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Fall prevention algorithm and programs for Wyoming Medical Center

Janna Rone
University of North Dakota

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This Scholarly Project Paper, submitted by Janna Rone, OTR/L in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Jan Stube
Faculty Advisor

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Degree Master's of Occupational Therapy

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### TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................................................................................ iv

ABSTRACT .................................................................................................................................... v

CHAPTER

I. INTRODUCTION ..................................................................................................................... 1

II. REVIEW OF LITERATURE ................................................................................................. 8
   A. INTRODUCTION ............................................................................................................... 8
   B. PATIENT RISK FACTORS ............................................................................................... 9
   C. CONSEQUENCES OF A FALL ......................................................................................... 18
   D. SUMMARY ..................................................................................................................... 23

III. METHODOLOGY ................................................................................................................ 25

IV. PRODUCT ........................................................................................................................... 28
   A. INTRODUCTION ............................................................................................................... 28
   B. THEORETICAL DESIGN ................................................................................................. 31
   C. PRODUCT DESCRIPTION ............................................................................................... 35
   D. PRODUCT IMPLEMENTATION ....................................................................................... 36

V. SUMMARY .......................................................................................................................... 38

APPENDICES .......................................................................................................................... 41

REFERENCES ........................................................................................................................... 55
ACKNOWLEDGEMENTS

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ABSTRACT

Falls are the leading cause of fatal and non-fatal injuries for people over the age of 65 (Center of Disease Control and Prevention, 2008). Literature indicates that 30-40% of falls are preventable (Sjosten, Vaapia, & Kivela, 2008). The population for this scholarly project is people over the age of 65 who are admitted into Wyoming Medical Center (WMC). WMC is a 180 bed acute care hospital that services the medical needs of the residents of Casper, Wyoming and the surrounding area. Like many acute care hospitals around the country, WMC has a problem with the number of fall occurrences. This fall prevention algorithm and program is going to address this issue. The goal of this scholarly project is to have a significant reduction in the number of falls that occur.

A comprehensive literature review was conducted to explore fall prevention risk factors for the older adult and how to implement effective strategies to reduce the number of falls occurring. Topics researched included:
1. Patient risk factors for the possibility of a fall

2. Consequences of a fall

3. Fall prevention strategies

Also, the literature review focused on the best practice strategies to reduce falls for the older adult. The literature available on fall prevention for the older adult is enormous and the information was gleaned to best meet the needs of the patients of WMC. Based upon the literature review, the fall prevention algorithm was developed as a tool to assist health care providers at WMC to determine each individual patient’s risk factors and the best fall prevention strategies. First, the fall prevention algorithm provides the health care providers a user friendly tool to guide them through the process. Second, the health care providers will attend an education session on how the process is to be completed to best serve the needs of their patients. Lastly, the tool includes easy to access screening forms to administer a successful fall prevention program.

This author’s expectation is with the implementation of the fall prevention algorithm and program that WMC will have a substantial impact vi.
in the reduction of falls for the older population that is admitted into the hospital. This program can be assessed quarterly with the quarterly fall occurrence reports to determine the effectiveness.
CHAPTER I
INTRODUCTION

Occupational therapy is a key discipline working in acute care hospitals with the focus on improving the patient’s physical and mental functioning. The patient in an acute care hospital varies from the age of infant to older adult. However, the primary users of acute care hospitals are the population over the age of 65 and the trend is to manage the patient’s acute medical condition and then discharge the patient to a lesser level of care. With this trend in health care, the older adult is placed at a higher risk for falls while being a patient in the hospital. Occupational therapy has the knowledge and skills to address the risk factors associated with falls and develop and implement a successful fall prevention program.

According to the 2006 Center of Disease Control and Prevention, 15.9% of people in the United States over the age of 65 sustained a fall in a 3 month time frame. Of these reported falls, 31.3% had an injury (Center of Disease Control and Prevention, 2008). Falls are the leading cause of fatal and non-fatal injuries for people over the age of 65 (Centers of Disease Control and Prevention, 2008). In 2005, 15,802 people over the age of 65
died related to injuries sustained from a fall (Centers of Disease Control and Prevention, 2008). These statistics validate the need for ongoing research to identify effective and proven strategies to decrease the number of falls in the older population in the United States.

Falls contribute to major economic and social problems (Clemson et al., 2004). The estimated cost of falls in the elderly in the United States is $19 billion per year (Centers of Disease Control and Prevention, 2008). Beside the financial burden this puts on taxpayers and the patient, the more significant barriers for a person who sustains a fall include a decrease in the person’s quality of life, restriction of the person’s level of activity, social isolation, and depression (Heesch, Byles, & Brown, 2008).

It is estimated that between 30-40% of falls are preventable (Sjosten, Vaapio, & Kivela, 2008). Occupational therapists have the background and expertise to be a key discipline in fall prevention. If the older adult is looked at holistically, specific fall prevention techniques and strategies can be employed.

The population for this scholarly project will be narrowed down to the people who are 65 years of age or older who are admitted to Wyoming Medical Center (WMC). WMC is the state of Wyoming’s largest and most
comprehensive hospital that services the Casper, Wyoming and surrounding areas. All hospitals around the country have to adhere to The Joint Commission’s 2009 National Patient Safety Goals. The ninth goal states “reduce the risk of patient harm resulting from falls” (Tzeng & Yin, 2008). A federal standard on the occurrence of falls in a hospital is important; when a person is admitted into the hospital, they should feel safe and free from the fear of falling. However, there is still an alarming number of falls occurring in the hospital setting. This scholarly project provides an effective strategy for WMC for a fall prevention program with the use of an algorithm. This also could be revised for other acute care hospitals.

