

Contents



Contents



Inside the Falls Toolkit you will find the following items:

This binder, containing the following tabs:

- **Background:** background on falls and falls prevention
- **Falls Team:** a guide to developing a multi-disciplinary falls team
- **Falls Policy:** a guide to developing a falls policy
- **Interventions:** interventions to reduce fall risk and injuries from falls
- **Measuring Success:** a guide to measuring the success of your interventions
- **Resources:** annotated references on key topics relating to falls
- **Video 1, 2, 3:** guides to the accompanying videos (the videos are found in the Media Box)

This binder also contains two trifold brochures and three flyers for patients, families and staff.

A Media Box, containing the following items:

One CD-ROM containing all of the information on the Web site

Two posters for patients, families and staff

Two designs of sample pins for identifying falls advocates or other key resources

One VHS tape containing three videos:

Video 1: Performing a Balance Assessment

Video 2: Hip Protectors in an Inpatient Setting

Video 3: Protecting Your Hips with Hip Protectors

Three Video CD-ROMs, each containing one of the three above videos

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Instructions



Instructions



Overview

The *Falls Toolkit* is designed for all facilities whether they already have a falls prevention program or would like to start one. There are several ways to use this toolkit. You can start on one of the scenarios listed below and turn to specific sections that you think will address your needs. You can also use the toolkit to develop information packets for patients and staff about falls and fall prevention.

I. Scenarios

Wherever you start, we recommend looking through the entire booklet — you may find some new information that would be useful for your current program.

A. Scenario 1: Starting a Falls Prevention Program

If you do not have a falls prevention program, the best place to start is the beginning and work your way through. The toolkit is designed to help you walk through the process from start to finish.

B. Scenario 2: Falls Prevention Program in Beginning Stages

If you have begun a falls prevention program, you should start in the Falls Team section (p. 21-24). For more information on possible interventions, the Interventions section (p. 59-69) would be a good place to go next. This section has interventions recommended by VA facilities like yours. For determining how successful your program is, turn to the Measuring Success section (p. 73-81).

C. Scenario 3: Comprehensive Falls Program in Place

Even if you have a successful program in place, you can still benefit from the Falls Toolkit. You may want to look at the Measuring Success section (p. 73-81) for more ways to measure the success of your program. For more information on possible interventions, the Interventions section (p. 59-69) should be your next stop. You may also appreciate the Resources section (p. 85-101), Excel™ worksheets and Technology Assessment Guide. Don't forget to look through the whole toolkit for more ideas on how to keep improving your program.

II. Suggested Information Packages

The toolkit can be a resource for educating staff, patients and their families about falls prevention. Because only two toolkits are provided to each facility, we suggest copying or printing out specific parts of the toolkit that would require wider dissemination in educating staff and patients. The following are examples of information packages that can be put together using information in the toolkit. These packages are for specific people within your facility.

A. Supervisors and Management

Supervisors and management need to understand why they should support falls prevention programs and interventions. You will need to justify the additional resources for the program.

1. Notebook:

Tab – Background (p. 15-18)

This provides information on the importance of falls prevention.

2. CD-ROM/Web site:

Other — Fall Rate Calculator

Use this to show the level of falls and major injuries at your facility or within a specific target unit. This can also be used after the intervention to show that the intervention reduced the rate of falls and/or major injuries.

Falls Collaborative Documents

These can be used to show that certain interventions have been successful in other facilities

B. Staff Nurses, RNs, LPNs, NAs

Nursing staff need to know which interventions are available to them. Additionally, they should be provided with information regarding the effectiveness of those interventions.

1. Notebook:

Tab – Interventions (p. 59-69)

This section provides interventions that they can use to prevent falls and fall-related injuries. It may help caregivers in developing care plans based on the needs of specific patients.

Tab – Resources (p. 85-101)

This section can provide a general overview of articles relating to fall and injury prevention. You can select some of these articles that you think specifically relate to the interventions that are being implemented.

2. *Video:*

Hip Protectors in an Inpatient Setting

This video is designed to educate staff about hip protectors, should your facility choose to implement them.

3. *CD-ROM/Web site:*

Educational Materials – Educational Resource Guide

Provides a list of educational materials and resources for patients and staff. Contact information on how to obtain the resources is also provided.

Educational Materials – Hip Fracture Education PowerPoint

Provides information on the consequences of hip fractures and some information on the prevention of hip fractures.

Educational Materials – Identifying Patients Using a Falling Star PowerPoint™

If you are implementing a falling star identification program, this PowerPoint™ presentation is a good template to use for educating staff.

Related Web sites

If your staff would like more information, you can direct them to some recommended Web sites.

C. Doctors, Physician Assistants and Advanced Practice Nurses

Doctors, physician assistants and advanced practice nurses are often the people implementing recommendations regarding the medications and treatment of patients.

1. *Notebook:*

Tab – Interventions (p. 59-69)

Tab – Resources (p. 85-101)

2. *Flyer:*

Performing the *Timed Up & Go Test*

Explains how to perform the *Timed Up & Go Test* on outpatients and to refer patients to a physical or occupational therapist if the patient is considered high-risk.

3. *CD-ROM/Web site:*

Educational Resource Guide

Related Web sites

D. Rehabilitation Therapists

Rehabilitation therapists (RTs) often make recommendations to help patients function more independently in their environment. The following information can be used to help RTs better assess and recommend interventions that best fit their patients' needs.

1. *Notebook:*

Tab – Interventions (p. 59-69)

Tab – Resources (p. 85-101)

2. *Video:*

Performing a Balance Assessment

This video explains how to perform and score a comprehensive balance assessment.

3. *CD-ROM/Web site:*

Educational Materials – Balance Assessment Handbook

This should be used in conjunction with the video *Performing a Balance Assessment*. It will help RTs follow along and give more detailed explanations of the tests shown in the video.

Web sites – Cornell University Aging Web site: www.cornellaging.org

Especially <http://www.cornellaging.org/gem>. This Web site provides information on design as well as a program that shows how patients can interact in their home using their assistive devices.

Other – Technology Assessment Guide

This guide shows the possible assistive devices that can be used to help patients be more independent.

E. Biotechnology Staff

Biotechnology staff are responsible for maintaining equipment which can affect patient falls. The information below can help biotechnology staff in maintaining equipment.

1. Notebook:

Tab – Interventions: Equipment Safety Checklist (p. 64)

The checklist provides a guide for biotechnology staff to assess equipment for its potential to cause falls. This list should be used on current equipment. New equipment should have more comprehensive tests done.

2. CD-ROM/Web site:

Other – Technology Assessment Guide

F. Facility Management Staff

Facility management is in the position of maintaining the patient's environment. The following information will be useful for them.

Notebook:

Tab – Interventions: Environmental Assessments (p. 60-65)

This section can help facility management implement an assessment program to ensure that hazards are clear from hallways and patient rooms.

G. Patients/Family

Patients and family should be involved in their care. The following information will be helpful for them.

1. Video:

Protecting Your Hips with Hip Protectors

This video can be used to “sell” the idea of hip protectors to patients and families.

2. Brochures:

“Hip Protectors”

Provides information about hip protectors to patients, including laundering instructions.

“Fall Prevention at Home”

Provides information on conducting a home assessment for some key areas. This can get patients started on evaluating their home.

3. *CD-ROM/Web site:*

Web sites

Many of the Web sites provide information for patients on falls and fall prevention. The AARP and CDC Web sites are good places to start.

Background



Background



Overview

Falls are one of the most common adverse patient events in the VHA and the consequences can be devastating. Many of our patients are elderly, which makes them more likely to suffer the most severe and life threatening consequences of falls.

I. Scope of the Problem

Falls are the leading cause of injury-related death for those 65 years of age or older, and can lead to severe consequences, including femur fractures, traumatic brain injury, fear of falling and premature death. Within VA nursing homes approximately 20,000 of the 44,000 patients are expected to fall during a year-long period.

In 1996, one VISN broke down their fall rates as follows:

- 20.4% of falls were located in the Nursing Home Care units
- 14.8% of falls were located in the Acute Care unit
- 60% of falls occurred in patients over the age of 65

Falls are often the result of an adverse drug event. Many falls go unreported.

II. Cost of Falls

In 1994, the total cost of fall injuries for those over the age of 65 was \$20.2 billion dollars and by 2020 the cost is expected to be at least \$32.4 billion (without adjusting for inflation).¹

One estimate of the average cost of a hip fracture in the VA is over \$33,000² for additional care, medication, rehabilitation, surgery, and so on.

As fall and fall injury prevention strategies become more readily available, health care providers are increasingly being held legally accountable.

III. Understanding Falls

There are many risk factors for falls, which can be grouped into two categories – intrinsic and extrinsic factors.³

Related to the Person’s Condition – this includes factors that address a person’s physiological condition (intrinsic).

Related to the Environment – this includes factors that address the physical environment (extrinsic).

Additionally, these risk factors can be either **anticipated** or **unanticipated**. The anticipated risk factors are the ones that we can address *before* a patient falls.³

Examples of some risk factors follow:^{3,4}

	Related to the Person’s Condition (Intrinsic)	Related to the Environment (Extrinsic)
Anticipated	<ul style="list-style-type: none"> -Recent history of falls (most significant risk factor) -Incontinence, etc. -Cognitive/psychological status -Mobility/balance/strength problems -Dizziness/vertigo -Postural hypotension -Age (over 65 years old) -Osteoporosis (can lead to pathological hip fractures and increases likelihood of fracture if a fall occurs) -Overall poor health status 	<ul style="list-style-type: none"> -Environment (wet floor, floor glare, cluttered room, poor lighting, inadequate handrail support, monochromatic color schemes, loose cords or wires) -Inappropriate or lack of footwear -Low toilet seat -Wheels on beds or chairs -Restraints (including side rails in the up position) -Prolonged length of stay -Unsafe equipment (unsteady IV poles) -Broken equipment -Beds left in high positions
Unanticipated	<ul style="list-style-type: none"> -Seizures -Cardiac arrhythmias -CVA or TIA -Syncope -“Drop attacks” 	<ul style="list-style-type: none"> -Individual reactions to medications

IV. Relationship to Restraint Reduction

JCAHO limits the use of restraints to “emergencies in which there is an imminent risk of a patient physically harming himself or herself, staff, or others, and non-physical interventions would not be effective.”⁵

Use of restraints must be closely monitored requiring higher staffing levels.

A patient at risk for falling is *not* sufficient to use restraints.

Restraint use is hazardous to patients:

- It *does not* reduce the rate of serious falls
- Results in muscle weakness & deconditioning, increasing the patient’s risk of falling and sustaining an injury from the fall
- May lead to more severe injuries than if the restraints had not been used at all

The interventions in this toolkit focus on *restraint-free* alternatives to fall and fall-related injury prevention.

V. Consequences of Falls

There are many consequences of falls:

A. Hip Fracture — a fracture of the femur near the greater trochanter

- One year mortality rate of 20-30%
- Increased risk of future falls

See Hip Fracture Education Presentation on CD-ROM

B. Traumatic Brain Injury

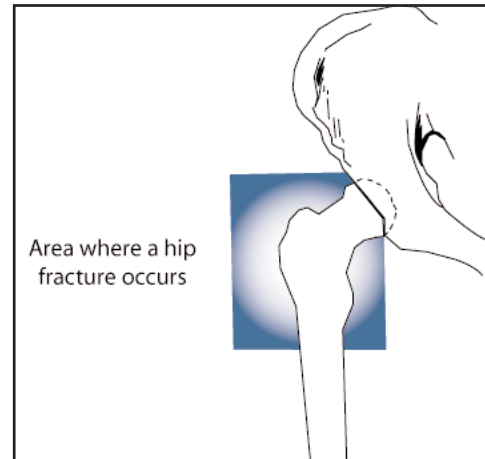
- 20% of serious head injuries lead to mental decline⁶
- Less than 45% of those over 75 years of age are discharged home following a traumatic brain injury⁷

C. Fear of Falling

- Self imposed restrictions on activity and mobility
- Reduced independence
- Can contribute to future falls and the risk of more serious injuries

D. Loss of Independence

- Related to decreased mobility and functional abilities
- Increased rates of institutionalization related to hip fractures and traumatic brain injuries



Additional consequences of falls include other types of fractures (e.g., vertebrae and forearm), prolonged hospitalization, loss of self-esteem and death.

