include trying to get out of bed, reaching for an object or trying to self-transfer.

## Role of Personnel

Developing a comprehensive fall prevention program is a complex process that can only be achieved through an interdisciplinary approach. The effectiveness of a fall prevention program relies on the strength of the team and understanding that each member of the team plays a role in preventing falls. Each member of the staff has a critical role to play in fall prevention program to maintain the safety of the patients. To initiate this program a meeting will be scheduled with the chief nursing office who also heads the fall prevention committee. The CNO can then recruit other nursing staff for the initial training session. As the program coordinator my role would be leading the initial training sessions and monitoring the implementation of the new policies. Another role as the program coordinator would be to do weekly check ins initially and then progress to monthly check ins to ensure that there are no questions and to obtain feedback. Figure 4 describes the roles of each clinical staff member

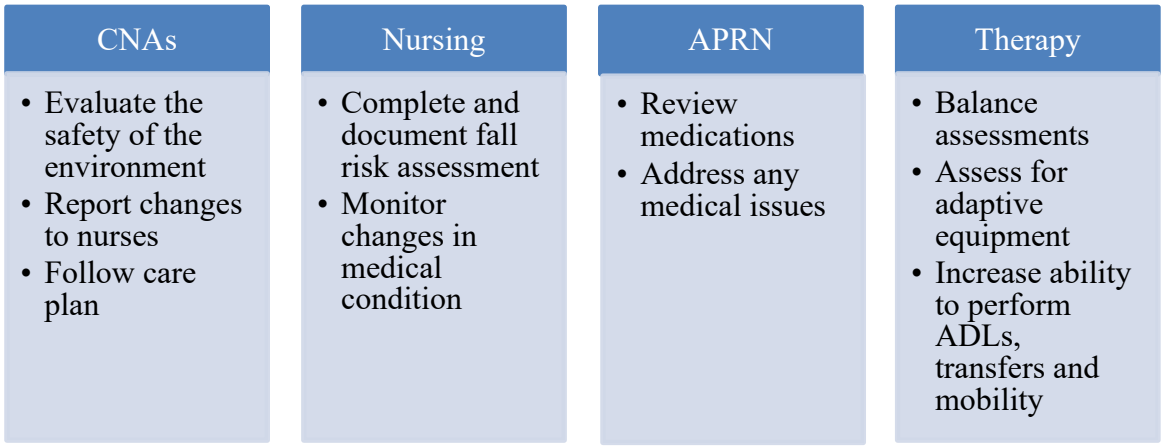



*Figure 4.1:* Roles of the Clinical Staff

**Intended recipients of the program**

This program will impact all patients who are admitted to Elim Park Rehabilitation Unit as they will all be screened to determine their falls risk. The primary recipients are the patients on the unit who are identified as high falls risk. They will receive fall prevention education and tailored environmental interventions will be implemented for each of these patients depending on their areas of risk. Individuals with cognitive impairment will not receive the handout and patient education, however, the tailored environmental interventions will be of particular importance for this group. All patients who are admitted to the inpatient rehabilitation unit would have their fall risk assessed by the nursing staff. The patients that fall into the high fall risk category would then have a SLUMS administrated by the occupational therapist. Individuals who scored 27 or higher on this test would then receive fall prevention education and tailored environmental interventions depending on the risk factors. Those who score less than 27 would not receive the individual patient education but the environmental interventions would still be implemented to minimize the risk of falling. The secondary recipients of this program are

the clinical and non-clinical staff. They will receive training so that the interventions can be implemented with the patient population.

## Integration of Evidence and Policy

As presented in Chapter 2 of this doctoral project, research has shown that in order for a fall prevention program to be successful the first step is to identify the risk factors for falling. The research has identified intrinsic and extrinsic risk factors. Intrinsic risk factors include such things as balance, medications, cognition, hypotension and visual impairments. Extrinsic factors include such things as having all necessary items within reach and having a clutter free space. The fall risk assessment tool that was selected, the Marianjoy Fall Risk Assessment Tool for Inpatient Rehabilitation (Marianjoy, 2007) takes into consideration these intrinsic risk factors. The decision tree that was created also takes into consideration the intrinsic risk factors and provides interventions for each risk factor.

The literature suggests in order to have a successful fall prevention program it needs to be multifactorial in nature and include various interventions. *Stepping Up to Prevent Falls* is multifactorial since it includes patient education and staff education. The intervention that are being utilized are unique to that patient which has shown to have the most success. This program is guided by the Social Ecological Model (Bronfenbrenner, 1979) since this framework takes into consideration the multiple layers of a fall prevention program. Dolan (2019) conducted a qualitative study to examine various theoretical frameworks that could be used as a framework to guide the understanding of falls in older adults in hospitals. Dolan rejected multiple theories and concluded that the

Health Belief Model was the best framework. This model takes into consideration the feelings of individuals participating in a fall prevention program it does not look at the whole picture including the environmental factors. The SEM allows all aspects to be considered from the individual level to the organizational level.

Measuring the success of fall prevention programs can be challenging. The most common way to measure the success of all prevention is to examine the number of falls that occurred in a certain period of time. Even though this is one way to tell the success their other indicators that can be examined to understand if the fall prevention program has been successful. The literature is sparse on utilizing the Barthel Index (BI) and understanding how a lower score on this tool can be linked to increased falls but a few studies have been completed. It has been noted that those who had a fall had a lower BI score. It is important to consider the score on the BI when measuring the success of a fall prevention program. Research has shown that those who experience a fall are less likely to be discharged home which could also correlate with a lower BI score. Since those who score lower on this tool tend to require increased assistance with ADLs which may mean they will not be able to go home at their previous level of function.

## Outcomes of the Fall Prevention Program

The short-term outcomes of *Stepping up to Prevent Falls* will be patients will demonstrate increased knowledge on how to prevent falls. Staff will demonstrate the ability to implement fall prevention strategies and the facility will develop a culture of safety and embrace fall prevention. The intermediate outcomes of the program will include full implantation of fall prevention strategies, consistent patient education on all

prevention strategies and fewer fall incidence reports. The long-term outcomes will include: reduced costs to the facility because of decreased falls, decreased lengths of stay, increased satisfaction patients and families due to fall safety measures being carried out and increased functional outcomes.

## Barriers to Developing a Fall Prevention Program

When developing a fall prevention program there are various barriers to consider. These barriers extend across multiple levels from the individual level to the organizational level. On the organizational level, all individuals in the facility need to be invested in the program and a culture of safety. In order to develop a culture of safety a meeting will be set up with the chief nursing officer to explain how the program would work and develop strategies that could be utilized to develop a culture of safety. On the individual level, there are many complex emotions that need to be taken into consideration. These emotions include fear that they may lose their independence and not be able to go home. In order to address these concerns individuals will be provided with educational handouts followed by a one to one session to understand falls and how falls can impact them. For individuals who have family involved in their care can also participate in the education. Patients will also be given an opportunity to participate in a group discussion surrounding fall prevention. In order to address these barriers, it needs to begin with the administration to ensure that they are in agreement with the fall prevention program and they will be able to foster a culture of safety throughout the organization.

Developing a comprehensive fall prevention program is a complex process and

requires an interprofessional approach to ensure success. Rochart (2013) examined the characteristics of individuals who had multiple falls and the relationship between falls, rehabilitation outcomes and health service use. It was hypothesized that older persons sustaining one or more falls would have a longer rehabilitation stays, lower functional outcomes and more likely to be discharged to long term care. Having a fall in the post-acute rehabilitation setting can have far reaching consequences. Minimizing falls in post-acute rehabilitation is critical component in ensuring a safe discharge home. Research has shown that falls can lead to devastating consequences to the individual in regards to discharge disposition and impacts the individually emotionally. After a fall the individual may demonstrate increased anxiety and fear which means limited mobility. Even though a fall prevention program cannot eliminate falls completely it can decrease the amount of falls that occur and lead to better functional outcomes. A fall prevention program that has multiple components has been proven to be more successful than a program that has only one component. Combining patient education and staff education will lead to a better awareness about falls, how to prevent falls and the consequences of falls. The ultimate goal of a fall prevention program is to develop a culture of safety and minimize falls in order to ensure patients have an optimal discharge plan.

## CHAPTER FIVE: Evaluation Plan

### Program Scenario and Stakeholders

The author has designed an intervention that will be educational in nature to provide information on how to prevent falls in post-acute rehabilitation. The program will be delivered in-person and will include educational sessions for patients, nurses, and staff. Patients will be provided with a handout and a discussion with the author. The author will hold separate educational sessions for the clinical staff in which she will discuss the importance of conducting a fall risk assessment, understanding risk factors, and implementing appropriate methods to prevent falls. Nurses will receive a binder, to be used as a resource, that will include a fall risk assessment tool along with a flow chart depicting what interventions could be carried out depending on the risk factor identified

Educational sessions will be provided to the support staff of the facility, for example maintenance and housekeeping, to discuss the practice of "if you see something say something" (Duboff, 2010). For example, if a patient looks unsafe then let a nurse know, or if a call bell is activated see what the patient needs. This education will be provided via posters in the breakroom.