A fall is defined as “when a person unintentionally comes to rest on the ground or another lower level” (Centers of Disease Control and Prevention, 2008). A fall related to a consequence of a sudden onset of paralysis, epileptic seizure, excess alcohol intake, or an overwhelming external force is not considered a fall (Hendriks, et al., 2008). A fall could or could not lead to injury sustained during the fall. However, the patient that sustains a fall without injury may be setting themselves up for a future fall.
due to the fear of falling, unwanted lifestyle changes, and/or decreased activity.

There are a large number of research projects and studies that focus on fall prevention. However, it is still an epidemic problem that the older population and health care workers are trying to tackle. The number of falls occurring is a public health concern and the involvement of The Joint Commission is proof that the United States government is attempting to tackle this issue, also.

A comprehensive literature review was conducted to explore and identify effective strategies for fall prevention for the elderly in a hospital setting. The strategies are based on research and designed to provide the staff at WMC a tool to decrease the risk of falling for the older population.

The theory chosen to help guide the implementation of the fall prevention algorithm and program is the Social Learning Theory (Bandura, 1977). This theory states that much of learning occurs by observation, by watching other people and determining what happens to them (Bastable, 2006). With the implementation of the fall prevention algorithm, health care providers observe their patient’s behaviors and determine how to react.
The success of this scholarly project will be determined by the carry through of the health care providers. The Social Learning Theory provides the OT department a sound model to train the health care providers in the implementation of the fall prevention algorithm. The health care providers at WMC strive to achieve the highest level of care for their patients along with doing no harm to their patients. This will serve as the motivation for a successful fall prevention program at WMC. The Social Learning Theory encourages hands on and real life demonstration and training; the focus of the OT department is to complete the training in the environment that the health care provider will actually be working with their patients.

The fall prevention algorithm was developed by this occupational therapist who works at Wyoming Medical Center. The algorithm uses a multifaceted approach that focuses on the risk factors of a fall for the older adult. The six identified and researched fall risk factors include: mobility impairments, balance disturbances, previous history of falls, acute medical conditions, taking multiple medications, and environmental hazards. The fall prevention program identifies specific fall prevention strategies for each individual patient from their risk factors.
The fall prevention algorithm is a necessary tool for health care providers at WMC to use to have a significant impact on the reduction of falls for the older adult. It addresses the person holistically and focuses on an individualized fall prevention program. Occupational therapy has an array of knowledge and skills to be a leader in this program. The occupational therapy department will provide leadership for this program by being a role model, mentor, and advocate for the reduction of falls at WMC.

The information leading to the development of the WMC program entitled “Fall Prevention Algorithm and Programs for Wyoming Medical Center” are presented here. The chapters of this scholarly project are presented in the following order:

- Chapter II – A review of literature on fall prevention strategies and strategies.
- Chapter III – The methodology used to design the algorithm and program for fall prevention strategies for WMC.
- Chapter IV – The final fall prevention product and how it will be implemented at WMC.
➤ Chapter V – A comprehensive summary of the scholarly project of fall prevention strategies

➤ Appendices

➤ References
CHAPTER II

LITERATURE REVIEW

Introduction

Accidental falls are the most common patient safety incident in hospitals in the United States (Oliver, 2007). Most people have the perception that when they or their older loved ones are admitted into the hospital, the person has a reduced risk for falling; unfortunately, this is a very inaccurate perception. According to research, one third of the population over the age of 65 fall annually (Low et al., 2008). Statistics indicate that approximately 60% of people admitted into the hospital are over the age of 65 and this figure is rising as our population gets older (Oliver, 2007). Hospitals are making fall prevention a priority in the care that they provide their patients.

Occupational therapy is a discipline that looks at the person not only from the medical aspect as in the acute care hospital setting but looks at the person holistically. Falls can have a significant impact on the person’s self care, work, and leisure tasks and developing an effective fall prevention
program with the occupational therapy perspective will benefit the older population.

A literature review was conducted to identify the best practice strategies for a fall prevention program in a hospital setting. Current literature describes multiple methods of fall prevention strategies; however, there is not one specific method that has definite recommendations.

The following information was gleaned from the current research to be included in this literature review:

1. Patient risk factors for the possibility of a fall
2. Consequences of a fall
3. Fall prevention strategies

Patient Risk Factors for Fall Occurrence

The current literature is very consistent with a list of common risk factors associated with falling for the older adult. Fall risk profiles can provide necessary information for the patient to prevent falls (Salameh, Cassuto, & Oliver, 2008). The determination of risk factors that lead to an increase in the incidence of falls is mandatory for a successful fall prevention program. Current literature presented here indicates that
mobility impairments, balance disturbances, previous history of falls, acute medical conditions, multiple medications, and environmental hazards are the top 6 risk factors for falling among people that are over the age of 65. Each of these areas will be presented and discussed in the following section.

**Mobility Impairments**

Mobility is critical for the older adult to function while performing their activities of daily living (ADL) skills. The basis of movement and mobility is the organization of the neuromuscular system in relationship to the skeleton (Bonder & Wagner, 2001). If anything is impaired in the human system then mobility impairments can be observed which in turn can increase the risk of falling.