¹ NCIP. *A Toolkit to Prevent Senior Falls*. Centers for Disease Control (CDC) Web site. Available at www.cdc.gov/ncipc/pub-res/toolkit.htm. [Accessed August 2003]

² Business case data from Patient Safety 202. 2003

³ Morse, HM. *Preventing Patient Falls*. Sage Publications 1997.

⁴ Noelker E. Fall training materials. Louis Stokes VA Medical Center. Brecksville, OH.

⁵ JCAHO. *Certification and Accreditation Manual for Hospitals (CAMH)* version 4. 2003

⁶ *Falls resulting in serious head injury may cause mental decline in elderly*. Doctors guide global edition.1999. Web site. Available at: <http://www.pslgroup.com/dg/e5e96.htm>. [Accessed April 4, 2004]

⁷ Centers for Disease Control and Prevention. *Public health and aging: nonfatal fall-related traumatic brain injury among older adults --- California, 1996 - 1999*. MMWR 2003;52(13):276-278.

Falls Team



Falls Team



Overview

Interdisciplinary falls teams are a key success factor in falls prevention programs. This section will cover the following information:

- I. Choosing the right people
- II. Responsibilities of the team members
- III. Options for facilities of various sizes
- IV. Functions of the Interdisciplinary Falls Team

I. Choosing the Right People

The Interdisciplinary Falls Team should have people with administrative and direct care functions. We recommend the following people be involved in the Interdisciplinary Falls Team:

A. Clinical Staff

- 1. Falls clinical nurse specialist (or similar position) if available or applicable*
- 2. Nurse managers (one each from Outpatient Care, Acute Care and Extended Care)*
- 3. Nursing assistants/LPNs (one from Acute Care and one from Extended Care; could involve two from each care line and have them rotate attending meetings)*
- 4. Pharmacist (one or two depending on work load and staffing levels)*
- 5. Occupational therapist or physical therapist*
- 6. Physician/nurse practitioner (may be full participant on the team or act as a resource for the team)*

B. Non-clinical Staff

- 1. Patient safety manager/quality management coordinator*
- 2. Facility management manager*
- 3. Supply procurement and distribution (SPD) manager*
- 4. Biotechnology manager (optional)*
- 5. Transportation manager (optional; one facility added this person due to a number of falls occurring while patients were being transported)*

II. Responsibilities of the Team Members

These should be clearly defined in the policy or charter.

A. Clinical Staff

1. Falls Clinical Nurse Specialist

Not all facilities have a falls clinical nurse specialist. Some facilities have a particular nurse manager, generally in the long-term or extended care wards, that has an interest in falls and fall-related injury prevention. This person will generally:

- a. Facilitate team meetings
- b. Ensure fall prevention measures are being used (this is a responsibility of the entire team)
- c. Elicit comments from staff regarding the program and other fall-related activities

2. Nurse Managers From Outpatient, Acute Care and Extended Care Lines

Nurse managers are an important part of the falls interdisciplinary team. Due to their management responsibilities, they can enforce the interventions taken by the interdisciplinary teams, and ensure that interventions become the standard of care for high fall-risk patients.

3. Nursing Assistants and LPNs from Acute Care and Extended Care Lines

Nursing assistants and LPNs are generally the most affected by the interventions implemented by the falls team. They can help educate their peers on the interventions. They can also act as falls prevention advocates and collect data for the aggregate reviews submitted to NCPS, etc.

4. Pharmacist

Pharmacists review medication of all high fall-risk patients when they are identified and following a fall. Pharmacists help to identify issues with medications and notify physicians that medications need to be adjusted. This is very important because many falls are the result of medication errors.

5. Occupational Therapist or Physical Therapist

Occupational and physical therapists provide balance and strength assessments for high fall-risk patients. They can also assess the ability of a patient to use specific interventions taking into account grip strength and other factors.

6. Physician/Nurse Practitioner

The physician looks at the medical history and stability of the high fall-risk patients when admitted and following a fall. He or she should identify aspects of the medical history that could contribute to falls.

B. Non-clinical Staff

1. Patient Safety Manager/Quality Management Coordinator

The patient safety manager can facilitate the team if there is no Falls Clinical Specialist. He or she can also act as a liaison between the team and the management of the facility. He or she can provide data to the team to help determine the impact of the interventions taken.

2. Facility Management Manager

The facility management manager can help to ensure that the environment of care is set up to reduce falls. They can train the janitorial staff to perform environmental assessments to remove clutter from rooms, ensure that spills are cleaned up promptly and other things. The facility management person can also identify fall hazards related to cleaning supplies, such as a particular cleaning agent causing the floor to be sticky. They may assess the environment in common rooms to ensure that furniture is safe for people who are at a high risk for falls.

3. SPD Manager

The SPD manager can help facilities purchase items that reduce the risk of falls and fall-related injuries. They can also ensure that the supply is adequate and ensure that the correct products are purchased.

4. Biotechnology Manager

The biotechnology manager can ensure that all devices used are in working order to prevent patients from falling. They can also look into devices that were involved in falls, such as wheelchairs or walkers.

5. Transportation Manager

One facility added their transportation manager after several falls had occurred on patient transportation vans. Although this may not be useful in your facility, it is a good idea to add people to the team from areas other than patient care if falls are occurring.

III. Options for Facilities of Various Sizes

Smaller facilities can integrate the falls team into their interdisciplinary treatment teams. The treatment teams for high fall-risk patients should include:

- A. Physician or nurse practitioner**
- B. Physical or occupational therapist**
- C. Pharmacist**
- D. Nurse manager for patient's unit**

The other suggested members can serve as resources for the treatment team.

IV. Functions of the Interdisciplinary Team

A. Responsibilities of the Falls Team

Falls teams:

- 1. Develop/review facility fall prevention protocols (see the Falls Policy, p. 27-56)*
- 2. Implement falls prevention strategies across the facility*
- 3. Act as a resource for interdisciplinary treatment teams treating high fall-risk patients*
- 4. Review falls on a case-by-case basis and make recommendations to treatment teams*
- 5. Collect and analyze data on falls to see if there are any common factors and determine if the interventions are working to reduce falls and fall-related injuries*

B. Logistics of the Falls Team

Falls teams operate differently depending on the facility; however, once the team is established they need to decide the following things:

- 1. When and how often they are going to meet (i.e., monthly, biweekly or weekly)*
- 2. Where they are going to meet (i.e., conference room or office)*
- 3. What their relationship is to the treatment teams (i.e., high fall-risk patients are referred to the falls team; or the interdisciplinary treatment teams ask for help with specific patients)*

Falls Policy



Falls Policy



Overview

The following is a suggested falls prevention policy. It is not required to be implemented. There are several areas that need to be covered in a falls prevention policy:

- I. Definition of a Fall
- II. Fall Risk Assessment for Inpatients
- III. Fall Risk Assessment for Outpatients
- IV. Environmental Rounds
- V. Responsibilities of Staff
- VI. Intervention Strategies
- VII. Post Fall Procedures/Management
- VIII. Example Fall Prevention and Management Program Core Policy

I. Definition of a Fall

A **fall** is defined as a sudden, uncontrolled, unintentional, downward displacement of the body to the ground or other object, excluding falls resulting from violent blows or other purposeful actions.

A **near fall** is a sudden loss of balance that does not result in a fall or other injury. This can include a person who slips, stumbles or trips but is able to regain control prior to falling.

An **un-witnessed fall** occurs when a patient is found on the floor and neither the patient nor anyone else knows how he or she got there.

II. Fall Risk Assessment for Inpatients

Patients should be assessed for their fall risk:

- On admission to the facility
- On any transfer from one unit to another within the facility
- Following any change of status
- Following a fall
- On a regular interval, such as monthly, biweekly or daily

Although there are many risk assessment tools available, NCPS recommends that you use either:

- A. **Morse Fall Risk Assessment** *or*
- B. **Hendrich Fall Risk Assessment**

A. Morse Fall Risk Assessment

This is one of the most widely used fall risk assessment scales available. It is a *reliable* and *valid* measure of fall risk.

Morse Fall Risk Assessment		
Risk Factor	Scale	Score
History of Falls	Yes	25
	No	0
Secondary Diagnosis	Yes	15
	No	0
Ambulatory Aid	Furniture	30
	Crutches / Cane / Walker	15
	None / Bed Rest / Wheel Chair / Nurse	0
IV / Heparin Lock	Yes	20
	No	0
Gait / Transferring	Impaired	20
	Weak	10
	Normal / Bed Rest / Immobile	0
Mental Status	Forgets Limitations	15
	Oriented to Own Ability	0

To obtain the Morse Fall Score add the score from each category.

Morse Fall Score*	
High Risk	45 and higher
Moderate Risk	25 - 44
Low Risk	0 - 24

* Based on most common scores used in VA

The major advantages to this assessment are:

1. *Research driven*
2. *Interventions are standardized by level of risk*

The major disadvantages:

Not designed for the long term care setting, consequently nearly all patients will be at high risk

Note: Janice Morse recommends calibrating this high-risk score based on the patient population and acceptable fall rate. For more information see Janice Morse's book: *Preventing Patient Falls*.

B. Hendrich Fall Risk Assessment

Some long-term and geriatric wards are using this scale.

Hendrich Fall Risk Assessment		
Risk Factor	Scale	Score
Recent History of Falls	Yes	7
	No	0
Altered Elimination (incontinence, nocturia, frequency)	Yes	3
	No	0
Confusion / Disorientation	Yes	3
	No	0
Depression	Yes	4
	No	0
Dizziness / Vertigo	Yes	3
	No	0
Poor Mobility / Generalized Weakness	Yes	2
	No	0
Poor Judgment (if not confused)	Yes	3
	No	0

The main advantages of this assessment are:

1. *Focuses interventions on specific areas of risk rather than general risk score.*
2. *Easy to determine if someone is high-risk because nearly every risk factor categorizes a patient as high-risk.*
3. *There are only two categories of patients: high-risk and low-risk.*

The main disadvantages of this assessment are:

1. *Not as researched as the Morse Fall Risk Assessment*
2. *Nearly every patient will be put into the high-risk category*

C. Comparing Morse and Hendrich Assessment

Some of the factors are the same between the Morse and Hendrich assessment.

Comparing the Morse & Hendrich Assessment			
Morse Fall Risk Assessment		Hendrich Fall Risk Assessment	
Risk Factor	Score	Risk Factor	Score
History of Falls	25	Recent History of Falls	7
Secondary Diagnosis	15	No Similar Risk Factor	
Ambulatory Aid	30 or 15	No Similar Risk Factor	
IV / Heparin Lock	20	No Similar Risk Factor	
Gait / Transferring	20 or 10	Poor Mobility / Generalized Weakness	3
Mental Status	15	Confusion / Disorientation or Poor Judgment	3
No Similar Risk Factor		Altered Elimination	3
No Similar Risk Factor		Dizziness / Vertigo	3

Both are good assessments depending on how you structure your program.

1. Use the Morse Fall Risk Assessment if interventions are based on level of risk
2. Use the Hendrich Fall Risk Assessment if the interventions are based on area of risk

Currently Janice Morse is working on interventions that will be tied to the areas of risks highlighted by her risk assessment scale.

Cautionary Notes

There are risks not captured by either risk assessment scale. For instance, although the Morse Fall Risk Assessment scale has a rating of 0 for patients who use wheel chairs, some facilities have found that these patients are at risk for falling.

Wheelchairs can tip over backwards or can slide out from under a patient while transferring. Although these events can be easily addressed with the use of wheel chair anti-tip devices and self-locking brakes, it is important to keep track of data that could highlight other potential environmental risks at your facility which can be dealt with easily.

III. Fall Risk Assessment for Outpatients

Outpatient fall risk assessments can be done on two levels. The primary care provider can do an initial screening, then refer patients that are at risk to either physical or occupational therapy to perform a more in-depth balance assessment.