The author's program will take place in a post-acute rehabilitation unit. Patient education will be provided at the bedside, and nursing and staff education will take place in a conference room. The goal would be that, once nurses are initially provided training and understand the fall prevention program, they would train new nursing hires. For the patient education component, assistants would deliver the education and help patients develop goals for maintaining safety and preventing falls while in post-acute

rehabilitation.

The author's project is particularly important because of gaps in the literature regarding fall prevention in post-acute rehabilitation, while research on fall prevention in the acute care and community settings is more prominent. The post-acute rehabilitation setting has marked differences from acute and community-based care. Another reason why developing an evidence base for the post-acute rehabilitation setting is important in the presence of conflicting best-practice guidelines for fall prevention. In thie literature, there has been some conjecture as to which is the best fall prevention approach to implement. When the body of research is looked at as a whole, there is no conclusive answer regarding the best intervention to prevent falls.

The author's aim is to provide a program that prevents falls, and that also demonstrates that a lower incidence of falls leads to better functional outcomes and increased likelihood of discharging home. The first group of stakeholders that would be impacted by this program would be patients, who would be empowered during their stay in post-acute rehabilitation. Patients' families would benefit from knowing that there are procedures in place to keep their family member safe Nursing staff as stakeholders would gain a clearer idea of how to perform a fall risk assessment to keep patients safe. Figure 5.1 depicts a case scenario where the author's proposed program and the findings of program evaluation research would be applicable.

Mr. B. was a patient in post-acute rehabilitation who had multiple falls in a period of a few days. Due to his frequent falls the family was concerned about his safety in rehab and was questioning if it would be safer to take him home. A team approach was utilized to prevent future falls and ensure his family that we can keep him safe. Nursing completed a medication review to ensure that not none of his medications were causing hypotension, confusion or dizziness. Therapy worked with family on strategies they could implement while they were visiting. Patient was provided education on strategies to prevent falls including ringing the call bell and not getting up on his own.

*Figure 5.1:* An example of implementing fall prevention strategies.

The author's planned intervention, plus the findings of program evaluation research, will benefit patients such as Mr. B. in the short and long term. The nursing staff would have access to the program evaluation research findings since they would be in a position to implement fall prevention strategies and ensure carryover. Administrators would be interested in program evaluation research findings demonstrating that fewer falls in the facility are leading to decreased costs, in keeping with research showing that patients who do not fall during their stay are more likely to be discharged home (Rochat et al., 2013). It is important for administrators to understand the impact of the program since they are in a position to make decisions about the future of the program.

## Vision for the Program Evaluation Research

The author's vision in the short term is to decrease the incidence of falls, develop a culture of safety within the building, and thereby decrease costs for the facility. which would be of interest to management and administration. An interprofessional culture of safety and collaboration is necessary to ensure that falls are prevented. The long-term vision for this program is to have a broader understanding of falls and the impact they have on patients' functional outcomes and the likelihood of discharge home, such that it

is implemented in other post-acute rehabilitation units. The author would also like to contribute to the evidence on fall prevention in post-acute rehabilitation. This evidence will guide practitioners and other staff working in post-acute rehabilitation on how to prevent falls and how to develop an educational program for the staff and for patients.

## Engagement of Stakeholders

The author will maintain stakeholder engagement by holding face-to-face meetings with nursing and other staff on a quarterly basis to check in on how the program is running and if there is anything that could be done differently. During these meetings, the author will respect their different viewpoints regarding how best to ensure patient safety and satisfaction. These meetings will provide an opportunity for answering questions and addressing concerns, particularly regarding the fall risk assessment and prescribed strategies for prevention. The administrator of the facility would be contacted periodically to report progress with implementation and to inquire regarding falls incidence and related costs since the program was launched. Patients who participate in the research will be visited to ensure they understand the study and its benefits. Patients who have a positive experience may share this with family members and friends, and may also be more likely to continue fall prevention strategies.

## Simplified Logic Model for Use with Stakeholders

The simplified logic model in Figure 5.2 will be shown to staff working in post-acute rehabilitation as an at-a-glance overview. Figure 5.2 shows expected program inputs and outputs, plus short term, intermediate and long-term outcomes. Short-term outcomes will be measured during initial program launch. The 30-minute educational sessions with

patients on fall prevention will include a workbook and multimedia resources, as well as inservice training for staff. The outputs of this program shown in the logic model include the number of patients participating, in-service sessions, and number of staff attending. Desired short-term outcomes of this program are depicted as increased patient knowledge of fall prevention, staff demonstration of fall prevention strategies, and a culture of safety. The intermediate outcomes of this program include full implementation of fall prevention strategies, consistent patient education on fall prevention strategies, and fewer fall incidence reports. The long-term outcomes, as shown, are reduced fall-related costs to the facility, increased satisfaction of patients and families due to fall safety measures being carried out, and increased functional outcomes at measured by the BI.

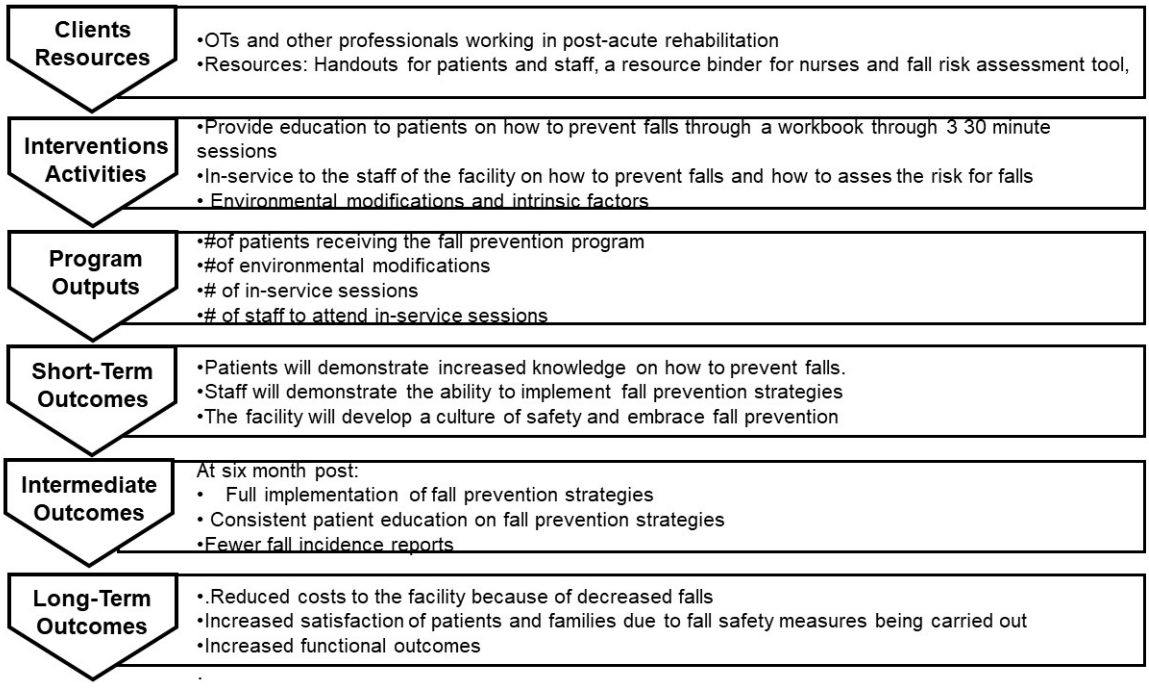



*Figure 5.2*. Simplified logic model for a fall prevention program

## Preliminary Exploration and Confirmatory Process

Prior to carrying out program evaluation research, the author will arrange in-person meetings to collaborate regarding the program design and the best practical ways to carry out the methodology. Nursing and other staff in the building that serves at the author's work site will be contacted through e-mail to set up meetings, as this is a mode of communication that works most effectively. For contacting stakeholders in other buildings, including management or administration, the author will determine the best means to communicate the day and time of meetings. Patients and family will be contacted by a mailed invitation.

During this confirmatory process, the author will begin by providing some background information from the literature, including current fall rates, the most effective fall prevention strategies, and valid and reliable assessment tools. A handout describing extrinsic and extrinsic risk factors contributing to falls will be provided, particularly those amenable to modification. The author will talk about the financial costs of a fall and the consequences for the patient, including decreased functional outcomes and likelihood of discharge home.