There are many documented neurological impairments that can affect the balance/mobility of a person. Examples of diseases or injury that can affect the neurological system are cerebral vascular accident (CVA), Parkinson’s, head injury, and spinal cord injury. The above diagnoses can place a person at a higher risk of falls and need to be documented and addressed by the care provider (Salameh et al., 2008).
Orthopedic conditions such as an acquired fracture, osteoporosis, articular bone diseases, and degenerative joint diseases can place a person at risk for falls. An older adult that is compromised by orthopedic conditions will have their mobility negatively affected (Fortinsky et al., 2008).

Visual disturbances can alter the patient’s response to the environment and in turn decrease their confidence with mobility. Decreased confidence in mobility combined with being in an unfamiliar environment, as the hospital is, need to be acknowledged as risk factors for falls. Visual impairments can have negative consequences for an older adult (Bonder & Wagner, 2001).

Another important factor to consider is that the person entering the hospital may have an exacerbation of their impaired mobility symptoms or have a new diagnosis that affects their mobility (Tzeng & Yin, 2008). An example of this would be a person being admitted into the hospital for a cardiac condition and placed on bed rest for a prolonged period of time. When that person is able to get up, then the caregiver needs to be aware their mobility is impaired. The patient and their family member may not recognize this as an issue since the person may not have had any mobility
impairments prior to the hospitalization. This scenario can then place the person at risk for falling.

*Balance Disturbances*

In the elderly population, poor balance function may result in accidental falls and injuries (Wong & Lan, 2008). Balance is a complex interaction of mechanical, sensory, and motor processing strategies to maintain standing (Wong & Lan, 2008). If one of these strategies is out of sync then the person can potentially lose their balance and increase their risk of falling.

Balance disturbances are an area that occupational therapy can address in the acute care setting. Completing a simple test or screen such as the *Get Up and Go* or the *Timed Up and Go* could be utilized to identify balance risk factors (Bonder & Wagner, 2001). A few examples of when balance may be disturbed are: a patient needs static balance to complete simple tasks such as transferring out of bed, standing at the sink to brush their teeth, or being able to stand to pull their pants up.

*Previous History of Falls*

According to Sjosten, Vaapiom and Kivela (2008), if a person has a history of falling then the occurrence of having another fall is increased.
The increased incidence of falling again will affect the person’s level of activity and potentially lead to a future fall.

For older adults who have experienced a fall, there are many negative associations and perceptions stemming from reactions from other people regarding their fall. Patients may not always report the incident of falling, since it may have negative consequences: restriction of activity, potential institutionalization, etc. (Laybourne, Biggs, & Martin, 2008).

Thirty-four percent of falls can be prevented according to a study by Sjosten, Vaspio, & Kivela (2008). Therefore, acknowledging the person’s past fall history is an important factor in preventing future falls. A previous fall increases the risk of subsequent falling and early detection can potentially save both healthcare dollars and personal independence (Ruchinskàs, 2003). With the onset of Medicare not covering the medical expenses incurred for a patient that had a fall in the hospital, hospitals are now more than ever being more diligent in trying to reduce the amount of falls (Pear, 2007).
Acute Medical Conditions

People are admitted into the hospital primarily for an acute or exacerbating injury or illness. Any chronic or acute medical problem can interfere with a person’s mobility (Bonder & Wagner, 2001).

Cardiac conditions such as a change or fluctuation with blood pressure or heart rate are common symptoms seen in the hospital among the older adult. Syncope, postural hypertension, and orthostatic hypertension often lead to a hospital stay. Depending on the incident, a person may or may not have had a fall with the event. These are common diagnoses seen in the hospital and healthcare providers cannot assume the patient is safe ambulating by themselves. Bonder and Wagner discuss that with advancing age, a person’s heart rate and blood pressure are affected (2001).

Acute delirium in the face of illness is very common and under-recognized in the older adult which leads to being poorly treated (Young & Inouye, 2007). This needs to be addressed and also incorporated into the treatment plan to properly care for the older adult. The patient being admitted into the hospital may not recognize their limitations and place themselves at risk for falling (Oliver, 2007).
Multiple Medications

The general consensus with the literature is that medications increase the risk of falls in the older adult (Thapa et al., 1995). The expertise from nursing, pharmacy, and physicians is imperative to identify which medications that an older person is taking can increase the risk of falls. Occupational therapists are not trained in pharmacology; however, it is their responsibility to look at a person in their entirety including their medications to determine potential risks.

Older adults admitted into the hospital are often on multiple medications that may have negative interactions (Oliver, 2007). Common medications like blood pressure medications can affect a person's balance and mobility (Thapa, et al., 1995).

Environmental Hazards

The environment, such as a hospital room, can lead to an increase in the occurrence of falls. Literature indicates the two most common locations for a fall with the elderly population are in either the bedroom or the bathroom (Tideiksaar, 1997). Obviously, the patient's space in an acute care hospital consists of the bed or bathroom. Older adults in the hospital need to be educated on the area that they occupy so they can safely
navigate in their small hospital room. Also, the chair type and height along with the bed heights need to be considered to allow the patient to safely get in and out of without an increased risk of falling (Oliver, 2007).

Clutter can impede a person's mobility and increase the risk of falling (Oliver, 2007). A hospital room having new and foreign equipment to a patient can lead to increasing the trip hazard. Examples of these objects are IV poles, oxygen tubing, chest tubes, catheters, wheelchairs, walkers, bedside tables, and having a curtain separating the room. Also, the clutter could be that of having to share such a small space with another patient in the hospital. A patient needs to be educated on each piece of equipment to not only prevent a fall from occurring but potential harm from the equipment.