Initial Screening for Fall Risk

1. *Send the patient a "Self Report" and review at the appointment*
 - a. If patient does not have a self report then go over it with them (be sure to annotate this in the notes section of the appointment)
 - b. If several medications and supplements are listed, have a pharmacist review the medications and supplements for any drug interactions or side effects which could increase the likelihood of falls.
2. *Perform the Timed Up & Go test¹*
 - a. Place a chair against the wall or another sturdy object. Set up a cone or other visible marker 8 feet away for the patient to walk around. Tell the patient to get up and walk as quickly as they can around the object and sit back down.
 - b. If the patient takes longer than 8.5 seconds they should be considered high risk and be referred to PT/OT for further evaluation.

Note: Allow the patient to practice one time.

IV. Environmental Rounds

The facility management, nursing and biotech staff should perform environmental rounds.

A. Facility management staff confirm:

1. *Hallways and patient areas are well lit*
2. *Hallways and patient areas are uncluttered and free of spills*
3. *Locked doors are kept locked when unattended*
4. *Handrails are secure and unobstructed*
5. *Tables and chairs are sturdy*

B. Biotech staff confirm:

1. *All assistive devices are working properly by inspecting them on a regular basis*

C. Nursing Staff confirm:

1. *Locked doors are kept locked when unattended*
2. *Patient rooms are set up in a way that minimizes the risk of falling (see High Fall-Risk Room Set-up in Intervention section)*

D. Everyone confirms:

1. *Unsafe situations are dealt with immediately either by dealing with the situation or notifying the appropriate staff and ensuring that they arrive and correct the situation.*

V. Responsibilities of Staff

In this section, the responsibilities of the following staff are delineated:

A. Medical Center Director

B. Associate Chief Nursing Service/Chief Nurse Executive

C. Nurse Managers

D. Admissions Nurses

E. Staff and Contract Nurses Including RNs, LPNs and NAs

F. Physicians, Physician Assistants and APNs

G. Pharmacists

H. Physical and Occupational Therapists

I. Audiologists and Optometrists

J. Biomedical Technologists

K. Interdisciplinary Falls Team

L. Facility Management Staff

M. Education Service

A. Medical Center Director

The **Medical Center Director** is responsible for ensuring that falls and fall-related injury prevention is:

1. *A high priority at the facility*

- 2. Promoted across the facility through direct care, administrative and logistical staff*
- 3. Adequately funded to provide a safe environment for patients and staff*

B. Associate Chief Nursing Service/Chief Nurse Executive:

The **Associate Chief Nursing Service/Chief Nurse Executive/Designee** is responsible for:

- 1. Establishing population-based fall risk levels/units/programs*
- 2. Deploying evidence-based standards of practice*
- 3. Overseeing the policy within the VAMC*

C. Nurse Managers

The **Nurse Managers** are responsible for:

- 1. Making fall and fall-related injury prevention a standard of care*
- 2. Enforcing the responsibilities of the staff nurses to comply with interventions*
- 3. Ensuring equipment on the unit is working properly and receiving scheduled maintenance. This is done in collaboration with facility equipment experts*
- 4. Ensuring that all nursing staff receive education about the falls prevention program at the facility and understand the importance of complying with the interventions*

D. Admissions Nurses

The **admissions nurses** are responsible for:

- 1. Completing the fall-risk assessment on admission*
- 2. Notifying the unit of any patients assessed as high-risk*
- 3. Following any procedure for high fall-risk admissions, such as a specific color arm band, ensuring the bed assigned is close to the nursing station, ensuring there is a high fall-risk magnet by bed, etc.*

E. Staff and Contract Nurses Including RNs, LPNs and NAs

Staff Nurses including **RNs, LPNs and NAs** are responsible for:

- 1. Ensuring compliance of fall and fall-related injury interventions*
- 2. Completing fall-risk assessments on transfers, following a change in*

status, following a fall and at a regular interval and ensuring procedures for high fall-risk patients are in use

- 3. Ensuring that rooms with high fall-risk patients are assessed and corrected if necessary*

F. Physicians, Physician Assistants and APNs

Physicians, physician assistants and APNs are responsible for:

- 1. Identifying and implementing medical interventions to reduce fall and fall-related injury risk*
- 2. Taking into consideration the recommendations of pharmacists regarding medications that increase the likelihood of falls*
- 3. Ensuring all patients are screened for risk factors for osteoporosis and tested if necessary*
- 4. Screening patients for fall-risk using the patient's self-report and the Timed Up & Go test (Outpatient Areas)*
- 5. Referring patients who are screened high-risk to a pharmacist to review the medication and to physical or occupational therapy to conduct a more thorough assessment of fall risk (Outpatient Areas)*

G. Pharmacists

Pharmacists are responsible for:

- 1. Reviewing medications and supplements to ensure that the risk of falls is reduced*
- 2. Notifying the physician and clearing medications with the physician if a drug interaction or medication level increases the likelihood of falls*
- 3. Asking outpatients to list their medications and supplements again and verify the medications and supplements with the list provided by the physician and against the patient record*

H. Physical and Occupational Therapists

Physical and occupational therapists are responsible for:

- 1. Conducting balance assessments for all high fall-risk patient referrals*
- 2. Developing an intervention program for patients to reduce their fall-risk*

I. Audiologists and Optometrists

Audiologists and **optometrists** are responsible for performing annual assessments on patient's vision and hearing to reduce the risk of falls.

J. Biomedical Technologists

Biomedical technologists are responsible for ensuring that:

Assistive equipment, such as wheelchairs, walkers and canes are checked regularly and equipped with devices to prevent falls

K. Interdisciplinary Falls Team

The **interdisciplinary falls team** is responsible for:

- 1. Collecting data to ensure that fall and fall-related injury prevention strategies are effective*
- 2. Conducting case-by-case reviews for all falls to ensure that medications are reviewed and prevention measures are recommended*
- 3. Providing assistance to interdisciplinary treatment teams when requested to recommend prevention strategies for a patient*
- 4. Participating in the Quarterly Falls Aggregate Review*

L. Facility Management Staff

The **facility management staff** are responsible for:

Ensuring a safe environment of care by conducting environmental assessments

M. Education Service

The **education service** is responsible for:

- 1. Developing an education program about falls for **all** staff*
- 2. Developing competencies for nursing staff about the falls prevention program*

VI. Intervention Strategies

Intervention strategies can be based on level of risk and/or area of risk. It is helpful to provide the available strategies in the policy. To get more information on the strategies see the section entitled Interventions.

Intervention Strategies									
Intervention	Level of Risk			Area of Risk					
	High	Med	Low	Frequent Falls	Altered Elimination	Muscle Weakness	Mobility Problems	Multiple Medications	Depression
Low beds	X	X	X	X	X	X	X	X	X
Non-slip grip footwear	X	X	X	X	X	X	X	X	X
Assign patient to bed that allows patient to exit toward stronger side	X	X	X	X	X	X	X	X	X
Lock movable transfer equipment prior to transfer	X	X	X	X	X	X	X	X	X
Individualize equipment to patient needs	X	X	X	X	X	X	X	X	X
High risk fall room setup	X	X		X	X	X	X	X	X
Non-skid floor mat	X	X		X	X	X	X	X	X
Medication review	X	X		X	X	X	X	X	X
Exercise program	X	X		X	X	X	X	X	X
Toileting worksheet	X	X			X				
Color armband / Falling Star etc	X			X	X	X	X	X	X
Perimeter mattress	X			X	X	X	X		
Hip protectors	X			X		X	X		
Bed/chair alarms	X			X		X	X		
Note: this list is not all-inclusive, nor is it required to be used. Facilities should use their best judgement in implementing recommendations.									

VII. Post Fall Procedures/Management

There are two key elements of the post fall procedures/management:

A. Initial post-fall assessment

B. Documentation and follow-up

A. Initial Post Fall Assessment

First priority is to assess the patient for any obvious injuries and find out what happened. The information needed is:

1. *Date/time of fall*
2. *Patient's description of fall (if possible)*
 - a. What was patient trying to accomplish at the time of the fall?
 - b. Where was the patient at the time of the fall (patient room, bathroom, common room, hallway etc.)?
3. *Family/guardian and provider notification*
4. *Vital signs (temperature, pulse, respiration, blood pressure, orthostatic pulse and blood pressure — lying, sitting and standing)*
5. *Current medications (were all medications given, was a medication given twice?)*
6. *Patient assessment*
 - a. Injury
 - b. Probable cause of fall
 - c. Comorbid conditions (e.g., dementia, heart disease, neuropathy, etc.)
 - d. Risk factors (e.g., gait/balance disorders, weakness)
 - e. Morse/Hendrich Risk Assessment
7. *Other factors:*
 - a. Patient using a mobility aid? If so, what was it?
 - b. Wearing correct footwear?
 - c. Clothing dragging on floor?
 - d. Sensory aids (glasses, hearing aids, was veteran using at the time?)

- e. Environment
 - i. Bed in high or low position?
 - ii. Bed wheels locked?
 - iii. Wheelchair locked?
 - iv. Floor wet?
 - v. Lighting appropriate?
 - vi. Call light within reach?
 - vii. Bedside table within reach?
 - viii. Area clear of clutter and other items?
 - ix. Siderails in use? If so, how many? How many are on the bed?
- f. Was the treatment intervention plan being followed? If not, why not?
- g. Were the falls team and other nurses on the unit notified?

B. Documentation and Follow-up

Following the post-fall assessment and any immediate measure to protect the patient:

1. *An incident report should be completed (see the Example Fall Prevention Policy, Attachment G, p. 51-54)*
2. *A detailed progress note should be entered into the patient's record including the results of the post-fall assessment*
3. *Refer the patient for further evaluation by physician to ensure other serious injuries have not occurred*
4. *Refer to the interdisciplinary treatment team to review fall prevention interventions and modify care-plans as appropriate*
5. *Communicate to all shifts that the patient has fallen and is at risk to fall again*

¹ Rikli, RZ, Jones, CH. Senior Fitness Test Manual. Human Kinetics Publishers: Champaign, IL; 2001.
<http://www.humankinetics.com>

Note: This is only an example policy. This policy should be modified as appropriate to your clinical setting and available resources.

VIII. Example Fall Prevention and Management Program Core Policy

A. Purpose: To establish national policy, assign responsibility and provide procedure for residents/clients at risk for falls; to systematically assess fall risk factors; provide guidelines for fall and repeat fall preventive interventions; and outline procedures for documentation and communication procedures.

B. Policy: Upon admission residents/clients are assured of assessment of their risk for falls; manipulation of the environment to prevent falls; and appropriate management of those who experience a fall.

Suggested Definition of a Fall:

A sudden, uncontrolled, unintentional downward displacement of the body to the ground or other object excluding falls resulting from violent blows or other purposeful actions.

C. Delegation of Authority and Responsibility:

1. *The Associate Chief Nursing Service/Chief Nurse Executive/Designee is responsible for establishing population-based fall risk levels/units/programs, deploying evidenced-based standards of practice, and oversight of this policy within VAMCs.*
2. *The Nurse Manager or First Line Nursing Supervisor is responsible for assuring implementation of this policy, for providing a safe environment, and for maintaining appropriate equipment in collaboration with facility equipment experts to aid in fall prevention (**See Attachment A, Equipment Safety Checklist**)*
3. *Registered Nurses are responsible for implementation and oversight of individualized residents/clients fall prevention care as follows:*
 - a. Assessing fall risk upon admission using a valid/reliable assessment tool, such as the Morse Fall Scale, **Attachment B, "Morse Fall Scale"**;
 - b. Determining risk for fall and establishing appropriate prioritized patient need / nursing diagnosis related to fall risk in the patient plan of care;
 - c. Reassessing residents/clients for change in fall risks when the patient is transferred, a change in condition occurs or following a fall episode using the Morse Fall Scale;
 - d. Implementing the **Fall Prevention and Management Interventions (Attachment C)** specific to determine fall risk level; and implementing the **Core Fall Prevention Standard (Attachment D)** for residents assessed at risk for falls;
 - e. Supervising ancillary personnel in delivering safe and personalized care;
 - f. Evaluating residents/clients to the plan of care;

- g. Collaborating with the interdisciplinary team in the prevention of falls;
 - h. Appropriately managing residents/clients who experience a fall by completing **Post-Fall Management, Attachment E**.
4. *Members of the interdisciplinary team are responsible for assessing, treating, and implementing strategies for the prevention of resident/client falls. Rehabilitation staff will provide assessment for assistive devices and need for gait training.*
 5. *Environmental Management Service and Engineering staff will assure environment is safe according to EMS standards.*
 6. *All staff are responsible for implementing the intent and directives contained within this policy, and creating a safe environment of care.*
 7. *Residents/clients and/or significant others are responsible for actively participating in their fall prevention and management program.*

D. Procedure:

1. Fall Risk - Individual Patient:

- a. Upon admission, a registered nurse will assess each resident/client for risk for falls using a valid and reliable instrument, such as the Morse Fall Scale (or Hendrich's Fall Scale). If determined to be at risk for falling, the resident's interim and/or interdisciplinary care plan will identify him/her as at risk for fall based on level of risk, and all members of the interdisciplinary team will be notified.
- b. Each resident/client will be assessed by physician/nurse practitioner/physician assistant/ and/or clinical pharmacist for medications that contribute to fall risk.
- c. PM and RS staff will complete further assessment of fall risk factors for residents/clients determined at risk for falls or repeat fall.