During this process, the author will elicit feedback from the nursing and therapy staff on what strategies they find most useful in preventing falls, as well as any barriers they encounter when attempting to use fall prevention strategies. Patients will be asked for feedback concerning their understanding of fall risk and reasons they might not ask for help, even when told to do so. Understanding patient and staff perspectives is critically important when designing the methods for delivering education and

administering measurements. Everyone's opinion will be heard, particularly because there are many perspectives on preventing falls. The author will listen to all stakeholders to ensure that everyone feels acknowledged, and utilize an interactive process to come to agreement regarding how the program and evaluation research can be a success.

## Program Evaluation Research Questions by Stakeholder Group

The purpose of the author's proposed program is to decrease falls through educational sessions for staff and patients. In order for program evaluation research to be successful, it is important that appropriate research questions are asked to capture the needed data. Qualitative and quantitative research questions that should be considered for each stakeholder group are listed in Table 5.1. For all program participants, the author will want to understand what aspects of the education were easy, difficult, and most valuable, and also if change in confidence and knowledge occurred. The author will want to report to facility administrators research findings about changes in fall incidence and proportions of patients discharged to home, as well as impact on patient function, the culture of safety, and alignment with the mission statement of the facility.

Table 5.1. Research questions to evaluate the efficacy of a fall prevention program

| **Stakeholder Group** | |
|---|---|
| Patients and their family | ***Qualitative:***<br>• What aspects of the fall prevention educational program were more difficult for patients and families to learn?<br>• What aspects of the fall prevention educational program were easier for patients and families to learn?<br>• What aspects of the program should be changed?<br><br>***Quantitative:***<br>• Did the patient and family show increased confidence the patient's safety in the hospital and upon return home?<br>• Did the patient and family demonstrate increased knowledge of fall prevention strategies? |
| The facility administrators | ***Qualitative:***<br>• Did administrators believe that the fall prevention program aligns with the mission statement of the facility?<br>• Did administrators believe that the fall prevention program led to a culture of safety and a change in attitudes?<br><br>***Quantitative:***<br>• Did the post-acute rehabilitation fall rate decrease after program completion?<br>• Did the percentage of post-acute rehabilitation patients discharge home increase after program completion?<br>• Did fall-related costs for post-acute rehabilitation decease following program completion?<br>• Did individuals with less falls demonstrate a higher Barthel Index?<br>• Did those with increased falls demonstrate a lower Barthel Index? |
| Nursing staff | ***Qualitative:***<br>• What parts of the fall prevention program did nursing staff believe contributed to a culture of safety?<br>• What parts of the program did nursing staff believe made patients safer?<br>• Did nursing staff feel prepared to carry out the assessment tool and strategies after the education?<br>• Was the educational material presented in a way that was easy for nursing staff to follow? |

| | |
|---|---|
| | • To what degree did nursing staff value the program?<br><br>***Quantitative:***<br>• Did the nursing staff show increased confidence the patient's safety in the hospital and upon return home?<br>• Did the nursing staff demonstrate increased knowledge of fall prevention strategies?<br>• Did nursing staff demonstrate an increase in implementing fall prevention strategies? |

## Research Design

The research design will include both formative and summative methodologies. For the formative component, semi-structured interviews with patients and nursing and therapy staff will be conducted in order to obtain a clear understanding of what aspects of the educational program worked well and what areas will need improvement. The goal of patient interviews will be to gain a better understanding of what parts of the educational program they found to be easy or difficult, and if they felt the strategies provided were useful. It would also be important to understand what fall prevention strategies were not used by patients and why. From nurses and therapists, it would be critical to understand their viewpoints regarding the burden of implementing the program, the value of the assessment tool and what they would change. For the summative component the author will utilize a quasi-experimental single group design with pre and post data collection. Some of the summative data will be found in records kept by the facility, including fall incidence rate and discharge destination. The occupational therapists will administer the Barthel Index (BI) to patients prior to the intervention and then following completion. Summative data will also be collected using survey questions with a one-to-ten rating scale. For example, patients could rate their knowledge or understanding of fall

prevention on a scale of one-to-ten. Nursing and therapy staff could rate their current confidence that the education program is worth the time to carry it out.

## Methods

The patient inclusion criteria for this program will be over sixty-five years old, in post-acute rehabilitation and a score of 27 or higher on the St. Louis University Mental Status Exam (SLUMS). Those scoring lower than 27 would be excluded from the study since they may not be able to comprehend the education provided. Patients will be recruited from a post-acute rehabilitation unit as they are admitted from the hospital, and those that meet the inclusion criteria will be asked if they want to participate in the study. The recruitment goal for the initial study will be twenty patients and fifteen members of the nursing staff. The author will ask one family member of each patient if they want to participate in the study. In order to recruit other staff members to participate the author will ask two people from each department to participate and represent the department.

### Formative or process research data gathering

The author will conduct semi-structured interviews with the patients and the nurses. For patients, these interviews will be completed just prior to discharge to ensure that their responses are captured before they leave. One issue that may arise is that if someone is discharged to the hospital, data collection may not take place. If the individual is discharged to the hospital the author would attempt to conduct a phone interview to obtain the data. For the nursing staff the author would conduct semi-structured interviews about one month after implementing the program to gather their impressions. Ideally the author would conduct the interview just prior to the start of shift.

All interviews would be recorded through an application where the information can be stored.

**Formative or process data management and analysis**

In order to analyze qualitative data, the author will utilize the hermeneutic method, which is a thematic analysis. To complete this task, data will be coded to develop manifest and latent themes. From there the author will develop a matrix and identify example quotes to illustrate important claims about the program. In order to accomplish this the author will utilize NVIVO software which will enable the author to code the responses from open ended questions and using a matrix to compare responses. This software will also enable the author to put the data into a table in order to present to stakeholders

**Summative or outcome research variables and measurement**

The primary dependent variable that will be measured is the number of falls on the unit. Information on fall rate on the unit will come from routinely collected records. To understand how many falls, occurred, an equation is used that divides the number of falls by the number of occupied bed days for the month. The second dependent variable will be functional outcomes as measured by the BI which has shown good reliability. The author would also utilize survey rating questions regarding, for example, the perceived value of the program and confidence to carry out the program. Survey questions that utilize a Likert scale will be distributed to each individual on paper. For the questions that require an open-ended answer the author will sit down with each individual and interview them. The answers from these questions will be transcribed then coded for themes. The

objective of this program evaluation is to determine if a multifactorial fall prevention program would reduce fall rates in individuals in post-acute rehabilitation and if there is a correlation between function and falls as demonstrated by the BI.

### Summative or outcome data management and analysis.

Through statistical analysis the author wants to explore the impact a fall prevention program has on fall rates and the functional outcomes of individuals with less falls. In order to analyze the data, the author would initially use descriptive statistics in order to understand characteristics of the population. The author would examine the mean age of the population, the number of falls a participant had, the SLUMs score and the BI score. After all descriptive statistics are calculated then inferential statistics would take place in order to understand if the fall prevention program had an impact on the fall rate utilizing a t-test. The author would only be to explore the correlation between function and falls if the sample size was large enough. If the sample size was not large enough then it may be difficult to demonstrate a relationship.

## Disseminating the Findings of Program Evaluation Research

The author will provide a technical report to the administrators. This report will include data tables that illustrate fall rates pre intervention and post intervention along with Barthel Index scores. This report will also include the responses to the survey questions and a version of the binder provided to nursing so they can understand the purpose of the program and the impact it had. For nursing staff, the author will provide an outline to show background information on falls, methodology, the findings of the program and the recommendations. The author would also provide an outline for patients

and families so they can see the impact of the program and how it prevents falls and keeps patients safety. The author would differ the recommendations for nursing and patients and families.

# CHAPTER SIX: Funding Plan

## Program Description

*Stepping Up to Prevent Falls* is an interprofessional fall prevention program for implementation in post-acute rehabilitation settings. This program will be multimodal and include patient and staff education, and a range of environmental fall prevention interventions. The patient education will include a handout followed up with a discussion on risk factors for falls, how to prevent falls and why it is important to prevent falls. Patients will also be offered to participate in a fall prevention group to continue the discussion on how to prevent falls and receive input from other patients. Patients are not mandated to participate in this group and if they choose not to there will be no impact on their care. There will be two parts to staff education one for clinical staff and one for non-clinical staff. The staff education will consist of a PowerPoint presentation to discuss various risk factors for falls, utilizing a fall risk assessment tool, understanding the interventions to prevent falls and the role of each team member. For the non-clinical staff members' posters will be posted in the breakroom so they understand their role in preventing falls.