The environment can also induce the onset of confusion in the older adult; the person could become restless and then increase their risk of falls (Oliver, 2007). A hospital unfortunately comes with many noises from equipment and caregivers. The sleep cycle is often interrupted due to medical procedures and the older adult could become disoriented. It is important to educate and frequently remind the patient to ask for help.
The use of the call light needs to be encouraged to orient the patient to his environment. This may be difficult since the person may have a very independent personality and not want to burden the caregiver. The patient needs to be educated on the benefits of having that person there to manage their equipment and not view the call light as a form of punishment.

It is important to have a mechanism to categorize the risk factors (Tzeng & Yin, 2008). This allows the health care provider to apply the necessary strategies to prevent a fall. Risk factors can be categorized as either intrinsic or extrinsic (Tzeng & Yin, 2008). The risk factors could be intrinsic which relates to a disease process (both acute and chronic) or medications. The medical professionals need to determine if modifications can be provided to decrease the intrinsic risk. An example would be altering a person’s blood pressure to manage their hypotension, therefore, decreasing the risk of syncope with a fall. The other category is if the risk factor is extrinsic. Extrinsic risk factors are associated with the environment. An example would be if the patient is not getting any sleep at night due to the noise factor in the hospital and becomes disoriented and falls on the way to the bathroom.
Consequences of a Fall

After the occurrence of a fall for an older adult, the consequences will affect the person’s quality of life. The injury could be as minor as a bruise or as severe as a broken hip or a head injury (Fortinsky et al., 2008). The consequences of a fall include injury, fear of falling, decreased activity, weakness, loss of independence, disability, and the community losing a productive citizen (Guitierrez & Smith, 2008). Also, research adds that the psychological consequences of decreased self esteem, isolation, and loneliness can be an issue (Heesch, Byles, and Brown, 2008).

Treatment for a fall may require significant healthcare expenditure secondary to increased hospital days and greater need for future services (Ruchinskas, 2003). In hospital settings, approximately 30-40% of falls result in physical injury with fractures occurring in 1-3% of falls (Oliver, 2007). The incident of a fall in the safe haven of a hospital leads to potential anger and depression in the patient and their loved ones. Hospitals need to ensure the safety of their elderly clients.

As research indicates, the consequences are significant to an older person’s quality of life and may affect their recovery. With advanced age, a person’s recovery may be longer and they may require institutionalization.
They may have to make significant life changes that could affect their overall health and quality of life.

Fall Prevention Strategies

A multifaceted strategy can significantly reduce falls in the older adult (Hill, Moore, Dorevitch, & Day, 2008). The strategy also needs a critical thinking component and must be evidence-based (Guitierrez & Smith, 2008). The interventions that the occupational therapist (along with all health care professionals working in the acute care setting) should be thorough and easy to implement. The trend in acute care is to stabilize the patient medically and then make the appropriate referral to a lesser level of care. The patient and the family should feel safe and not have to fear the risk of added injury while at the hospital due to a fall.

A more user friendly environment to address the needs of the older adult can be implemented. The health care provider needs to be aware of how the equipment and layout of the hospital room is left when they are finished with the patient. The patient's environment is important to how the patient is able to function or complete their everyday tasks (Hendricks et al., 2008).
Environmental modifications in the patient's hospital room need to be performed on admission and constantly occur throughout the patient's stay in the hospital. Attention needs to be brought to all health care professionals who interact in the patient's hospital room to make sure when they leave the room they are not putting barriers in the patients pathway. An example of this is if the physician makes rounds on the patient and moves their bedside table away from the patient and does not return it to the proper place after leaving the room and 5 minutes afterwards the patient wants a drink of water and attempts to reach for the water. When they cannot access the water they attempt to get out of bed and trip over their catheter bag and fall.

The Joint Commission recommends that hospitals have their hospital beds positioned in a manner that enables the patient to get easily in and out of (Tzeng & Yin, 2008). The exact position is so that the patient can have their knees bent at approximately ninety degrees and their feet will touch the floor. Unfortunately, most hospital beds are 8-12 inches higher than the patient's bed at home which makes it more difficult to get out of the bed (Tzeng & Yin, 2008). Health care providers need to be
conscientious about the bed height and make sure the bed is raised or lowered to accommodate the patient's transfer in or out of bed.

When transferring a patient from various surfaces in their hospital room, caution needs to be taken in properly positioning a patient for the movement. An occupational therapist has the skills and knowledge to assess the best method to mobilize a patient. The therapist can formally assess the patient's mobility. Research suggests the following tests or screens for balance: one leg standing, tandem balance, Romberg, Berg Balance, Functional Reach Test, and Timed Up and Go (Wong & Lan, 2008). These are all simple, quick assessments or screens that can be completed by the occupational therapist in the patient's room.

An older person's general strength needs to be assessed by an occupational therapist. It is fact that hospital bed rest can negatively affect a person's strength (Gutierrez & Smith, 2008). Exercise programs aimed at improving lower extremity and trunk strength along with balance exercises can have positive effects if the patient continues the program long term (Bonder & Wagner, 2001). Simple exercise programs that target the key areas can be provided to the patient by an occupational therapist in the acute care hospital along with education of the importance of exercise.
A medication assessment completed by a pharmacist should be implemented on all patients to determine any medication that may affect the person’s balance. Medications increase the fall risk in older adults (Hanlon, 1996).