2. Fall Risk - Unit Level:

- a. Each unit will determine their fall risk scores to set parameters for low, moderate and high fall-risk scores / ranges.
- b. These levels will guide correct selection and implementation of fall risk reduction interventions.
- c. Unit level risk scores will be re-evaluated / validated / modified annually.

3. Prevention Interventions/Strategies:

- a. Environmental Safety — All staff will implement interventions to create a safe environment. **(Environmental Rounds Attachment F)**
- b. **Nursing Service Fall Prevention Standard** will be implemented by the Registered Nurse. **(Attachment D)**
- c. Medication adjustments will be implemented to reduce medication-related fall-risk factors.
- d. Interim and/or interdisciplinary care plans will initiate the **Fall Prevention and Management Interventions (Attachment C)**.

4. Post Fall Management:

- a. The Registered Nurse will complete resident/client post fall assessment and notify the physician (**Section B. of the Fall Incident Report Form, Attachment G**).
- b. Residents/Clients experiencing a fall will be managed according to protocol (**Post-Fall Management, Attachment E**).
- c. If fall-related injury is suspected or occurs, the physician will complete post fall assessment and initiate further diagnostic orders.
- d. The registered nurse will initiate referral to the Fall Response /Interdisciplinary Team if appropriate (**Suggested Membership for Fall Response Team, Attachment H**).
 - i. Fall Response Team will:
 - Assess all factors contributing to the fall event such as environment, equipment, medication factors and which interventions were in place at the time of the fall using Fall Prevention and Management Interventions (**Attachment C**) as a guideline.
 - Recommend interventions and changes to plan of care to prevent repeat falls.
 - Communicate and document results of referral.
 - Meet on a regular basis to evaluate the fall prevention program and recommend improvements to the program.

5. Communication/Documentation:

- a. A Fall Incident Report Form (**Attachment G**) will be completed for each resident/client fall episode.
- b. The medical record will be completed to include: patient appearance at time of discovery, patient response to event, evidence of injury, location, medical provider notification, medical/nursing actions.*
- c. Staff will complete a Fall Hazard/Near Miss Report Form (**Attachment I**) when they identify and take corrective action to prevent falls. Staff will be recognized for contributions to fall hazard prevention.

6. Program Evaluation:

- a. The facility will complete a fall aggregated review every 6 months according to the National Center for Patient Safety (NCPS) Handbook**and related updates.
- b. An individual Root Cause Analysis (RCA) will be completed for any falls that are an actual Safety Assessment Code (SAC) 3.**
- c. Reported falls will be entered into the SPOT database as indicated by NCPS guidelines.

*VHA National Center for Patient Safety. *Patient Personal Freedoms and Security. Fall Prevention and Management. October 2001.* <http://www.patientsafety.gov/FallPrev/howtostart.html>

****VA National Center for Patient Safety (NCPS) (2002, January 30). VHA National Patient Safety Improvement Handbook (1050.1): Veterans Health Administration. Access at: <http://vaww.va.gov/publ/direc/health/handbook/1051-1hk1-30-02.pdf>**

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Attachment A

Equipment Safety Checklist

Wheelchairs

Brakes	Secures chair when applied	_____
Arm Rest	Detaches easily for transfers	_____
Leg Rest	Adjusts easily	_____
Foot Pedals	Fold easily so that patient may stand	_____
Wheels	Are not bent or warped	_____
Anti-tip devices	Installed, placed in proper position	_____

Electric Wheelchairs/Scooters

Speed	Set at the lowest setting	_____
Horn	Works properly	_____
Electrical	Wires are not exposed	_____

Beds

Side Rails	Raise and lower easily	_____
	Secure when up	_____
	<i>Used for mobility purposes only</i>	_____
Wheels	Roll/turn easily, do not stick	_____
Brakes	Secures the bed firmly when applied	_____
Mechanics	Height adjusts easily (if applicable)	_____
Transfer Bars	Sturdy, attached properly	_____
Over-bed Table	Wheels firmly locked	_____
	Positioned on wall-side of bed	_____

IV Poles/Stands

Pole	Raises/lowers easily	_____
Wheels	Rolls easily and turns freely, do not stick	_____
Stand	Stable, does not tip easily (should be five point base)	_____

Footstools

Legs	Rubber skid protectors on all feet	_____
	Steady — does not rock	_____
Top	Non-skid surface	_____

Call Bells/Lights

Operational	Outside door light	_____
	Sounds at nursing station	_____
	Room number appears on the monitor	_____
	Intercom	_____
	Room panel signals	_____
Accessible	Accessible in bathroom	_____
	Within reach while patient is in bed	_____

Walkers/Canes

Secure	Rubber tips in good condition	_____
	Unit is stable	_____

Commode

Wheels	Roll/turn easily, do not stick	_____
	Are weighted and not “top heavy” when a patient is sitting on it	_____
Brakes	Secure commode when applied	_____

Geri/Broda Chairs

Chair	Located on level surface to minimize risk of tipping	_____
Wheels	Roll/turn easily, do not stick	_____
Breaks	Applied when chair is stationary	_____
	Secure chair firmly when applied	_____
Footplate	Removed when chair is placed in a non-tilt or non-reclined position	_____
	Removed during transfers	_____
Positioning	Chair is positioned in proper amount of tilt to prevent sliding or falling forward	_____
Tray	Secure	_____

References: Morse, J. 1997. Preventing patient falls. Thousand Oakes, CA: Sage
 Broda. 1999. Safety Operating Instructions

Attachment B

Morse Fall Scale*

Variables		Score	
History of Falling	no	0	_____
	yes	25	
Secondary Diagnosis	no	0	_____
	yes	15	
Ambulatory Aid	None/bed rest	0	_____
	/nurse assist	15	
	Crutches/cane/walker Furniture	30	
IV or IV access	no	0	_____
	yes	20	
Gait	Normal/bed rest/ wheelchair	0	_____
	Weak	10	
	Impaired	20	
Mental status	Knows own limits	0	_____
	Overestimates or forgets limits	15	
Total		_____	

Immediate or within 3 months.

Patients are designated at risk for fall if the MFS score is greater than _____. (Determine high risk score for your unit. See pages 43-44, Morse, J. M. (1997).

* Morse, J.M. (1997). *Preventing patient falls*. Thousand Oaks, Sage Publications.

Attachment C**Fall Prevention and Management Interventions**

Note: Include any interventions that you have available.

1. Orient patient to surroundings and assigned staff.
2. Lighting adequate to provide safe ambulation.
3. Non-slip footwear
4. Instruct to call for help before getting out of bed.
5. Demonstrate nurses' call system.
6. Call bell within reach, visible and patient informed of the location and use
7. Light cord within reach, visible and patient informed of the location and use
8. Consider use of sitters for cognitively impaired
9. Provide physically safe environment (i.e., eliminate spills, clutter, electrical cords, and unnecessary equipment).
10. Personal care items within arm length
11. Bed in lowest position with wheels locked
12. Ambulate as early and frequently as appropriate for the patient's condition.
13. Educate and supply patient and family with fall prevention information.
14. Identify patient with a colored wrist band.
15. Place a colored star outside of patient's room.
16. Place a colored star over patient's bed.
17. Every 3-hour comfort and toileting rounds
18. Every 2-hour comfort and toileting rounds
19. Every 1-hour comfort and toileting rounds
20. Comfort rounds include positioning as indicated; offering fluids, snacks when appropriate and ensuring patient is warm and dry.
21. PT consult is suggested to PCP.
22. Consult with the falls workgroup and pharmacy.
23. Bed alarm
24. Wheelchair alarm
25. Room placement closer to nurses' station
26. Bedside mat
27. Hill-rom low bed
28. Evaluation by the interdisciplinary team.
29. For risk of head injury consider consult for PT for consideration of a helmet (those at risk of head injury are patients on anticoagulants, patients with severe seizure

disorder and patient mechanism of fall is by history to fall hitting head).

30. Elevated toilet seat
31. Assign bed that enables patient to exit towards stronger side whenever possible.
32. Relaxation tapes/music
33. Diversional activities
34. Exercise program
35. Transfer towards stronger side.
36. Actively engage patient and family in all aspects of the fall prevention program.
37. Instruct patient in all activities prior to initiating.
38. Individualize equipment specific to patient needs.
39. Minimize distractions.
40. Check tips of canes, walkers and crutches for non-skid covers.
41. Instruct patient in use of grab bars.
42. Medications reviewed.

Attachment D

Nursing Service Fall Prevention Standard

STANDARD: Patients are designated at risk for fall if the MFS score is greater than ____ (Determine high risk score for your unit, See pages 43-44, Morse, J. M. [1997]. Preventing Patient Falls. Thousand Oaks, Sage Publications.)

A. All Patients/Residents

1. Assess and document patient's fall risk upon admission, change in status or transfer to another unit.
2. Assign the patient to a bed that enables the patient to exit towards his/her stronger side when ever possible.
3. Assess the patient's coordination and balance before assisting with transfer and mobility activities.
4. Implement bowel and bladder programs to decrease urgency and incontinence.
5. Use treaded socks and/or non-skid footwear.
6. Approach patient toward unaffected side to maximize participation in care.
7. Transfer patient towards stronger side.
8. Actively engage patient and family in all aspects of fall prevention program.
9. Instruct patient in all activities prior to initiating.
10. Teach patient use of grab bars.
11. Instruct patient in medication time/dose, side effects, and interactions with food/medications.
12. Instruct the patient to call for help before getting out of bed. Demonstrate nurse's call system.
13. Orient the patient to the environment, especially the location of the bathroom.
14. Lock all movable equipment before transferring patients.
15. Individualize equipment specific to patient's needs.
16. Place an "at risk" indicator on the chart, outside the room and at the bedside.
17. Place patient care articles within reach.
18. Provide physically safe environment (eliminate spills, clutter, electrical cords, and unnecessary equipment).
19. Provide adequate lighting.

B. Patients/Residents using Ambulatory Aids

1. Assist the patient with ambulating with assistive device.
2. Check tip of canes, crutches and walkers for non-skid covers.
3. Instruct the patient to request assistance with ambulation.

C. Patients/Residents with Gait and Transferring Difficulty

1. The patient is to ambulate with assistive devices (if applicable).

2. Rehab team (PT and OT) is to make recommendations for the safest type of transfer, i.e., toward the stronger side, use transfer belt, etc.

D. Patients/ Residents with Mental Status Changes

1. Instruct the patient not to get up without help, reinforce every shift and with each transfer.
2. Minimize distractions.
3. Observe activity every hour, or more often if indicated.
4. Use bed and wheelchair alarms when indicated.
5. Repeatedly reinforce activity limits and safety needs to the patient and family.

E. Patients with a History of a Fall During this Admission

1. Assess etiology of the fall.
2. Increase frequency of observation to every hour.
3. Initiate corrective action(s).
4. Consider referral to Falls Clinic or Falls Workgroup.