## Local Resources

*Stepping Up to Prevent Falls* will be held at Elim Park Rehabilitation Unit. The nursing conference room will be reserved in order to provide staff education. In the nursing conference room, there is a computer and projector screen which can be utilized for the PowerPoint presentation. The author also plans to ask if the facility will print all necessary materials in order to eliminate the need for printing services. This program may

sound like it would create more work for nurses but the design of this program is meant to fit right into the current workflow so that all members of the interprofessional team can continue to perform their jobs within the time table they have. For example, the fall risk assessment tool is brief and can be included in the admission assessment. The decision tree that was designed is user friendly and allows members of the interprofessional team to select the appropriate interventions based on the risk factors from the above assessment. It is also important to note that even though nursing is performing the initial assessment it is a collaboration among all team members to address the identified risk factors. There are no costs associated with team members implementing fall prevention interventions as it will be considered an enhancement of their regular duties. The educational sessions will be provided by the author. These patients will already be on therapy caseload so the educational session will be the treatment session for the day. In the past, this facility implemented a new program titled 'Dining Rounds' in order to assess if any long-term care residents required speech or occupational therapy services for swallowing or self-feeding. In the initial stages this was a difficult program to get off the ground due to the logistical issues of timing which including organizing all the team members and understanding what time meals were delivered. Once the logistical factors were addressed, the dining rounds took place every month. Due to the fact that many times new initiatives fall flat due to the time commitment or just seen as more work it is important that *Stepping Up to Prevent Falls* can fit into the already existing work flow. When implementing the environmental fall prevention interventions all the resources that are needed are available at the facility which means that additional money will not need

to be spent. For example, the facility has commodes and other adaptive equipment available if needed.

## Budget Expenses

When developing *Stepping Up to Prevent Falls* costs will fall into two categories personnel and supplies. The purpose of creating this funding plan is to understand the resources that will be necessary to carry out this program along with potential funding sources to support the program.

### Personnel

The program designer will provide services free-of-charge. In the first year, the program designer (the author) will focus on program development which will include such tasks as leading the educational sessions for patients and staff and working with the nursing staff on including the elements of *Stepping Up to Prevent Falls* into their workflow and eliciting feedback from the interprofessional team to ensure the program is easy to use and is making a difference in the number of falls patients are experiencing. In the second year, the program designer would be responsible for modifying any part of the program that is not successful and monitoring the outcomes of the program. The program designer will also be responsible for preparing all written materials that will be distributed so there will only be the cost for printing the materials. In order to develop these materials a laptop computer and a subscription to Microsoft Office will need to be utilized which is available at the author's facility. Another component of personnel is paying the nursing staff to attend the in service about the new program. It is the policy of the author's facility to pay staff to attend in services due to this the cost is being including

however it is the author's hope that the facility will absorb this cost. The average hourly salary for licensed practical nurses (LPNs) is $27.72 and the average salary for registered nurses (RNs) are $39.20. The length of time for the in services is about an hour so if 2 LPNs and 2 RNs attend the in services that is a total of $133.84. Other team members that would attend this in service would include the director of nursing, the chief nursing officer and the unit manager. These staff members are salaried employees not hourly employees which means that it would be included in their daily work flow.

**Supplies**

The program will accrue costs for printing all the necessary materials needed for patient and staff education. These costs are being included in the funding plan however the author will request that the facility support the printing out of items. The patient handout is one page and to print at a Staples would be thirteen cents per copy and 50 copies would be needed so that would total $6.50. When developing the posters for the breakroom legal size paper would be utilized and three copies would be printed at a cost of $1.80 for a total of three. To design a resource manual, a binder will be purchased at the cost of $4.93 and then it would cost thirteen cents for each page. The decision tree will also need to be printed in color which would cost thirteen cents a page to ensure that it is printed in color. This document will also be laminated at a cost of $2.00 to preserve it due to the frequent use. Table 6.1 presents the breakdown of costs, totalling $141.83 in the first year, and $136.90 in the second year.

Table 6.1: *Two Year Budget for Personnel*

| **Item** | **Rationale** | **Planning Expense Year 1** | **Planning Expense Year 2** |
|---|---|---|---|
| Program designer | In the first year the program designer (the author) will focus on program development which will include such tasks as reviewing the current literature, understanding the evidence surrounding fall prevention interventions and eliciting feedback from nursing staff and other disciplines to ensure the program is easy to use and is making a difference in the amount of falls patients are experiencing. In the second year the program designer would be responsible for modifying any part of the program that is not successful and monitoring the outcomes of the program | Program designer will provide free of charge | Program designer will provide free of charge |
| Nursing staff | Nursing staff will be provided with an in-service on the fall prevention program | LPNs is $27.72 and the average salary for registered nurses are $39.20 | LPNs is $27.72 and the average salary for registered nurses are $39.20 |
| Printed materials for patients | It will include handouts that discuss risk factors for falls, how to prevent fall and why falls are dangerous | Thirteen cents per copy and 50 copies would be needed so that would total $6.50 | thirteen cents per copy and 50 copies would be needed so that would total $6.50 |
| Printed materials for staff | This material will include the fall risk assessment tool, a decision tree that discusses various interventions and additional resources | Thirteen cents per page and have approximately 10 pages which would be a total of $1.30 | No cost since binder is already created |
| Posters for breakroom | The posters will be printed on legal size paper and posted in the breakroom for non-clinical staff members | $1.80 many need to print more than once in the year to update the information | $1.80 to replace old ones and add on new information |
| Binder and other office supplies to develop a resource binder | The binder will house all the information nursing needs to implement the program | $4.93 | $4.93 |
| Dissemination | | $509.60 | $509.60 |

## Potential Funding Sources

The majority costs will be accrued during the first year in regards to printing all materials and developing the initial resources. During the second year, the costs that will need to be covered are copies of patient education, and the fall risk assessment tool. There are multiple grants available for fall prevention programs at the community level but are hard to come by for the post-acute rehabilitation level. Due to this the author plans to put together a budget proposal for the facility where *Stepping Up to Prevent Falls* will be implemented to offset some of the costs. This budget proposal would discuss the program, the anticipated costs and the benefits of having this program. Other potential funding sources are listed in Table 6.2.

Table 6.2 *Potential Funding Sources*

| **Potential Funding Source** | **Amount** | **Information** |
|---|---|---|
| Boston University Student Research Grant https://www.bu.edu/sargent/research/research-funding-administration/funding-opportunities-for-sargent-faculty-and-students/student-research-grant/ | The Student Research Grant awards up to $5,000 | Sargent students and postdoctoral fellows working with Sargent-primary faculty are eligible for a Student Research Grant. These investigator-initiated awards should be consistent with ongoing research at Sargent, with a preference for proposals that cannot be supported otherwise |
| Another Look 2020 through the Donaghue Foundation https://donaghue.org/grant-opportunities/another-look/ | Eight grants totaling approximately $750,000 are available. Smaller amounts can be requested. | This grant provides funding for research that has the near-term potential to improve quality for older adults living in long term care facilities. |

## Conclusion

*Stepping Up to Prevent Falls: A Fall Prevention Program for Post-Acute Rehabilitation* is an interprofessional approach to preventing falls and promoting function. It will include education for patients and staff that address risk factors for falls, how to prevent falls and why falls are dangerous. There are expenses to implement this program and those expenses fall into two distinct categories of personnel and supplies. Developing all the educational program will be done by the program designer will be done at no charge however there will be expenses for printing the materials and putting together a resource binder. Under the personnel category paying the nurses to attend the in service to understand the new program. The funding plan discussed in this chapter will support the creation, implementation and dissemination of *Stepping Up to Prevent Falls: A Fall Prevention Program for Post-Acute Rehabilitation*. Even though there maybe initial costs to set up the program, the expenses will lower the financial burden of the facility in the future. The Improving Medicare Post-Acute Care Transformation Act of 2014 (the IMPACT Act) requires inpatient rehabilitation facilities to collect certain data sets (Center for Medicare and Medicaid, 2018). Among the data sets that tracking is required for is incidence of major falls. The data reported are then available for viewing on the inpatient rehabilitation facilities (IRF) Compare website where the public can compare the data from various inpatient rehabilitation facilities. Having a lower incidence of falls could mean that when a family member is choosing a facility for their loved one and see that Elim Park has a lower fall rate than another facility and choose Elim Park. Increasing the admissions to Elim Park allows for increased revenue. In conclusion even

though money will need to be spent initially to get the program off the ground the long-term investment would be increased revenue through increased admissions.

## CHAPTER SEVEN: Dissemination Plan

### Program Description

*Stepping Up to Prevent Falls* is an interprofessional fall prevention program for implementation in post-acute rehabilitation settings. This program will be multimodal and include environmental interventions, patient and staff education, with the aim of reducing falls. The patient education will include a handout followed by a discussion on risk factors for falls, how to prevent falls and why it is important to prevent falls. Patients will also be encouraged to participate in a fall prevention group to continue the discussion on how to prevent falls and receive input from other patients. Patients are not mandated to participate in this group, and if they choose not to, there will be no impact on their care. There will be two parts to staff education: one for clinical staff and one for non-clinical staff. The staff education will consist of a PowerPoint presentation to discuss: (1) various risk factors for falls, (2) utilizing a fall risk assessment tool, (3) interventions which can prevent falls, and (4) the role of each team member. For the non-clinical staff members', posters will be posted in the breakroom, so they understand their role in preventing falls

### Dissemination Goals

The overarching goal of dissemination is to make health professionals and patients aware of Stepping Up to Prevent Falls, and to engage them in the program.