A fall history assessment needs to be completed for all older adults entering the hospital by a health care provider. Most research indicates to question the older adult about their fall history in the last 3-6 months (Bonder & Wagner, 2001). A family member such as a spouse or child needs to be questioned to obtain accurate information. The assessment needs to also include the number of “near” falls in which the patient had an episode that they lost their balance and were about to fall, but their fall is prevented due to an environmental object that averted the fall (Bonder & Wagner, 2001).

The primary piece of fall prevention strategy is education provided by all health care providers working with the older adult. Education needs to be provided to the patient, the patient’s family, and all health care providers interacting with that patient. For the program to be successful a multifactorial and multidisciplinary approach needs to be utilized (Clemson et al., 2004). On all these strategies, education needs to be addressed and
reinforced by all health care professional. Education on the patient’s disease, the medical equipment being used, and the environment need to be completed at regular intervals.

Research also indicates a person is able to voluntary modify their fall to decrease the amount of injury that may occur from the fall (Van Swigchem, Groen, Weerdesteyn, & Duyseons, 2008). The most effective fall technique is to educate the person to relax and roll during their fall (Van Swigchem, et al., 2008). This technique reduces the impact on the hip by 12-27% which can prevent the occurrence of a hip fracture (Van Swigchem et al., 2008).

Summary

Fall prevention is a hot topic in hospital settings and needs to continue to be researched to implement the best practice strategies. Research on fall prevention has been very broad and an occupational therapy perspective is necessary for a successful fall prevention program. OT focuses on assessing all areas of occupation and the negative consequences of a fall, including how it will affect an older adult’s function. This scholarly project focused on fall prevention in an acute hospital setting.
Identifying an older adult's risks for a fall on admission into the hospital can eliminate a potential fall during their stay. The six key risk factors for falls include mobility impairments, balance disturbances, previous history of falls, acute medical condition, multiple medications, and environmental hazards. These have been researched and are essential in preventing a future fall in the older adult. The development and implementation of a fall prevention algorithm and programming provides health care provider strategies to reduce the occurrence of a fall.

A need was determined by this author to develop a specific fall prevention algorithm for the Wyoming Medical Center as a vital piece in the reduction of falls. The current literature has provided support to this project. The methodology for the fall prevention algorithm and program for the older adult is presented in Chapter III.
CHAPTER III

METHODOLOGY

The process for developing the fall prevention algorithm and program for Wyoming Medical Center began with a comprehensive literature review. Resources that were used to access literature about the topic included the Harley French Library at the University of North Dakota, Wyoming Medical Center Medical Library, and colleagues at WMC. Topics researched included statistics related to older adults and the occurrence of falls, definition of a fall, consequences of a fall, fall prevention strategies, and trends in fall prevention in acute care hospitals.

The literature available on fall prevention for the older adult is enormous. The fall prevention issue is not only a national problem, but a world problem and spans across multiple disciplines. The research included was both world wide and multi-disciplinary. The common theme, unfortunately, is there is no specific strategy that has a 100% guarantee to prevent falls in the hospital setting. After gleaning through the vast amount of literature on falls, an algorithm was developed that would target the specific needs of WMC.
The fall prevention algorithm was designed to assist healthcare providers at WMC in providing the best practices to prevent falls from occurring. Information included is based on evidence-based practices and most current research. In addition to the algorithm, the project includes several other important components to ensure the success of the program. First is the fall prevention screening tools such as the general mobility screen, environmental hazard checklist, and the common diagnosis referral worksheet. Second is a fall prevention education session with objectives and a handout for the healthcare professional. Third is the outcome survey that will be completed quarterly to monitor and adapt the fall prevention program.

The theory chosen to direct the fall prevention algorithm was the Social Learning Theory (Bandura, 1977). The Social Learning Theory states that a learner has four self-regulation processes that include:

1. Attention to the role model

2. Retention of the new material

3. Reproduction of the observed behavior

4. Motivation to perform the behavior (Bandura, 1977)
These four self-regulating processes can have positive effects on health care providers implementing a successful fall prevention program.

This author hopes with the implementation of the fall prevention algorithm and programs at WMC that there will be a significant reduction in the number of falls that occur. The fall prevention algorithm will address the risk factors associated with the occurrence of falling for the older adult and how to implement appropriate and safe strategies that are specific to each patient.
CHAPTER IV

THE PRODUCT

Introduction

Patient safety is a vital component to the future of Wyoming Medical Center (WMC) and to be able to determine the best practices to implement a successful fall prevention program is key. The literature on the fall prevention topic is vast, and there was not one specific protocol to meet the needs of an acute care hospital like WMC. The fall prevention algorithm was developed by this author after an extensive literature review from an occupational therapy background, but is designed to be used by all health care providers. Current literature supports the need of a multi-disciplinary approach (Clemson et al., 2004). This author felt it necessary to develop the fall prevention algorithm and program with the focus on a holistic and multidisciplinary approach.

The actual product for this scholarly product is called the Fall Prevention Algorithm and Programs that was designed specifically for
Wyoming Medical Center. The screening tools coincide with the algorithm and can be found in appendices A-E. The fall prevention algorithm is the tool to identify the risk factors that the older adult has and also identifies the appropriate strategies to prevent a fall or to be able to make a referral to the necessary discipline to address the older adult's fall risk identifiers. For the older adult, the fall prevention algorithm is to be used on admission or as soon as the patient is medically stable by the nursing staff.

The product also contains an education session on the fall prevention program and how to implement the program correctly, refer to appendix F and G for the education information. The education session will be led by the OT department and provided to the nursing staff.

The last component of the product is the outcome survey which is located in appendix H. This outcome survey will be completed by the OT department every quarter for each specified nursing unit to determine the success of the program, barriers to the program, and to allow the nursing staff to ask questions or provide feedback.