Attachment E**Post-Fall Management**

Residents/Clients Experiencing a Fall with

- No loss of consciousness
- No injuries to exceed minor hematomas and lacerations

A. No Head Trauma

1. Determine vital signs to include sitting/standing blood pressure (manual cuff) and pulse.
2. If diabetic, check blood glucose.
3. Determine circumstances leading to the fall with corrections.
4. For the 48 hours following the fall:
 - a. Obtain vital signs every 8 hours
 - b. Observe for possible injuries not evident at the time of the fall (limb reflex, joint range of motion, weight bearing, etc.)
 - c. Mental status changes
 - d. If restrictions in mobility appear warranted due to the fall
5. All falls will be reported to the attending physician or nurse practitioner on the day of the fall.

B. Minor Head Trauma

1. Use the same protocol outlined above and, in addition, perform neuro checks every two hours for the first 12 hours, every three hours for the next 24 hours, and every four hours for the following 24 hours. Alert the attending physician for any changes.
2. Alert attending physician for all falls with head trauma in residents receiving anticoagulants.

Additional Measures:

- Complete incident report
- Detailed progress note
- Review fall prevention interventions and modify plan of care as indicated
- Communicate to all shifts that patient has fallen and is at risk to fall
- Consult Fall Response Team for additional suggestions for changes to plan of care

Attachment F
Environmental Rounds

Area:

Location:

Date:

Reviewer:

	YES	No*	NA
Exit signs exist and are visible			
Are hallways and corridors clear of obstacles			
Furniture and equipment is sturdy and wheels are locked			
Furniture and equipment is suitable for the specific needs of the unit			
Chairs, gerichair, wheelchairs are suitable			
Commode/seat lifts are properly installed (not loose)			
Door handles are secure			
Handrails in halls present, accessible and properly secured to wall			
All lights are working properly and areas are well lit			
Floor is clean and dry			
Floor is clear of personal items			
Flooring is level and free of tripping hazards, such as broken tiles or thresholds that are above the level of the floor			
Call bell/light within reach			
Bed in low position			
Bedside table within reach			
Water within reach			
Light within reach			
Room furniture arranged to allow patient space when walking and grab bars/hand rails are accessible			
Is there a 2 foot wide path for the patient to walk in or use w/c			
Door to bed			
Bed to commode			
Bed to chair			
Chair to commode			
Does patient have footwear present			
Patients clothing does not drag on the floor			
Do slippers have non-slip soles			
Are there grab bars next to the toilet			
Is the toilet seat at a height that allows easy transfer			
Is there a night light in the bathroom			
Other			

ANY IMMEDIATE SAFETY ISSUES NOTIFY PROPER SERVICE IMMEDIATELY

Notes:

Attachment G:

FALL INCIDENT REPORT

(Confidential in accordance with Title 38 U.S.C. 5705) **DO NOT INCLUDE THIS FORM IN THE PATIENT'S MEDICAL RECORD**

SECTION A: To be completed by clinical staff

Location at time of fall (ward, clinic, service, etc.): _____ Inpatient Outpatient

Date of fall: _____ Time of fall(military): _____

Name of Physician/ARNP/PA notified: _____

For inpatients, Date admitted/transferred to this ward: _____

Description of the event, including any obvious fall-related injuries (e.g., head trauma, change in ROM, pain, bruises, lacerations) and describe what was patient doing or trying to do that may have contributed to the fall:

- Found on floor Staff lowered patient to floor Patient lowered self to floor

Was next of kin notified? Yes No (If no why not?)

Contributory Factors (check all that apply):

Mobility:

- Up ad lib Bed rest
 Wheelchair Ambulate with wheelchair
 Ambulate with assistance Ambulate with walker
 Restraints Other

Cognitive & Functional factors:

- Incontinent (circle appropriate choice(s): bowel or bladder)
 Confused/memory impaired
 Altered gait/balance
 Altered ADL

Environmental/Equipment (check all that apply):

- Floor wet Lighting poor Needed item out of reach Cluttered area Foot wear
 Bed side rails (circle appropriate choice(s): all up or down 1 up (left right) top half up (left right) bottom half up (left right)
 Equipment faulty:
 Shower chair/commode chair Cane Walker Wheelchair Unavailable grab bars
 Stretcher Bed Other, please specify _____

Assistive Devices:

- Assistive Devices involved in fall? No Yes
 If Yes, please complete the following:
 Assistive device(s) not appropriate? No documentation of patient education in proper use?
 Needed transfer/mobility equipment NOT within reach? Equipment not correctly or safely used by patient?
 Other, please specify: _____

Preventive Measures prior to incident (check all that apply):

- Interdisciplinary Fall Prevention Care Plan implemented & communicated to entire team
 Increase level of observation Fall Alert Identifier (e.g., green armband, signage, computer alert)
 Patient close to nurses' station Motion alarm
 Call light/bell in reach Gait/Safety training
 Patient/family involved in care plan

Witnessed/Reported by: Name: _____ **Position/Title:** _____

Report prepared by: _____ **Title:** _____

ADDRESSOGRAPH

SECTION D: To be completed by physician or individual, e.g. ARNP or PA with appropriate credentials

Physical Assessment and Examination findings:

- | | |
|---|---|
| <input type="checkbox"/> Rash/erythema | <input type="checkbox"/> Pain _____ |
| <input type="checkbox"/> ROM impairment | <input type="checkbox"/> Minor abrasion (s) _____ |
| <input type="checkbox"/> Change in LOC | <input type="checkbox"/> Bleeding _____ |
| <input type="checkbox"/> Change in mental status: | <input type="checkbox"/> Laceration (s) _____ |
| <input type="checkbox"/> Bruise(s) _____ | <input type="checkbox"/> Fracture (s) _____ |

Injury from fall:

- No Injury**
 Minor Injury
 Major Injury
 Death

Post Fall Plan of Care:

- | | |
|---|---|
| <input type="checkbox"/> No follow-up indicated | <input type="checkbox"/> Lab ordered |
| <input type="checkbox"/> Keep under observation | <input type="checkbox"/> X-ray |
| <input type="checkbox"/> First aid given | <input type="checkbox"/> PM&RS consultation |
| <input type="checkbox"/> Pain Management | <input type="checkbox"/> Sutures _____ |
| <input type="checkbox"/> Other _____ | |

Date of exam: _____ **Time:** _____ **Signature/Title:** _____

SECTION E: To be completed by Attending Physician (Review and Comment)

Attending Physician Review/Comments:

Corrective/Preventive measures taken to reduce risk of reoccurrence:

- No change in treatment indicated
 Treatment Plan modified (How?)
 Medication adjusted _____

Date: _____ **Signature and Title:** _____

SECTION E: Service Chief/SHG Leader: Please review the information regarding this incident and provide your comments, e.g. current status of patient, recommendations/action taken or no further action	
<input type="checkbox"/> No further action indicated	
Date:	Signature and Title:
Chief of Staff:	
<input type="checkbox"/> No further action	Investigation indicated: (check type)
	<input type="checkbox"/> Physician Peer Review <input type="checkbox"/> Mortality & Morbidity Review <input type="checkbox"/> Root Cause Analysis <input type="checkbox"/> Administrative Board of Investigation <input type="checkbox"/> Other (see comments)
Comments and recommendations:	
This event is reportable to: (check all that applies) <input type="checkbox"/> VISN <input type="checkbox"/> VA Headquarters <input type="checkbox"/> JCAHO	
Date reported: _____	
Date:	Signature:
Director:	
<input type="checkbox"/> No further action required	<input type="checkbox"/> Investigate incident and submit report and recommendations to me by (date) _____.
Comments:	
Date:	Signature of Director:
Risk Manager:	
<input type="checkbox"/> Forwarded for ABI	<input type="checkbox"/> Mortality & Morbidity Review
<input type="checkbox"/> Case closed	<input type="checkbox"/> Root Cause Analysis
	<input type="checkbox"/> Physician Peer Review
	<input type="checkbox"/> Other (please specify)
Date:	Signature:

Attachment H**Suggested Membership for Fall Response Team**

1. Senior leader
2. Technical leader
3. Clinical leader
4. Day-to-day leader
5. Recreation
6. PM & RS
7. Social work
8. EMS
9. Dietary
10. Pharmacy
11. Nurse manager(s)
12. Staff nurse or nursing assistant from ward 1
13. Alternate nurse or nursing assistant from ward 1
14. Nurse or nursing assistant from ward 2
15. Alternate nurse or nursing assistant from ward 2
16. Nurse or nursing assistant from ward 3
17. Alternate nurse or nursing assistant from ward 3

Attachment I

Fall Hazard/Near Miss Report Form

Employee Name: Enter employee name (Please Print)

Hazard Being Reported: Identify the actual hazard in detail

Date of Discovery: Enter actual date hazard was first discovered

Location of Hazard: (bldg., unit, room) - Enter detailed location of the hazard, example: Bldg. 78, NH2, Rm 242, bathroom, broken handrail.

Immediate Corrective Action Taken: Enter exactly what corrective action you took to eliminate the hazard, to prevent a fall. Example: Placed a STAT work order to have handrail repaired, advised patients and staff of the hazard, removed the hazard until it is repaired.

Was a work order initiated? Yes No N/A Check one

If yes, describe the requested correction. Loose handrail in bathroom of room 242 needs immediate repair.

Please explain the measures taken to prevent future reoccurrence of the hazard. Explain any measures put in place for prevention. Example: Loose floor tiles, if they can be removed, do so, and then place a STAT work order. Alert staff and patients of the hazard. Block the area where the loose tiles were found.

Please identify Lessons Learned from the Near Miss. Example: Communication among staff on all shifts gives a better total understanding of the day-to-day happenings on each unit.

Information/Lessons Learned shared with staff via:

Staff meeting: Date(s) _____

Shift Reports: Date(s) _____

Postings on bulletin boards: Date(s)/Location(s) _____

Storyboards: Date(s)/Location(s) _____

Other (Please describe): _____

Patient Safety Manager Response: _____

This report is what submission for this employee?

1st 2nd 3rd 4th 5th

Pin Pen/pencil Popcorn Drink Time Off Award

Please submit this form to your Nurse Manager upon completion.

Each submission will earn one entry into a quarterly drawing for a special surprise!

THANKS for putting the SAFETY of our Patients FIRST!

Interventions



Interventions



Overview

This section covers the possible interventions for high fall-risk patients.

The main sections are:

- I. Environmental Interventions — creating a safe environment for patients
- II. Interventions for All Patients — general interventions
- III. Individualized Interventions for High Risk Patients — interventions based on specific patient characteristics, such as incontinence, mobility problems, memory disorders (dementia), etc.

Notes on Side Rails

Full side rails should not be used for fall prevention, because they:

- Are considered restraints
- Increase the likelihood of death due to bed entrapment
- Can cause a patient to fall further when climbing over the side rails
- Lead to lost or decreased muscle mass and balance due to immobility

Split side rails are all right as long as the rail by the foot of the bed is lowered and the rail at the head of the bed is being used as an enabling device.

For more information on alternatives to side rails, see:

Capezuti, E, et al. Interventions to prevent bed-related falls and reduce side rail use. J Gerontol Nurs. 1999;25(11)26-34.