#### *Long Term Goals*

- Through dissemination of the program evaluation results, facility administration at Elim Park Rehabilitation Center will support on-going implementation of the

program

- Through dissemination of the program research findings, post-acute rehabilitation centers across the United States will become aware of, and adopt the program in their own settings.

***Short Term Goals***

- Through dissemination of the program, health professionals at the Elim Park Rehabilitation Center will engage in the interprofessional training session for the program.
- Through dissemination of the program, patients at the Elim Park Rehabilitation Center will participate in patient education sessions of the program.
- Through dissemination of the program, patients at Elim Park will demonstrate increased knowledge on how to prevent falls and be an active participant in their care

## Target Audience

### Primary Audience

This will include the clinical staff of post-acute rehabilitation, and dissemination will occur through an in-service that will discuss the fall prevention program. The objectives of this in-service will be to understand the definition of a fall and how to utilize the fall risk assessment tool and the decision tree as part of standard practice. The non-clinical staff will be educated through posters in the breakroom. On a broader scale the author will submit proposals to local and national conferences in order to educate

other professional about Stepping Up to Prevent Falls.

**Secondary Audience**

Patients in post-acute rehabilitation will be the secondary audience. This audience will receive education via handouts and a discussion that will be facilitated by the author. This group will also have the opportunity to participate in a group session regarding fall prevention, but it will not be mandatory.

## Key Messages

**Primary Audience**

- Falls in post-acute rehabilitation negatively impacts the patient's longer-term functional status, their length of stay, and consequently their quality of life.
- Falls in post-acute rehabilitation are costly for the facility, which impacts on the delivery of care available to all patients.
- Falls in post-acute rehabilitation are avoidable, through the implementation of team-based interventions.
- *Stepping Up to Prevent Falls* is a 'whole of team' approach to reducing falls in post-acute rehabilitation settings.
- *Stepping Up to Prevent Falls* employs evidence-based interventions to reduce patient falls in post-acute rehabilitation settings.
- *Stepping Up to Prevent Falls* can generate cost-savings by reducing the number of falls sustained by patients, reducing their length of stay, and maintaining patient's functional abilities in not having a fall.

**Secondary Audience**

- Falls can be prevented through the use of environmental interventions and safe behaviors.
- You have an active role to play in fall prevention
- The interprofessional team is committed to preventing falls in this facility.
- Falls in post-acute rehabilitation negatively impacts your longer-term functional status, length of stay, and consequently your quality of life.
- The interprofessional team is here to help you get back home safely and no one is a burden if they ring for assistance.

## Sources of Messengers

**Primary Audience**

The author would partner with the nursing administration to explain the importance of preventing falls and the purpose of this program: to assist in keeping patients safe without adding additional work for the multidisciplinary team. It is important to have the support of the nursing administration because that is who the nurses report to and having support from administrators allows nurses to see the importance of the program.

**Secondary Audience**

The author will design a fact sheet for patients to provide education for fall prevention. Along with this fact sheet, the author will utilize resources from the American Occupational Therapy Association and the National Council on Aging. The author will also provide statistics on falls to demonstrate how common they are and why

it is important to prevent them. Also, discuss that you will be talking to individual patients in a 1:1 approach to get them involved.

## Dissemination Activities

### Written Information

For the primary audience, the clinical staff will be provided with a resource binder which will include all vital information to implement the program. This binder will include the handouts from the presentation, the risk assessment tool and the decision tree. Handouts will also be provided to the patients for education on falls and how to prevent falls.

### Person-to-Person Contact

This will include the in-service session for the staff. In order to get the team on board the author will create a handout that will be posted by the time clock in order to begin to peak interest. The author will go to each department head to discuss the new program and have that individual pass along the information. Elim Park Rehabilitation Unit has quarterly meetings with all staff and the author will speak to administration to receive permission to speak about *Stepping Up to Prevent Falls* during this meeting to spread awareness about the program. During this session, staff will be educated on the definition of falls, the risk factors for falls, how to utilize the fall risk assessment tool and using the decision tree. This education will be provided through a PowerPoint presentation with participant interaction. A face to face session will also be provided to the patients. This educational session will take place in the patients' rooms and include discussions of the information on the handout along with any other concerns.

## Reporting

In order to ensure that the program can be sustained at the six month mark the fall rates would be examined. The fall rate data would then be presented to the executive team to demonstrate a decrease in the fall rate. In this report other data points that would be included would be patient satisfaction with the addition of this program.

## Dissemination to the Professional Community

In order to disseminate the findings on a broader level the author would submit a proposal to present a poster at the Connecticut Occupational Therapy Association Conference in the fall. This venue will allow other occupational therapists working in post-acute rehabilitation to become aware of *Stepping Up to Prevent Falls*. On a broader scale a proposal could be submitted to American Medical Rehabilitation Providers Association Conference. This organization is dedicated to the interests of inpatient rehabilitation providers and the goal of the conference is to provide resources on delivering quality of care and treatment and outcomes at inpatient rehabilitation centers. A manuscript can also be submitted to the AOTA Special Interest Section rehabilitation and disability in order to have other professionals learn about the program and the effectiveness of the program. Refer to Table 7.1 for a timetable of dissemination activities.

Table 7.1 *Timetable for Dissemination*

| **Deadline** | **Individual Responsible** | **Activity** |
|---|---|---|
| 6 months after implementation of the program | The author | Will provide an update to the executive team of Elim Park regarding the success of the program. In order to accomplish this a report will be provided that includes fall rates and patient satisfaction |
| 8 months after implementation of the program | The author | Write a manuscript to submit to the Special Interest Section to reach a broader audience |
| Fall 2020 | The author | Submit a poster presentation to the Connecticut Occupational Therapy Association for the fall conference |
| Fall 2021 | The author | Submit a poster proposal to American Medical Rehabilitation Providers Association Conference under the clinical care delivery category which includes fall prevention |

## Budget

The main cost of the budget will include printing the materials for the secondary and primary audience. For the primary audience, there will be the cost of printing the materials for the binder and printing out the decision tree. The other cost would be the cost at presenting at conferences to disseminate the information to a broader audience. There will be no cost for renting a room for the in-service since the nursing conference room of the facility will be utilized. For the secondary audience, there will be the cost of printing the handouts, and the author will be providing the education as part of their occupational therapy session. Table 7.2 presents details of the budget for dissemination.

Table 7.2 *Budget for Dissemination Plan*

| **Item** | **Cost** | **Audience** |
|---|---|---|
| Handouts including the assessment tool, the decision tree and other tools to place in the resource binder | $0.13 per page for approximately 10 pages which would be a total of $1.30 | Primary Audience |
| Educational posters for the breakroom to educate non-clinical staff | $1.80 each. They may need to printed more than once in the year to update the information | Secondary Audience |
| Educational handouts for the patients | $0.13 per copy and 50 copies would be needed so that would total $6.50 | Secondary Audience |
| American Medical Rehabilitation Providers Association Conference | The cost would depend on the location but at this time will budget $500 | Primary Audience |

## Evaluation

In order to evaluate the success of the dissemination plan various metrics will be looked at for the primary and secondary audience. For the primary audience patient records would be examined to see if the nursing staff is consistently administrating the fall risk assessment tool upon admission. It would also be important to perform a survey for all team members that explores if the program is easy to understand and implement or does there need to be modifications. In order to ensure that recruitment was successful the author will perform a brief survey that would be e-mailed to the staff and would ask are they aware of the Stepping up to Prevent Falls fall prevention program and how did they hear about the program. For the secondary audience the fall rate would be monitored to see if the fall rate is dropping with the introduction of the program. A survey for that patients would be conducted that would examine if patients felt safer with this program in place and if they felt that it relieved some of their anxiety about being in a new facility and how the staff plan to help them achieve that goal. In order to evaluate if

the above dissemination activities reached a broader audience the author's goal would be to present at one of the mentioned conferences. The number of expressions of interest about the program and subsequent implementation of the program can be use used to evaluate whether the dissemination plan was effective in reaching health professionals in post-acute rehabilitation centers across the country.

## Conclusion

Stepping Up to Prevent Falls is a fall prevention program for post-acute rehabilitation. This program is multimodal in nature and includes an educational component for clinical and non-clinical staff along with patient education. This chapter discusses the dissemination goals, target audiences, key messages, the messengers, dissemination activities, expenses and evaluation plan. This plan is focused on the clinical staff and non-clinical staff and the patients in post-acute rehabilitation. The goal is to provide education and tools for the clinical staff to utilize to decrease the number of falls on the unit. The dissemination activities will occur in two categories: written and person to person. The purpose of dissemination is to allow for a deeper understanding of the complexities of fall prevention in post-acute rehabilitation for clinical staff, non-clinical staff, and patients in this setting.