The fall prevention algorithm and screening tools were developed by an occupational therapist. However, in an acute care hospital all health
care providers interacting with the patient need to be aware of the screening process and the fall prevention strategies.

Occupational therapy looks at the patient from all aspects of their mental and physical abilities in an acute care hospital. They also have the assessment skills to analyze the fall risks of a patient in an acute care hospital. The fall prevention algorithm is a screening tool to be administered by nurses with input from certified nursing assistants (CNA's). The tool is user friendly and designed for them to quickly refer to the appropriate discipline or implement the correct strategy. The OT perspective is valuable in the manner it takes away any guessing on the part of the nursing staff member.

The literature identified the following areas that are specific for a fall prevention program:

1. Patient risk factors for the possibility of a fall
2. Consequences of a fall
3. Fall prevention strategies

By addressing this issue, WMC can be better equipped to provide fall prevention approaches to all patients over the age of 65 and be in compliance with the National Patient Safety Goals (Tzeng & Yin, 2008).
Based on the information from the literature review, a fall prevention algorithm and program was developed that was specific to the needs of WMC. The fall prevention algorithm was specifically designed to analyze the risk factors of the older adult who is admitted to WMC and individualize the best fall prevention strategies for that specific patient. The goal of the fall prevention algorithm is to have a significant reduction in the number of falls that occur at WMC.

**Theoretical Design**

To ensure the success of the fall prevention algorithm, education sessions will be given to nurses and certified nursing assistants (CNA’s) since they are the first health care providers that interact with a patient. The success of this program is related to the compliance and cooperation of all disciplines working with the older adult at WMC.

The fall prevention education sessions were designed with the guidance of the Social Learning Theory. According to the Social Learning Theory, most of learning occurs through observation – watching other people and determining what will happen next (Bastable, 2006). According to the Bastable text, the Social Learning Theory stresses the importance of the following:
1. The learner has 4 self-regulating processes (Bandura, 1977)
   a. Attention – observe the role model
   b. Retention – storage and retrieval
   c. Reproduction – the learner copies the observed behavior
   d. Motivation – the learner is motivated to perform the certain behavior
2. Role modeling is a key component
3. Reinforcement for a desired behavior by either a reward or a punishment is important

The fall prevention algorithm is based on these self-regulating processes that Bandura outlined. An example of how the 4 processes will be utilized at WMC for this product is described below:

1. Attention: A nurse working on the surgical unit observes the OT administering the fall prevention algorithm to a new patient who is an 80 year old male admitted into the hospital the previous night due to a fall at home in which he sustained a pelvis fracture. The OT successfully completes the fall prevention paperwork and makes the appropriate fall prevention recommendations and referrals.
2. Retention: An hour later, the same nurse is now admitting a new patient who is a 69 year old female who has a history of dementia and presents to WMC with an acute small bowel obstruction. The nurse retrieves the information she observed from the OT as described in the attention phase.

3. Reproduction: The nurse now administers the fall prevention screening to the woman and makes the appropriate fall prevention recommendations and referrals.

4. Motivation: The nurse is motivated to administer the fall prevention screening to prevent her patient from falling and not wanting to cause any unnecessary harm to that patient. Also, the nurse administers this program to maintain a positive record of no falls occurring for her patients, or not wanting to be reprimanded by her supervisor due to a fall occurring to one of her patients.

Occupational therapists will be an integral role model in incorporating the fall prevention algorithm for the nursing staff. Initially, all nurses will be trained by the OT department on the fall prevention algorithm in an educational session. They will also be required to complete a mandatory yearly educational session conducted by the OT department
for any updates and also to maintain competency. The OT department will be available for questions that may arise throughout the year.

Also, as a role model, the occupational therapy department at WMC will also complete quarterly rounds on each nursing unit to assess how the program is working. The quarterly rounds checklist will be utilized for each nursing unit to determine the effectiveness of the program (refer to appendix H).

Bandura’s Social Learning Theory stresses that reinforcement is an essential part of the success of any education program. The primary reinforcement to the health care provider is causing no harm to their patient and decreasing the older adult’s risk of falling will, in turn, do no harm to that patient. Also, WMC tracks falls weekly house wide and analyzes each fall; therefore if the health care provider does not use the fall prevention algorithm and has a patient fall occur, it could potentially lead to disciplinary action. This would be an enormous motivator.

The fall prevention algorithm and program will be presented to the staff on the following nursing units of WMC: the transitional care unit, the progressive care unit (cardiac), the surgical unit, the medical unit, and the
neurological unit. The units chosen to participate in the fall prevention program have a large percentage of patients over the age of 65.

The occupational therapy department will be the primary educators along with being the role models for the fall prevention algorithm. In-services or education sessions will be provided to each department on how to implement the fall prevention algorithm and program. It is essential the therapy department and each unit's personnel work together in the process to promote consistency and compliance with each unit. The Social Learning Theory provided a guide to construct the education sessions. From the self-regulating processes, the motivation process will be the key to the success of the program.

Product Description

The fall prevention algorithm and program is to be utilized by the health care providers at Wyoming Medical Center to be in compliance with the National Patient Safety Goals and most importantly to ensure the safety of all patients over the age of 65 who enter WMC. It was designed by this author to be a quick and user-friendly tool for the health care provider to assess the patient and make the appropriate referrals. The fall prevention algorithm includes the appropriate strategies to prevent falls. Along with
the fall prevention algorithm, there are several screening and referral
checklists for the health care provider to utilize to gather the appropriate
information; these are all listed in the appendices A-E.