I. Environmental Interventions

There are three key facets of environmental interventions:

A. Environment Set Up/Design

B. Structural Changes

C. Environmental and Equipment Assessments

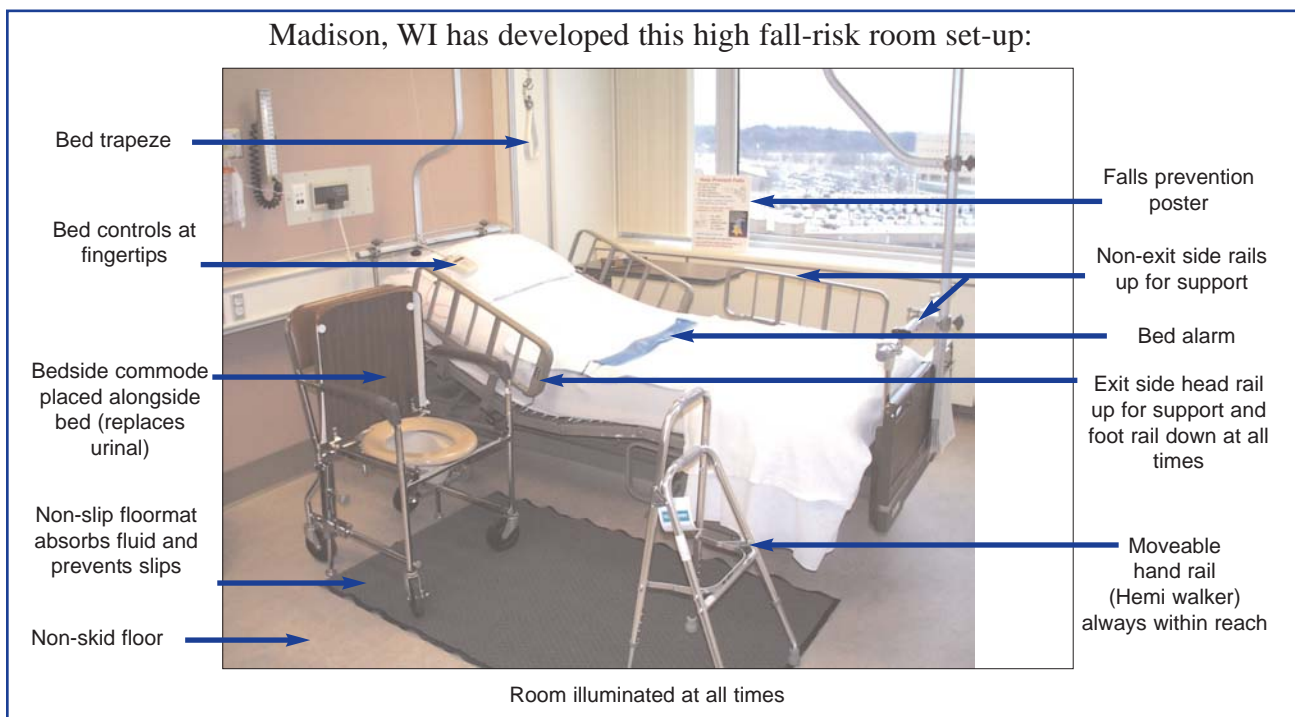
A. Environment Set Up/Design

The way that furniture and equipment is arranged in the environment is an important aspect of fall prevention.

1. Patient Rooms

The setup of patient's room should be individualized for that patient. Room set-up for all patients regardless of risk:

- a. Patient is assigned to bed that allows the patient to exit towards their stronger side
- b. Patient's bedside table, call bell and light switch are within reach (i.e., patient does not need to lean or stretch in order to obtain items on the bedside table, call a nurse or turn on a light)
- c. Room is well lit
- d. Room is free of clutter, tripping hazards (such as cords or wires), spills etc.
- e. Bathroom and exit doors are clearly marked with both letters and pictures



- f. Movable equipment and furniture are locked
- g. Furniture is sturdy and comfortable
- h. Beds with adjustable height (measured from the top of the mattress to the floor)

Additional features for high fall-risk patients should include:

- a. Room located as close as possible to nursing station
- b. Non-slip/skid padded floor mat on the exit side of the bed
- c. Concave mattress or other method of marking bed boundaries other than side rails³
- d. Assistive devices (walking aids, transfer bars, bedside commodes, etc.) located on exit side of bed
- e. Night lights to ensure room is illuminated at all times
- f. Handrails are accessible and sturdy¹

Both the St. Cloud and Madison VAMCs have developed checklists for high fall-risk room set-ups.

2. Patient Bathrooms

Many falls occur in bathroom and shower areas. The following interventions should be in place in bathrooms.

- a. Floor and tub have slip resistant strips or the cleanser used should increase the traction of the floor even when wet.
- b. Showers grab bars are installed and covered with a material that increases traction when wet.
- c. Toilets should have transfer bars installed at the correct height for the patient
- d. Showers have a stool to allow the patient to sit down while showering

3. Hallways

Interventions should be in place to ensure patients and staff are able to move about freely and safely in hallways. Hallways should be:

- a. Free of clutter, unused or non-working equipment and tripping hazards, such as electrical cords, and spills
- b. Well lit at all times; lights should be fixed promptly
- c. Handrail are accessible and sturdy
- d. If possible, provide chairs or other “rest stops” periodically down the hall¹

4. Common Rooms

Common rooms should be set up to promote patient movement while reducing the risk of falling.

- a. Rooms are free of clutter, tripping hazards and spills
- b. Chairs should be sturdy, comfortable, and easy to get out of¹
- c. Handrail should be accessible and sturdy¹
- d. “Rest stops” should be spaced periodically opposite the wall so patients walking can take a break¹
- e. Rooms should be illuminated at all times

B. Structural Interventions

Structural interventions refer to the physical design of the building or area. These are more expensive than the other interventions, but have more permanent improvements. Some interventions can only be done if remodeling the building; others can be done more easily.

1. Easy Structural Interventions

These structural improvements can be done without major remodeling of the care environment.

- a. Installing handrails in hallways, patient rooms and common areas
In patient rooms, hand rails should be installed between the bed and the bathroom¹
- b. Installing grab-bars in showers
- c. Installing transfer bars next to toilets
- d. Locate a high fall-risk patient’s room near the nursing station

2. Moderate Structural Interventions

These structural improvements can be done without major remodeling of the care environment, but are more expensive and require more work.

- a. Remove thresholds at doors - ensure that the floor is level everywhere
- b. Link bed and tab alarms to the nursing call system, so that alarms can be heard even when a nurse is not at the nursing station
- c. Installation of rugs or other flooring to reduce the risk of falls and injuries from falls²

3. Major Structural Interventions

These interventions require major remodeling of the care area.

- a. Design a high fall-risk room with more than one bed so that patients can watch each other
- b. Install a window in the high fall-risk room to allow patients to be watched without disturbing them, especially at night
- c. The high fall-risk room should be right next to the nursing station

C. Environmental and Equipment Assessments

Environmental and equipment assessments are a key way to reduce the hazards in the environment that can increase the risk of falling. They should be done frequently and encompass a wide variety of areas. As stated in the section on interdisciplinary falls teams, responsibilities for environmental assessments can be distributed to staff other than nursing.

1. Facility management and housekeeping staff can ensure:

- a. All lights are working properly and areas are well lit (including a night light in the bathroom)
 - b. Areas are clear of obstacles and clutter, for example, hallways should be clear of equipment not currently being used and the floor of patient rooms should be clear of personal items
 - c. Handrails are accessible and properly secured to the wall
 - d. Floors are dry and spills are cleaned up in a timely manner
 - e. Furniture is sturdy and wheels are locked
 - f. Furniture is arranged so that patients have space to walk and the grab bars/handrails are accessible
 - g. Door handles are secure
 - h. The patient's bedside table, call bell, water and light switch are within reach (i.e., the patient does not have to lean or get out of bed in order to reach items on the bedside table)
 - i. Flooring is level and free of tripping hazards such as uneven or broken tiles or thresholds that are above the level of the floor
 - j. Floors are sealed using a matte polish to reduce glare¹
 - k. Grab bars are located next to the toilet and in the shower
 - l. Chairs are comfortable and easy for patients to get into and out of
- Note: For patients who are unable to ambulate or transfer safely on their own a triangular pad can be placed to make it more difficult for the patient to get out of the chair on their own. These patients should be watched carefully.*

Equipment Safety Checklist^{1,6}

Wheelchairs

Brakes	Secures chair when applied	_____
Arm Rest	Detaches easily for transfers	_____
Leg Rest	Adjusts easily	_____
Foot Pedals	Fold easily so that patient may stand	_____
Wheels	Are not bent or warped	_____
Anti-tip devices	Installed, placed in proper position	_____

Electric Wheelchairs/Scooters

Speed	Set at the lowest setting	_____
Horn	Works properly	_____
Electrical	Wires are not exposed	_____

Beds

Side Rails	Raise and lower easily	_____
	Secure when up	_____
	<i>Used for mobility purposes only</i>	_____
Wheels	Roll/turn easily, do not stick	_____
Brakes	Secures the bed firmly when applied	_____
Mechanics	Height adjusts easily (if applicable)	_____
Transfer Bars	Sturdy, attached properly	_____
Over-bed Table	Wheels firmly locked	_____
	Positioned on wall-side of bed	_____

IV Poles/Stands

Pole	Raises/lowers easily	_____
Wheels	Roll easily and turn freely, do not stick	_____
Stand	Stable, does not tip easily (should be five point base)	_____

Footstools

Legs	Rubber skid protectors on all feet	_____
	Steady — does not rock	_____
Top	Non-skid surface	_____

Call Bells/Lights

Operational	Outside door light	_____
	Sounds at nursing station	_____
	Room number appears on the monitor	_____
	Intercom	_____
	Room panel signals	_____
Accessible	Accessible in bathroom	_____
	Within reach while patient is in bed	_____

Walkers/Canes

Secure	Rubber tips in good condition	_____
	Unit is stable	_____

Commode

Wheels	Roll/turn easily, do not stick	_____
	Are weighted and not “top heavy” when a patient is sitting on it	_____
Brakes	Secure commode when applied	_____

Geri/Broda Chairs

Chair	Located on level surface to minimize risk of tipping	_____
Wheels	Roll/turn easily, do not stick	_____
Breaks	Applied when chair is stationary	_____
	Secure chair firmly when applied	_____
Footplate	Removed when chair is placed in a non-tilt or non-reclined position	_____
	Removed during transfers	_____
Positioning	Chair is positioned in proper amount of tilt to prevent sliding or falling forward	_____
Tray	Secure	_____

2. *Nursing staff ensure:*

- a. The patient's bed is in the low position or in a very low position for patients who are too weak to transfer or ambulate by themselves³
- b. The patient's bedside table, water, call bell and light switch are within reach
- c. Patient has proper footwear present (i.e., for tiled floors either treaded slipper socks or hard soled shoes)⁴
- d. Patient's clothing does not drag on floor
- e. Toilet seat is at a height that allows easy transfer

3. *Biotechnologists ensure:*

Assistive devices are working properly and repaired in a timely manner (see Equipment Safety Checklist on previous page).

4. *Purchasing can ensure:*

- a. Adjustable height beds are purchased such that the beds can be adjusted to a low position for the patient and high position for staff
- b. Furniture purchased is sturdy and capable of being used as a walking aid without slipping out from underneath the patient or falling over on top of the patient
- c. Chairs are comfortable to sit in for long periods of time

Conducting Environmental and Equipment Assessments

To aid staff in conducting environmental assessments, some facilities have developed checklists for staff. One such environmental checklist was developed by Bath, N. (see example Falls Policy Attachment F, p. 50).

Janice Morse, in *Preventing Patient Falls*, provides an equipment checklist.

An example modified to include updated technology is on the previous page (p. 64).

II. Interventions for All Patients

In addition to environmental modifications, there are several interventions that can reduce the likelihood of falls for all patients.

- 1. While up and moving all patients should wear treaded slipper socks or shoes.⁴*

There is an exception to this. If rugs are installed throughout the environment, patients should not wear treaded slipper socks because this could increase their likelihood of falling, especially if they shuffle their feet while walking.
- 2. Orient the patient to the environment.*

Patients who are unfamiliar with their environment are more likely to trip and have difficulty moving around the hospital environment.
- 3. Approach and transfer patients to their stronger side.*
- 4. Instruct and ensure patients understand how to use assistive devices prior to initiating them.*
- 5. Instruct patients in medication time/dose, side effects and interactions with food or other medications and supplements.*

Even if a patient is not considered a high fall-risk, their condition can change, increasing their likelihood of falling. Monitor a patient's risk factors frequently, upon transfer and whenever his or her status changes. This includes:

- 1. Evaluating and treating gait changes, postural instability and spasticity*
- 2. Evaluating and treating patients for impaired vision and hearing*
- 3. Evaluating medications for factors that increase the risk of falling (i.e., use of anti-hypotensives, psychotropic medications and drug interactions)*
- 4. Evaluating and treating pain*
- 5. Evaluating and treating orthostatic hypotension*
- 6. Assessing and treating impaired central processing (dementia, delirium, stroke and perception)*

III. Individual Interventions for High Fall-Risk Patients

A. All High Fall-Risk Patients

There are certain interventions that should be done for all high fall-risk patients. These include:

- 1. High fall-risk room set up (see photo, p. 60)*
- 2. Medication review - taking into account risks specific to the patient,*

such as balance impairment and pain

3. *“Falling star” identification program (see CD-ROM for Powerpoint)*

B. Fall Frequently

1. *Using hip protectors to prevent hip fractures*
2. *Refer to Rehabilitation Therapy for further evaluation and implementing their recommendations*

C. Incontinence/Nocturia

For patients who experience incontinence, nocturia or urgency, there are some things that can be done.