## CHAPTER 8: Conclusion

Occupational therapists play a vital role in preventing falls across the continuum of care. In the home setting occupational therapist assist with home modifications and the introduction of adaptive equipment in order to ensure safety in the home. The same tools that are utilized in the home setting can also be utilized in post-acute rehabilitation. Preventing falls in post-acute rehabilitation requires an interprofessional team approach due to the complexity of risk factors that cause falls. OTs can assist in addressing the intrinsic and extrinsic factors of falls. If it is noted that a patient has a fear of falling when doing a particular activity, the OT can assist the patient in modifying that activity.

Falls in the post-acute rehabilitation can lead to poorer functional outcomes and the possibility of not being able to be discharged to their previous environment. Due to these possibilities it is important that the entire clinical team works together to prevent falls. Preventing falls cannot be tackled by one discipline; instead each discipline brings their knowledge to the table in order to foster an environment of safety for the patients. The goal of *Stepping Up to Prevent Falls* is to develop a collaborative approach among team members to understand the risk factors of falls and how to mitigate these risk factors. In order to achieve this goal, clinical staff will be provided with an in-service to discuss the definition of fall, define a fall, be able to perform fall risk assessment tool, identify risk factors for falls, identify strategies and interventions to prevent falls and understand the role of each member of the team. Non-clinical staff members will be instructed through handouts in the breakroom. Patients will be provided education through handouts and a one to one discussion about the handout and to express to the

patient that they play an active role in their care.

Falls can be a scary experience for patients and may result in the patient having numerous additional issues as a consequence of the fall. A fall can lead to an injury which can lead to a fear in mobilizing which can lead to patients not being able to discharge home. Due to this domino effect it is important to develop a evidence based fall prevention program to enhance patient safety and to ensure that patients can be discharged to their previous living environment. The experience of being in post-acute rehabilitation can be emotional for patients. It is important, therefore, to establish rapport with patients and an environment of safety. *Stepping Up to Prevent Falls* is an evidence-based program designed for the post-acute rehabilitation setting to decrease falls and promote safety for patients and enhance collaboration among clinical staff members

# Appendix A: Fall Risk Assessment Tool

Marianjoy Rehabilitation Hospital
Wheaton Franciscan Healthcare

PATIENT NAME: _____

| **Marianjoy Fall Risk Assessment Tool© For Inpatient Rehabilitation**<br>FALL RISK INDICATOR DESCRIPTION: Date of Assessment: _____ | **SCORE IN POINTS**<br>**Yes = 1**<br>**No = 0** |
|---|---|
| 1. COMMUNICATION DEFICITS<br>• Inability to make basic needs known to staff | |
| 2. IMPAIRED COGNITION<br>• Difficulty understanding, reasoning and /or remaining oriented to people, place, time | |
| 3. ALTERED BOWEL/BLADDER ELIMINATION<br>• Any altered bowel and/or bladder function issue related to incontinence, retention, infection, constipation, urgency, diarrhea, etc. | |
| 4. UNILATERAL NEGLECT<br>• New onset of inability to be aware of one side of the body | |
| 5. LOWER EXTREMITY PARESIS<br>• New onset of LE Paresis | |
| 6. UPPER EXTREMITY PARESIS<br>• New onset of UE Paresis | |
| 7. SENSORY DEFICITS<br>• Deficits in hearing, sight or touch | |
| 8. HISTORY OF PREVIOUS FALL IN PAST 3 MONTHS | |
| 9. IMPULSIVE BEHAVIOR<br>• Actions taken by an individual without thought of consequences or insight into physical limitations or weight bearing status or safety | |
| 10. SPECIAL MEDICATIONS<br>• Antipsychotic, antidepressants | |
| | TOTAL SCORE |

SCORING THE MARIANJOY FALL RISK ASSESSMENT TOOL©

Assess the rehabilitation inpatient for each of the 10 indicators listed in the Marianjoy Fall Risk Assessment Tool©

- Place a value of "1" beside the appropriate indicator if the patient fits the indicator description
- If the patient does not fit the indicator description mark it with a "0".
- Add the points in the score column and fill in "Total Score." If the patient has 4 or more points in the score column, the Marianjoy Fall Risk Assessment Tool© rates the patient as high risk for fall.

**Marianjoy Rehabilitation Hospital ♦ 26W171 Roosevelt Road ♦ Wheaton, IL 60187 ♦ 800.236.2366 ♦ www.Marianjoy.org**

## Appendix B: Examples of Educational Sessions

### 30-minute session plan for individual patient education

- Introduction about falls (5 minutes)
    - What is considered a fall
    - Risk factors for falls
    - Complete a Fall Efficacy scale to understand where they feel most at risk (https://www.sralab.org/sites/default/files/2018-08/Falls-Efficacy-Scale.pdf)
- A 5–10-minute discussion on if they have fallen in the past and what they did it about, perceptions of falls and emotions they feel after experiencing a fall
- A 5–10-minute discussion on ways falls can be prevented and identify some strategies to prevent falls
- Wrap up
    - Identify 2–3 strategies to utilize when in rehabilitation
    - Have patients be able to state 2–3 risk factors for falls
- Provide a session plan for the group patient education
    - The group session will last 45 minutes
    - Introduction
        - Therapist will introduce herself and go over the purpose of the group which is to understand what a fall is, the risk factors that can lead to fall, how to prevent a fall and the emotions surrounding a fall.

- Activity
    - Set-up the room so that there are hazards present and then ask individuals to identify the hazards.
    - Go over strategies of how to get off the floor and how to get help.
- Sharing
    - Have each member share one thing they learned about falls
- Processing
    - Talk more in depth about the feelings regarding falls and that these emotions are completely normal
- Generalizing
    - Discuss with patients what strategies can be utilized in their room
- Application
    - Discuss with patients that the strategies they have learned in this group can be used in this setting and at home
- Summary
    - Go over the important points and ask if there are further questions

45-minute session plan for the clinical staff education

- Pre test
- Go over PowerPoint
- Do a case example
- Q and A
- Post test

**Appendix C: Patient Education Handout**

# How to prevent falls while in rehab

**How to prevent a fall?**

- Ring for help before getting up
- Use your walker
- Wear non-skid socks when getting out of bed
- Make sure you have all the things you need by your side
- Wear your hearing aids and glasses


**Are you at risk for a fall?**

- Medication
  - Some medications may make you dizzy
- Previous falls
  - If you have had a fall in the past year you are more likely to have a fall
- Gait instability
  - If you feel unstable while walking using a device and ask for help
- Confusion
- New environment

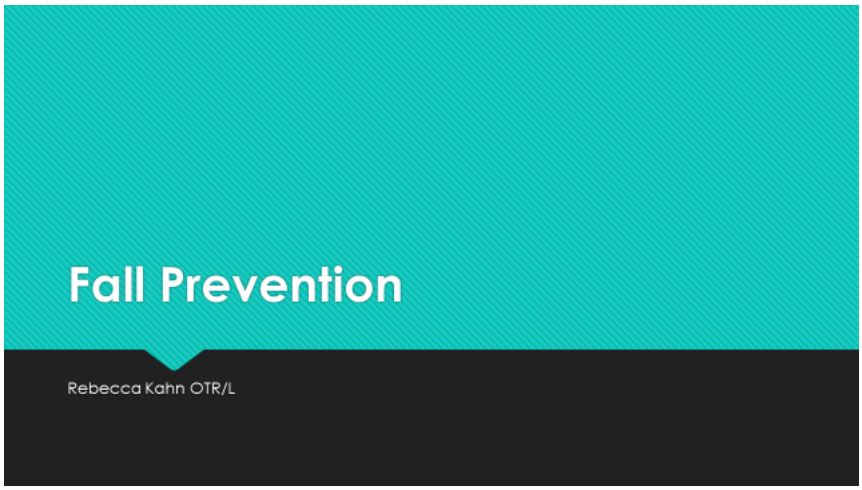

**Why are falls a big deal?**

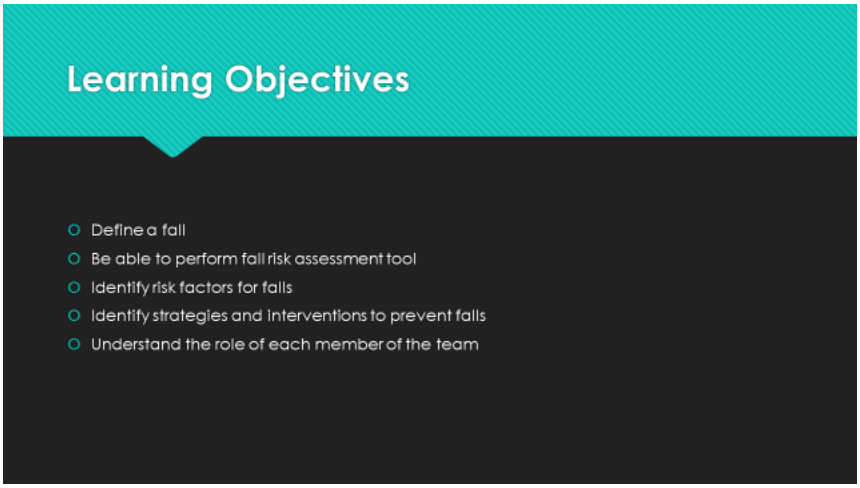
- Falls can lead to broken bones, brain injury and other serious injuries
- Falls can lead to longer stays on the rehab unit