*Product Implementation*

The fall prevention algorithm and program will be introduced to each
individual nursing unit in an educational session. The administrative staff at
WMC supports a fall prevention program and will make it mandatory for all
direct health care providers from each nursing unit to attend the session.
The educational session will be mandatory for nursing staff to attend is to
promote compliance of the program and that the health care provider
could be disciplined by their supervisor if they do not attend. WMC has a
monthly mandatory education session that must be completed by each
nursing employee to remain employed at the hospital and the fall
prevention algorithm will be completed during the monthly education. The
occupational therapy department will provide yearly in-services to each
specified nursing unit on the fall prevention algorithm to ensure
compliance. See Appendix F for the outline of the fall prevention algorithm
education session that the therapy department will present.
Each individual nursing unit will determine who will administer the fall prevention algorithm to all new patients who are over the age of 65. The fall prevention algorithm will be included in the admission packet for each patient. The fall prevention algorithm will be completed within 2 hours of when the patient is cleared to be mobile or discontinued off bed rest.

After the fall prevention algorithm is completed, the nurse assigned to that patient will determine what fall prevention strategies need to be implemented and make the appropriate referral to the recommended disciplines. The fall history questionnaire, general mobility screen, environmental hazard checklist, and common diagnosis checklist are filled out by the nurse. The environmental hazard checklist is to be utilized by all health care providers interacting with the patient since the patient’s environment can easily be altered. The health care provider will make the appropriate modifications to the patient and their environment along with referring to the appropriate disciplines.
CHAPTER V

SUMMARY

The fall prevention algorithm and program was developed for Wyoming Medical Center to decrease the occurrence of falls for the older population. An occupational therapy perspective was utilized in developing the fall prevention algorithm. OT focuses on the patient’s function and how to maximize a patient’s function with physical and mental deficits and a fall can have a negative affect on the person’s abilities.

Unfortunately, hospitals have seen an increase in the number of falls and the federal government has taken this under review by the development of the National Patient Safety Goals. Goal #9 specifically states “reduce the risk of patient harm resulting from falls” (Tzeng & Yin, 2008) and a hospital needs to adhere to this goal. The fall prevention algorithm has the necessary strategies to allow WMC to achieve this goal since it looks at each patient individually.

The vast amount of literature and research that is available on falls and the older adult support the need for evidence-based and individualized fall prevention strategies. As discussed throughout this scholarly project,
the number of falls occurring in the older adult indicates an alarming problem in health care. Also, the United States population is getting older and the primary users of hospitals. WMC needs to be proactive in preventing falls in the older adult.

The literature supports six primary indicators that increase the risk of falls for the older adult. These indicators include mobility impairments, balance disturbances, multiple medications, acute medical conditions, environmental hazards, and previous fall history. The fall prevention algorithm analyzes each risk factor and then develops an individualized and specific strategy for a patient to promote safety and prevent a fall (not only in the hospital but also carried over into their home environment).

The success of this program is dependent on the carry through of the fall prevention algorithm to all patients admitted to WMC that are over the age of 65. Health care providers are extremely busy people and the fall prevention algorithm is a quick and efficient tool that can be administered to their patients. After it is completed, the appropriate strategies will be initiated.

The Social Learning Theory is the guide to successfully educate health care providers on the application process of the fall prevention algorithm.
(Bandura, 1977). The occupational therapists at Wyoming Medical Center are the gatekeepers that will make the appropriate referrals. The Social Learning Theory focuses on role modeling. In health care, most teaching is done through an expert/role model strategy. The fall prevention algorithm will be introduced by a the role model which is the OT and the health care provider such as a RN will have hands on exposure in how to successfully complete the program.

There are several limitations to this scholarly project. First, the research does not support a 100% accurate strategy to prevent falls for the older adult. Second, in acute care the patient can rapidly change, and the individual's fall risks factors may vary on a day to day or even hour to hour basis. Lastly, health care has a high turn-over in staff, which would lead to the need for frequent education sessions.

This program was developed to meet the unique needs of WMC. The fall prevention algorithm and program can have positive effects to all older adults being admitted to WMC. The falls that presently occur at WMC are tracked weekly along with being analyzed by an interdisciplinary team. With the addition of the fall prevention algorithm and program, the number of patient fall could be reduced significantly.
FALL PREVENTION ALGORITHM AND PROGRAM
FOR THE OLDER ADULT AT
WYOMING MEDICAL CENTER
FALL PREVENTION ALGORITHM
WYOMING MEDICAL CENTER
FALL PREVENTION ALGORITHM
FOR THE OLDER ADULT

Has the patient experienced a fall in the last 6 months?

Yes

Complete Fall History Questionnaire

After completed, make necessary recommendations and referrals.

Has the patient had an acute or chronic medical exacerbation in the last month?

No

Complete common diagnoses checklist.

After completed, make necessary recommendations and referrals

Medication Reconciliation performed by Pharmacy.

Perform general mobility assessment for the health care provider.

After completed, make necessary recommendations and referrals.

Environmental hazard checklist

After completed, make necessary recommendations and referrals.
FALL PREVENTION SCREENING TOOLS
APPENDIX B

Fall History Questionnaire

Complete the following questionnaire with the patient and a family member, if possible, to determine accuracy.