1. *Individualized toileting schedule can be initiated
(See CD-ROM for an example toileting schedule)*
2. *Consider medication for reducing urgency*

D. Dizziness/Vertigo

For patients with dizziness or vertigo it is important to monitor and treat orthostatic hypotension. Additionally, patients should be taught to rise slowly from bed to prevent fainting.

E. Fear of Falling

Generally, a fear of falling is the result of some balance or mobility issues. Patients with a fear of falling should have a balance/strength assessment done by a physical or occupational therapist. Additional interventions can include:

1. *Using hip protectors — especially if the patient is frail or at high risk of fracture*
2. *Lowering the bed to a very low position to reduce the distance the patient would fall while getting out of bed*

F. Gait/Mobility Problems

For patients who have gait or mobility problems there are several interventions:

1. *Have occupational therapy (OT) assess the environment and implement their recommendations*
Often OT will recommend aids like transfer bars or raised toilet seats that are based on the individual needs of the patient.
2. *Have a physical therapist or occupational therapist assess the patient and implement recommendations*

It is important that nursing staff comply with the exercise program because exercise programs have been shown to reduce falls as part of a multifaceted falls prevention program

3. *Place a bedside commode next to the bed if the patient has difficulty walking to the bathroom at night*
4. *Patients who are unable to get out of bed or ambulate on their own should have the bed in a very low position to make it harder for the patient get out of bed without assistance³*
5. *Patients should be assisted with toileting as needed*

If an individual assessment for an exercise program is not feasible, it is good to institute exercise programs that focus on balance.

G. Cognitive/Memory Problems

This includes patients who forget their limitations. For these patients there are a variety of interventions.

1. Bed & Chair Alarms

These alarms can be used to alert the staff when a patient is attempting to transfer on their own. There are two types of alarms:

a. Pressure sensor alarms

When the weight of the patient is removed from the sensor the alarm sounds.

b. Tab alarms

When the patient moves beyond the length of the string attached to them the alarm is sounded.

Both of these alarms can be hooked up to the nurse call system and can sound at the nursing station.

2. Bed Placement

The bed can be placed along the wall so that the patient exits towards their stronger side. This eliminates the need for side rails along the side of the bed, reducing the likelihood of bed entrapment.³

3. Hip Protectors

Hip protectors are a good intervention for patients with dementia and other cognitive deficits. They allow the patient to be active while helping to prevent hip fractures if they fall. Generally patients should wear them all the time; however, some patients may find them uncomfortable at night.

4. *Frequent Checks on the Patient*

The patient should be checked on frequently if in their room. If patient is prone to wandering, a safe place should be provided that is supervised and set up with comfortable chairs and handrails.¹

5. *Mobility Aids*

When patients with cognitive impairments use mobility aids, several things should be done to ensure the patient knows how and remembers to use the aid.

- a. Mobility aids should be placed directly next to the patient's bed on the side that the patient exits.
- b. Patients should use the mobility aid frequently to increase the likelihood that they will remember how to use it.

This will work in the same way that patients with cognitive disorders still know how to tie their shoes.

- c. To assess a patient's knowledge of how to use their mobility aid, ask them to use it, not just explain how to use it.

Even if a patient can't explain how to use their mobility aid they may be able to use it.⁵

¹ Morse JM. *Preventing Patient Falls*. Sage Publications, Thousand Oaks, CA 1997.

² Proper flooring a critical measure for preventing slips and falls, *Health Hazard Manag Monitor* 2003;16(10):1-5

³ Capezuti et al. Individualized interventions to prevent bed-related falls and reduce siderail use. *Journal of Gerontological Nursing*, 1999; 25(11): 26-34.

⁴ Meddaugh DI, Friedenbergl DL, Knisley R. "Special Socks for Special People: Falls in Special Care Units." *GeriatrNurs*. 1996; 17 (1): 24-26.

⁵ Noelker E. Fall training materials. Louis Stokes VA Medical Center. Brecksville, OH.

⁶ Broda. 1999. Safety Operating Instructions. Broda Enterprises. Repair and Maintenance with Pictures. Available at http://www.brodaseating.com/literature/documents/Repair_Maint_w_pics.pdf [Accessed August 2004].

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Measuring Success



Measuring Success



Overview

This section is designed to help when measuring the success of your program or an intervention. This section will cover:

- I. Steps in Measuring Success
- II. Key Measures
- III. Other Important Measures
- IV. Analyzing the Data

A Word about Benchmarking:

Many people are interested in benchmarking fall rates. Although leadership and regulatory agencies may focus on fall rates and attempt to establish benchmarks, it is important not to lose sight of our goal: to promote independence while preventing fall-related injury. Benchmarks often focus on fall rates and lose focus on injury rates. We recommend benchmarking against your own baseline, setting stretch goals for reduction of falls and reducing severity of fall-related injuries, then monitoring achievement. We also recommend finer analysis of fall rates by type of fall, which is discussed in *IV. Analyzing the Data*. It is also important when benchmarking to use comparable populations, for example, long term care or acute care, otherwise your comparisons may not be as relevant.

I. Steps in Measuring Success

There are 4 steps to measuring the success of your program:

A. Step 1: Define the scope

The first step in measuring the success of your program is to define what you are reviewing. For falls, you will need to develop a definition of a fall. The suggested definition of a fall is a sudden, uncontrolled, unintentional downward displacement of the body to the ground or other object, excluding falls resulting from violent blows or other purposeful actions.

When defining a fall, it is important to consider:

1. *Unwitnessed falls (specify that you looked at this type of fall when sharing data with staff and leadership)*
2. *Types of “near falls” or “near misses,” such as trips or slips*

You should also define and measure the severity of injuries due to falls. The VHA standards for injury severity are as follows:

0 = None *no injury or disability*²

1 = Minor Injury (abrasion, bruise, minor laceration).¹ *Injuries are minor in nature, and if they do require any medical intervention, they do not extend the patient’s hospital stay except for observation or to obtain laboratory and/or radiology results.*²

2 = Major Injury (hip fracture, head trauma, arm fracture)¹ *Injuries which require medical or surgical intervention, increased hospital stay, or are disabling and/or disfiguring to a degree that the patient will have any degree of permanent lessened function or require surgical repair.*²

3 = Death^{1,2}

NOTE:

The Severity Index is not intended to replace the use of the Safety Assessment Code (SAC) Matrix in determining the need for a Root Cause Analysis. For more information please contact your Patient Safety Manager.

B. Step 2: Deciding what to measure and how

The three different types of measurements are **outcome**, **process** and **balancing measures**.

Outcome measures help determine if the desired patient goal is being achieved. For example are we reducing falls and injuries due to falls? You could also examine organizational goals such as “reduce severity of fall related injury by 20%...”

Process measures tell us if we are implementing actions that are expected to lead to improvement. For example, you may want to examine how many patients are assessed for fall risk or the percentage of patients who fell and had all the indicated interventions in place. If you find a high percentage of patients who fell did not have all of the indicated interventions implemented you may want to focus on improving the use of fall prevention interventions. Another process measure is the percentage of staff trained in fall prevention.

Balancing measures are factors to monitor while you are improving one area to ensure that another area of care has not gotten worse. For example, we recommend measuring restraint use to ensure it does not go up as you try to reduce your fall rates.

For examples of each of these measures see the next part.

The measures you use should follow these simple rules:

1. *Contains a numerator and denominator*
2. *Specifies the time in which the information will be collected, i.e., monthly, quarterly or annually*
3. *Specifies the measurement strategy, i.e., observation, random checks of patient charts or number of incident reports (Keep in mind that if you measure incident reports you're not measuring the actual number of incidents, but the level of reporting — this may skew your results.)*

C. Step 3: Collect baseline data

Once you have chosen your specific measures, such as fall rates, major injury rates and restraint use, you will need to collect some baseline data. The baseline data is taken **prior** to the implementation of the program or a specific intervention. It is used to determine whether there is a change in your measures after the intervention is implemented.

Keep in mind that you will need at least five or six baseline data points in order to ensure accurate data.

D. Step 4: Collection and analysis of data after implementation

After implementing the program or specific intervention you will need to keep measuring the data. You will need five or six data points after the implementation is complete to ensure accurate information. For more information on data analysis please see the data analysis section.

II. Key Measures

The measures that are most often used are **Fall Rate** and **Major Injury Rate**. This information is often easiest to show in a run chart. This will be described in the section on data analysis.

A. Fall Rate

The fall rate is a measurement of risk. It tells you how many falls you can expect for every 1000 bed days of care (BDOC).

Fall rate = (number of falls/bed days of care) x 1000 BDOC

Note: Bed days of care tells how many days patients were in beds. For example, if you have a census of 30 for 30 days this is 900 BDOC. To obtain the bed days of care for your unit or facility you should contact the health information department.

Example of Fall Rate:*

Your facility has had 4 falls in the last month. The health information department reports that you had 900 bed days of care last month. Thus your **fall rate** for last month was:

Fall Rate = (Number of Falls/Bed Days of Care) x 1000BDOC = (4/900) x 1000 = 4.44 per 1000 BDOC

Interpretation:

For every 1000 bed days of care you can expect to have about 4 falls.

B. Injury Rates

Injury rate = (number of injuries/number of falls) x 100

The injury rate tells you how many injuries per 100 falls. It is important to separate the injuries based on their severity, using the severity index described in the previous section. Depending on the intervention you are implementing you may want to measure both the major and minor injury rates. For instance if you were implementing hip protectors you would want to see a decrease in the major injury rate but you may see an increase in the minor injury rate as a result.

Example of Injury Rates:*

Your facility has had 80 falls in the last month. Of the 80 falls, 5 falls resulted in a minor injury, 3 falls resulted in a major injury, such as a hip fracture, and the remainder resulted in no injury.

Minor Injury Rate = (5/80) x 100 = 6.25 per 100 falls (6.25%)

Major Injury Rate = (3/80) x 100 = 3.75 per 100 falls (3.75%)

Interpretation:

6.25% of the falls last month resulted in minor injuries and 3.75% resulted in major injuries.

III. Other Important Measures

When aggregating fall data look for trends such as falls related to toileting or repeat fallers. This can lead to focusing on reducing particular types of falls. To do this you may want to keep track of:

1. *Where a fall occurred (e.g., a specific unit or a place like a bathroom or hallway).*
2. *What the patient was doing, or attempting to do, at the time of the fall.*
3. *The shift that the fall occurred on (e.g., first, second or third shift).*

This information is categorical and the easiest way to analyze it is by using a Pareto chart or bar graph.

To aid aggregate review teams and target future interventions you should keep track of factors that related to each fall, such as communication issues, assistive devices and environmental factors. For more information on this and other ways to measure success, please see the CD-ROM or Web site.

IV. Analyzing the Data

Once you have collected the data you will need to analyze it. There are two easy ways to look at your data: **run charts** or **Pareto charts**. For other ways to analyze the data, please see the Web site or CD-ROM.