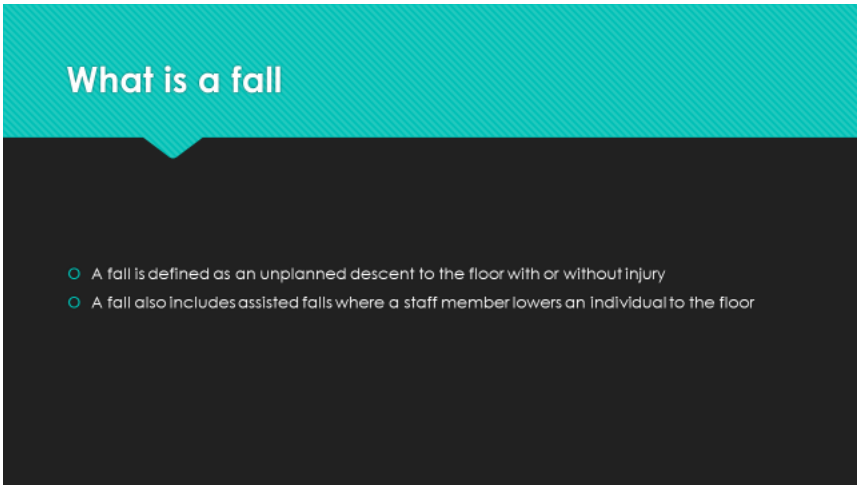
**Remember**

Ask for help, press the call button
Be aware of your body: do you feel dizzy or weak
Caution: is there enough light, do you have your non-slip socks on

## Appendix D: Presentation for Clinical Staff



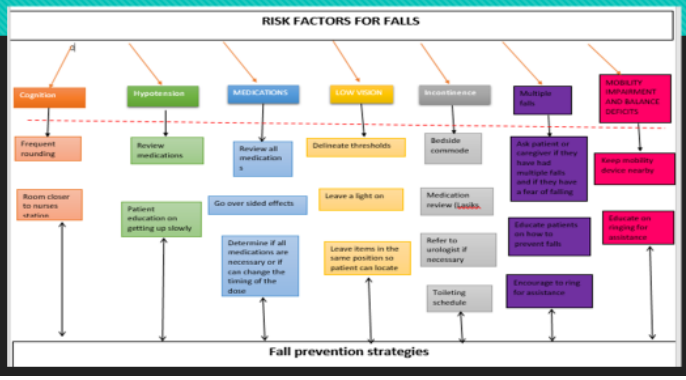
## Fall Risk assessment

- Utilizing the Marianjoy Fall Risk Assessment Tool©For Inpatient Rehabilitation
- See below

## Risk factors for falls

- Intrinsic Factors
  - Cognition
  - Low vision
  - Hypotension
  - Incontinence
  - Multiple falls
- Extrinsic Factors
  - Clutter
  - Lighting
  - Mobility device nearby

## Interventions for falls



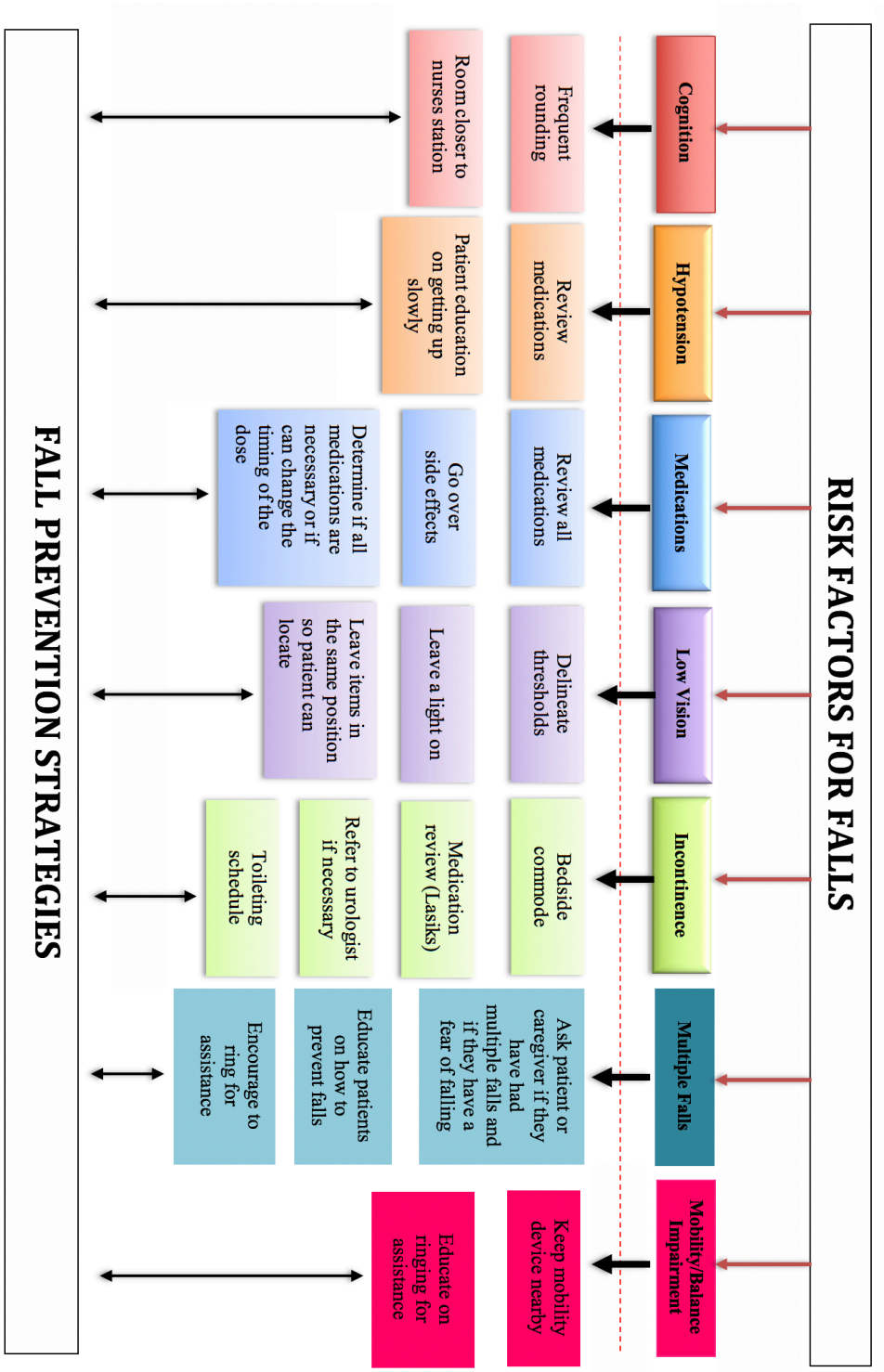
## Team approach

- Each member of the team will take part in this program and prevent falls
- Nursing will initiate the fall risk assessment tool to understand who is at high risk for falls
- Therapy department will assist with patient education and to address any balance concerns

## Summary

- Falls are caused by multiple risk factors
- It is important to identify these risk factors to provide the appropriate intervention
- It takes everyone on the team to prevent falls
- Questions?

## Appendix E: Decision Tree



## Appendix F: Executive Summary

**Introduction:**

Many older adults experience falls. Falls occur across the continuum of care; in the community, in acute care, and also in post-acute rehabilitation. The Centers for Disease Control (2017) has noted that 1 in 4 older adults fall in the community. Evidently, every year, 3 million older adults are treated in the emergency room for falls and at least 300,000 people are hospitalized due to falls (Centers for Disease Control, 2017). After hospitalization, some individuals require a stay in post-acute rehabilitation. The Joint Commission (2015) reports that hundreds of thousands of patients fall in hospitals with 50% resulting in injury. Some individuals will also experience a fall in the rehabilitation setting. Once a person experiences a fall it doubles their chances of falling again. Not only is the person more likely to fall again, after a fall a person may experience fear of falling and anxiety around mobility increases, which can lead the person to become less mobile and increased difficulty to discharge home (Delbaere, et al., 2004). Minimizing falls in post-acute rehabilitation is critical in ensuring that the person has a successful outcome and is able to discharge home.