1. How many falls have you had in the last 6 months? ______
2. How many “near” falls have you had in the last 6 months? ______
3. Were the falls caused by: (Check all that apply)
   - Syncope/passed out ______
   - Stroke or paralysis ______
   - Trauma ______
   - Alcohol abuse ______
   - Seizure ______

   *If any of the above boxes are checked is the patient’s physician aware? ___

4. Was the fall caused by any of the following circumstances: (Check all that apply)
   - Were you near your bed or bathroom? ______
   - Was there an environmental barrier in your pathway (i.e. tripped over a throw rug or the chair you sat in was on wheels)? ______
   - Do you use a mobility device? ______
   - Have you noticed a decline in your strength or sudden onset of weakness? ______
   - Did you lose your balance? ______
   - Other Circumstances: ____________________________

5. Additional comments: ____________________________

   * If any of the above boxes were checked, refer to occupational therapy.
APPENDIX C

HEALTH CARE PROVIDER’S GENERAL MOBILITY SCREEN

*Patient needs to be alert before administering.

1. Yes  No  Was the patient bed bound or total care prior to the hospital admission? 

   STOP

   Use diligent equipment

2. Yes  No  Can the patient reposition themselves in bed?

3. Yes  No  Can the patient come to a seated position at the edge of bed with minimal assistance or less?

4. Yes  No  Can the patient set at the edge of bed without support?  
If No, refer to occupational therapy.

6. Yes  No  Can the patient stand up without assistance?  
If No, refer to occupational therapy.

7. Yes  No  Can the patient walk to the bathroom without loss of balance or requiring minimal assistance?  
If No, refer to occupational therapy.
APPENDIX D
ENVIRONMENTAL HAZARD CHECKLIST

PATIENT’S NAME: _______________________
DATE: __________

WHEN LEAVING THE PATIENT’S ROOM AFTER EVERY ENCOUNTER, ENSURE THE FOLLOWING:

- CALL LIGHT IN REACH
- PATIENT ABLE TO UTILIZE THE CALL LIGHT/ EDUCATE ON CALL LIGHT
- BED SIDE TABLE WITHIN REACH
- ESSENTIAL ITEMS WITHIN REACH
  - URINAL
  - WATER/DRINK
  - MAGAZINE/BOOK
  - TV CONTROL
  - TELEPHONE/CELL PHONE
  - LIGHT SWITCH
  - OTHER PERSONAL ITEMS _______________________
- SIDE RAILS UP IF ORDERED
- BED IN LOW POSITION
- REMOVE CLUTTER FROM PATHWAY
- MOBILITY AIDE WITHIN REACH
- ADEQUATE LIGHTING
- BED/CHAIR ALARM ACTIVATED IF ORDERED
APPENDIX E

COMMON DIAGNOSIS AND REFERRAL CHECKLIST

REFER TO THE OCCUPATIONAL THERAPY DEPARTMENT

FOR THE FOLLOWING CONDITIONS:

- Acute fractures
- Acute neurological conditions or diagnosis such as CVA, Parkinson’s, ALS, Guillian Barre, SCI
- Prolonged bed rest (5 or more days) for a medical condition
- Hospital admission was due to a fall

REFER TO PHYSICIAN OR PHARMACY FOR MEDICAL MANAGEMENT:

- Fluctuating blood pressure
- Syncope
- Acute infections
- Acute cognitive changes

CONSIDER 1:1 SUPERVISION FOR THE FOLLOWING COGNITIVE CONDITIONS:

- Delirium
- Hallucinations
- Inability to follow directions
- Constant movement
- Hospital admit related to drug or alcohol withdrawal
FALL PREVENTION EDUCATIONAL SESSION:

OUTLINE

HANDOUT FOR SESSION
APPENDIX F

FALL PREVENTION ALGORITHM EDUCATION SESSION OUTLINE

I. Recent statistics of falls occurring on the specific unit
II. Information on the National Patient Safety Goal #9
III. Consequences of a fall
IV. Responsibilities of the health care provider in fall prevention
V. How to administer the fall prevention algorithm
VI. Fall prevention strategies
VII. Complete mock patient case studies
VIII. Questions
IX. Summary
APPENDIX G

FALL PREVENTION EDUCATION HANDOUT

FACTS:

- 30-40% of falls are preventable (Sjosten et al., 2008)
- Almost 16% of people over the age of 65 sustain a fall every 3 months (CDC, 2008)
- 60% of the patients admitted to the hospital are over the age of 65 (Oliver, 2007)

NATIONAL PATIENT SAFETY GOAL #9

Reduce the risk of patient harm resulting from a fall

CONSEQUENCES OF A FALL

- Decrease the person’s quality of life
- Restricts the person’s activity level
- Prolonged hospital stays
- Social isolation
- Depression
- Increased cost for the hospital

TO DO LIST:

1. Administer the fall prevention algorithm and screening tools on all patients over 65 within 2 hours of admission or when cleared off bedrest.
2. Refer to weekly emails on the fall occurrence of your nursing unit.
4. Complete yearly education on the fall prevention program.
FALL PREVENTION OUTCOME SURVEY
APPENDIX H

FALL PREVENTION PROGRAM

QUARTERLY ROUND SURVEY

Date: _______________________
Nursing Unit: ___________________
Completed by: ___________________

1. Is the fall prevention algorithm being utilized for all older adults on your nursing unit?

2. Are there any difficulties completing the fall prevention algorithm or implementing the recommendations?

3. Number of falls in the last quarter? _________
4. Number of falls that occurred with the fall prevention algorithm being completed? _________
5. Number of falls that occurred without the fall prevention algorithm being completed? _________

6. Other comments: 

54
REFERENCES