Developing a program that minimizes falls in post-acute rehabilitation is complex due to the reasons of why falls occur in post-acute rehabilitation. Falls occur for multiple reasons. Those reasons can be divided into extrinsic and intrinsic risk factors. Extrinsic risk factors include clutter on the floor or poor lighting while intrinsic risk factors include medications, low blood pressure, and decreased cognition. Falls in post-acute rehabilitation are further complicated by the fact that the goal of rehabilitation is to

maximize patients' level of functioning. This in itself can lead to falls since as patients gain strength and become more independent, they are more likely to try to perform activities that could lead to a fall. There are multiple fall prevention programs that aim to prevent falls in the community and in acute care; however, there are fewer programs in post-acute rehabilitation to prevent falls. *Stepping Up to Prevent Falls* is a fall prevention program designed specifically for post-acute rehabilitation utilizing evidence to minimize falls.

## Stepping Up to Prevent Falls:

## A Fall Prevention Program for Post-Acute Rehabilitation

*Stepping Up to Prevent Falls* is an interprofessional, collaborative, and multimodal program that includes patient and staff education in addition to environmental fall prevention interventions. The social ecological model provides a foundation for this program by exploring all the risk factors and influences that cause falls in post-acute rehabilitation.

### Patient Education

The patient education will include a handout followed up with a discussion on risk factors for falls, how to prevent falls, what to do if a fall occurs, how to become an active participant in their care and why it is important to prevent falls. Patients will also be offered to participate in a group discussion on fall prevention which will include idea sharing and feedback opportunities. Patients are not mandated to participate in this group and if they choose not to there will be no impact on their care. Through the educational sessions, patients will see that they can have an active role in their care. When patients

feel empowered they have better health outcomes.

**Staff Education**

There will be two parts to staff education: one for clinical staff and one for non-clinical staff. The clinical staff education will occur during a team in-service. The session will discuss various risk factors for falls, how to utilize a fall risk assessment tool, environmental interventions that can be implemented to prevent falls, and the role of each team member. To ensure the clinical team has the resources they need a binder will be created and placed on the unit. This binder will include the assessment tool, the decision tree and a copy of the presentation for future reference. For the non-clinical staff members' posters will be displayed in the breakroom so they understand their role in preventing falls.

**Environmental interventions**

Particular environmental interventions will be implemented based on the results of the fall risk assessment. These interventions include increased lighting in the room, delineating thresholds, removing clutter in the room and keeping the mobility device nearby.

## Evaluation

To evaluate the success of this program, various metrics will be examined, such as the rate of falls and the functional status of patients using the Barthel Index. Research has demonstrated that individuals who have frequent falls tend to have poorer functional outcomes (Rochat et al., 2013). Those with poorer functional outcomes may not be able to discharge home to their previous environment. Surveys will be provided to patients

and staff to evaluate the effectiveness of the program and to see which parts of the program need to be modified. These surveys will explore ease of implementation for staff members and if patients feel safer after participating in the program.

## Conclusion

*Stepping Up to Prevent Falls* is a program designed to prevent falls in post-acute rehabilitation. This program was designed through the lens of the social ecological model in order to address the breadth of factors associated with falls in post-acute rehabilitation. When designing a fall prevention program, it is important to look at factors from the policy level to the individual level. The organizational culture of developing safety and a fall free environment needs to come before any changes occur in the environmental or individual level. *Stepping Up to Prevent Falls* is a fall prevention program that is easy to incorporate into the workflow of post-acute rehabilitation while integrating evidence-based strategies. The goal of *Stepping Up to Prevent Falls* is to decrease falls in post-acute rehabilitation through an interprofessional, multimodal, and evidenced-based program.

## Appendix G: Fact Sheet

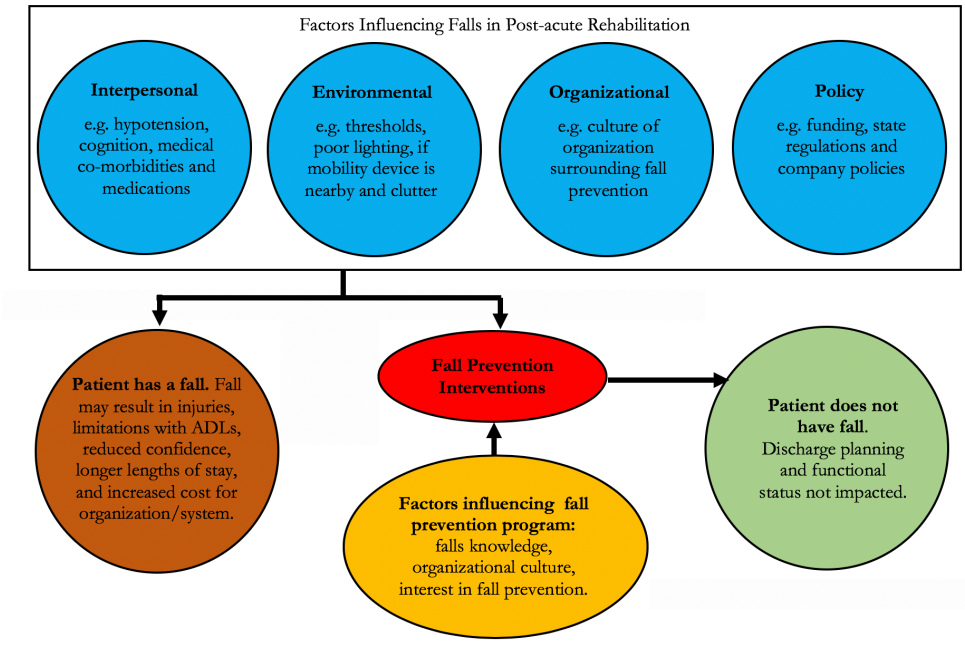
BOSTON UNIVERSITY

# Stepping Up to Prevent Falls: A Fall Prevention Program for Post-Acute Rehabilitation

*Rebecca Kahn OTR/L*

### The Problem:

- Falls are a common occurrence in the older population and can occur in a variety of settings from the community to acute care to post-acute rehabilitation.
- Falls can cause physical injuries which can impact on an individual's mobility and function abilities, and may result in the need for increased assistance in the home (Delbaere et al., 2013). Falls can also have a psychological impact, as individuals may develop a fear of falling (Delbaere, et al., 2013).
- There are many evidence-based fall prevention programs in the community and the acute care level but there is a gap in the post-acute rehabilitation level.
- Individuals who experience a fall in post-acute rehabilitation have poorer functional outcomes and may not be able to return to their previous level of function (Rochart, et. al, 2013).
- A number of factors influence falls occurring in a post-acute rehabilitation setting. These can be grouped as interpersonal, environmental, organizational and policy.
- It is critical that in post-acute rehabilitation there is evidence-based fall prevention strategies targeting the multiple factors influencing falls to promote patient functioning and ultimately, to enable patients' return to their previous living environment.



**The Proposed Solution:**

*Stepping Up to Prevent Falls: A Fall Prevention Program for Post-Acute Rehabilitation* is an evidence-based fall prevention program that is multimodal and interdisciplinary. The program involves:

- Evidence-based environmental fall prevention strategies which are implemented following completion of a fall risk assessment on individual patients.
- Program education for clinical staff will develop their abilities to:
    1. define a fall
    2. perform fall risk assessment
    3. identify risk factors for falls
    4. identify strategies and interventions to prevent falls and
    5. understand the role of each member of the team
- Posters targeting non-clinical staff promoting their role in preventing patient falls.
- Patient handouts and education sessions covering risk factors and implications of falls, and fall prevention strategies; provided to patients with high risk of falls.
- Fall prevention discussion group for patients to gain feedback and develop increased safety awareness. This group is not mandatory and will not impact their level of care.

*Stepping Up to Prevent Falls* is a program designed for post-acute rehabilitation with the purpose of reducing falls in order to facilitate better functional outcomes. The other aim of this program is to allow clinical staff members to collaborate together to reduce falls while enhancing the safety of patients.

**Impact on Occupational Therapy:**

- Occupational therapists (OT) can provide insight on environmental modifications to prevent falls. This can include looking at floor thresholds, the lighting and the set-up of the bathroom and make recommendations to increase safety.
- During patient education the OT can discuss fear of falling and what activities they avoid due to this and how to make these activities safer (American Occupational Therapy Association, 2017)
- OTs can address both the intrinsic (weakness, decreased balance, decreased cognition) and extrinsic factors (clutter, lighting and thresholds) of falling.
- Through the prevention of falls in the post-acute rehabilitation setting, OTs can maximize patients' functional abilities and enable them to participate in meaningful and purposeful occupations.

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## CURRICULUM VITAE