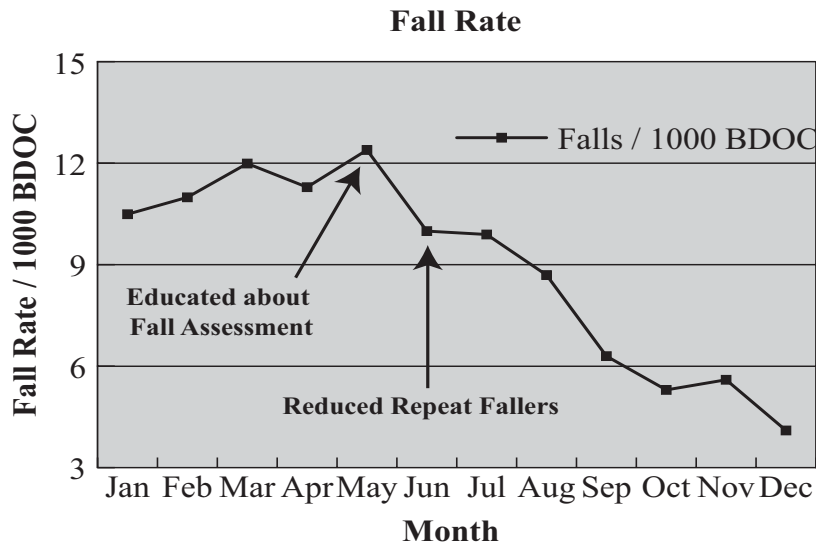
A. Run Charts

Run charts are used to track data over time. They are most often used to track data like fall rates or injury rates. It is important to clearly mark on the graph the months that the interventions were implemented. To show a difference you will want to take the average fall rate for the months prior to the interventions.

*Example** — The fall rates per 1000 BDOC at a facility for the last year are:

Fall Rate per 1000 BDOC			
January	10.5	July	9.9
February	11	August	8.7
March	12	September	6.3
April	11.3	October	5.3
May	12.4	November	5.6
June	10	December	4.5

In May, an education program was implemented and in June a program to reduce repeat fallers was implemented. The run chart for this is below:



To see if the interventions are working you will want to take the average fall rate prior to the interventions and after the interventions.

Month	# Falls	BDOC	Fall Rate per 1000 BDOC	Month	# Falls	BDOC	Fall Rate per 1000 BDOC
January	10	950	10.5	July	10	1010	9.9
February	11	1000	11	August	10	1150	8.7
March	15	1250	12	September	8	1275	6.3
April	13	1150	11.3	October	6	1130	5.3
May	13	1050	12.4	November	6	1080	5.6
June	11	1100	10	December	4	975	4.1
Totals	73	6500	11.2	Totals	44	6620	6.6

In this case, the average fall rate for January through June is:

$$((10+11+15+13+13+11)/(950+1000+1250+1150+1050+1100)) \times 1000 = (73/6500) \times 1000 = 11.2 \text{ per 1000 BDOC}$$

The average fall rate for the months after the intervention (July-December) is:

$$((10+10+8+6+6+4)/(1010+1150+1275+1130+1080+975)) \times 1000 = (44/6620) \times 1000 = 6.6 \text{ per 1000 BDOC}$$

This means that prior to the intervention the average fall rate was 11.2 and after the interventions the fall rate decreased to 6.6.

Prior to the interventions, the facility could expect 11.2 falls per 1000 bed days of care.

After the interventions, the facility could expect 6.6 falls per 1000 bed days of care.

If you want to analyze this further, you could take the variance of the data or do a statistical means test. Both of these can be done using functions in Excel™. For more information on this, please see the CD-ROM or Web site.

B. Bar Graphs

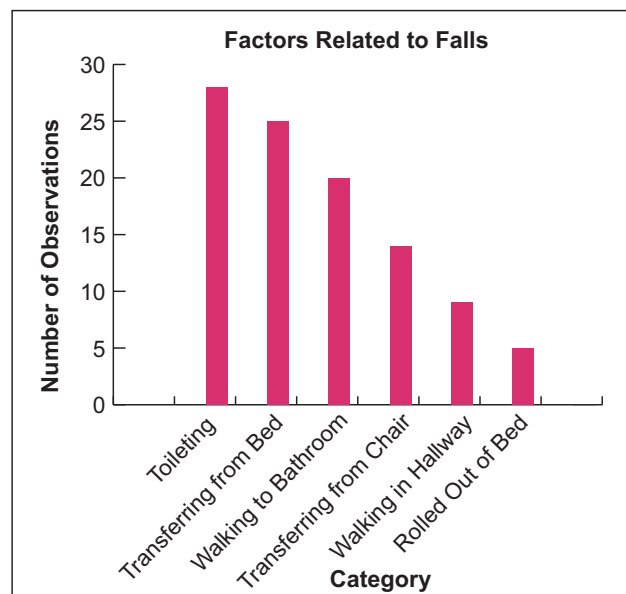
Bar graphs are used to visualize categorical data, like the location of patient falls or what the patient was trying to accomplish at the time of the fall. They can be used to target interventions where there is the highest risk. For instance if most of the falls are occurring while the patient is toileting then instituting a toileting schedules for at-risk patients may be an option. The bar graph is sorted with the largest category first going to the smallest category. It may be helpful to separate the data into separate charts, such as falls by location or shift.

Example:*

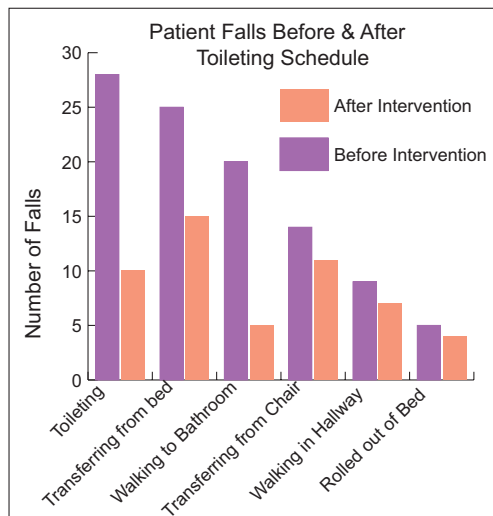
A facility tracked what the patients were attempting to do at the time of a fall. They found that the falls broke down into the following categories:

Toileting	28
Transferring	25
Walking to Bathroom	20
Transferring from Chair	14
Walking in Hallway	9
Rolled out of Bed	5

The data graphed into the following bar graph:



Bar graphs can also be used to show the incidence of certain factors before and after an intervention. For instance, after implementing a frequent toileting schedule for incontinent patients and patients with urgency, they found that the incidence of falls was:



As you can see there appears to be a difference before and after the toileting schedule was implemented. To find out more information on how to show that there is a statistical difference, see the Web site or the CD-ROM.

* Data in the examples are not real; they are examples to show the process of looking at the data, not guide any interventions.

¹ VHA National Center for Patient Safety. Patient Personal Freedoms and Security. Fall Prevention and Management. October 2001 <http://www.patientsafety.gov/FallPrev/howtostart.html> and DVA. (1996). Clinical Practice Guidelines: The Prevention and Management of Patient Falls).

² Veterans Health Administration Manual, Department of Veterans Affairs. Severity of Injury Level Scale, 35.07, M-2, Part 1, Chapter 35.

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Resources



Resources



REFERENCE AND RESOURCE GUIDE

FALL RISK ASSESSMENT, PREVENTION, AND INJURY PREVENTION

The following list of references was compiled for NCPS staff, VISN patient safety managers, and other VHA employees seeking information about fall risk assessment and prevention, and fall injury prevention. The references were obtained from the VHA Patient Personal Freedoms and Security Fall Prevention and Management cognitive aid, PubMed and EBSCO databases, and bibliographies compiled by VHA clinical staff. Only current references with statistical validity were included in the bibliography. Each reference citation appears with a summary and some full text articles are available online or at the National Center for Patient Safety. Within topic categories, references are organized in descending order by most to least current. If a star is left of the numerical citation, then the reference comes recommended by NCPS staff.

These are the sections as follows:

- I. General Falls Information
- II. Specific Fall Prevention Interventions
- III. Fall Risk Assessment Tools
- IV. Falls Prevention Programs
- V. Cormorbid Conditions
- VI. Economic Factors
- VII. Cognitive Aids, Newsletters, Videos
- VIII. Suggested Web Pages

I. GENERAL FALLS INFORMATION:

★ 1. Chang, JT. Morton SC. Rubenstein LZ. Mojica WA. Maglione M. Suttrop MJ. Roth EA. Shekelle PG. "Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials." *British Medical Journal*. 20 March 2004. Vol 328: 1-7.

In a meta-analysis to assess the relative effectiveness of interventions to prevent falls in older adults, Chang et al systematically analyzed 40 randomized clinical trials. Their findings showed that patients in the falls intervention groups had a significant reduction in the risk of falling and the monthly rate of falling.

Quick Facts:

Multifactorial falls risk assessments and management programs (which include vision and blood pressure tests, balance and gait assessments, drug review, instrumental activities of daily living, and cognitive evaluations) are the most effective in reducing fall rates.

Exercise programs are also effective.

There is no clear evidence for the independent effectiveness of environmental modification or educational programs in reducing fall rates.

★ 2. NCIPC. A Tool Kit to Prevent Senior Falls. Centers for Disease Control (CDC) Web site.

Available at: www.cdc.gov/ncipc/pub-res/toolkit/toolkit.htm. Accessed August 2003.

Available in full volume on the internet, the CDC's Tool Kit offers an abundance and variety of statistics – some of which are highlighted below – cost information, research summaries, graphs, and useful pictures related to falls and fall prevention.

Quick Facts:

Number of people over age 65 is expected to increase from 31.0 million in 1990 to 68.1 million by 2040

Number of people age 65 or older living in nursing homes is expected to increase from 1.5 million in 1997 to 3 million in 2030

87% of all fractures among older adults are due to falls

Most common fractures are of the vertebrae, hip, forearm, leg, ankle, pelvis, upper arm, and hand

About 250,000 hip fractures occur each year among people over the age of 65

Hip fractures resulted in approximately 338,000 US hospital admissions in 1999

In 1996, more than 8,500 people over age 65 died because of falls

In 1999, about 10,000 people over age 65 died because of falls

Average health care cost of a fall injury of people aged 72 and older was \$19,440 (including hospital, nursing home, emergency room, and home health care, but not physician services)

In 1994, total cost of fall injuries in people age 65 and older was \$20.2 billion

By 2020, the cost of fall injuries is expected to be \$34.4 billion (before adjusting for inflation)

3. Tinetti ME. Preventing falls in elderly persons [clinical practice]. *N Eng J Med* 2003; 348(1): 42-9.

A case vignette highlighting a patient fall. Evidence supporting various strategies is presented, followed by a review of formal guidelines. The article ends with the author's clinical recommendations.

Quick Facts:

Greater than 1/3 of persons 65 years or older fall each year

Half of these falls are recurrent

1 in 10 falls results in a serious injury to the patient, such as hip fracture or subdural hematoma

"Patients 75 years or older (or 70 years or older if they have known risk factors) should be asked whether they have a history of falls and should be carefully questioned about the circumstances of the falls and examined for potential risk factors." (Tinetti, 47)

★ 4. Mills PD. Waldron J. Quigley PA. Stalhandske E. Weeks WB. "Reducing falls and fall related injuries in the VA system." *Journal of Healthcare Safety*. 2003, 1:25-33.

A multi-facility quality improvement effort involving 31 teams tracked fall and injury rates, and reported on the interventions implemented for eight months. Major injury rate from falls dropped 62% from 2.14 major injuries per 100 falls to .82 major injuries per 100 falls after project completion.

Quick Facts:

Average reduction of 40.9 major injuries per month

Direct cost savings between \$667,569 and \$765,934 per month

Toileting interventions reduced major injury rates during the project by 2.7 falls per 100, which was well above the average reduction rate

Team performance was positively correlated with signage, post-fall assessment, environmental safety, and toileting programs

5. Weigand JV, Gerson LW. “Prevention care in the emergency department: should emergency departments institute a falls prevention program for elder patients?” **Academic Emergency Medicine**. August 2001. 8(8): 823-6.

A review of the emergency medicine literature to assess the appropriateness of an intervention to identify, counsel, and refer emergency department (ED) patients >64 years old who are at high risk for falls. The review used a structured template, a companion explanatory piece, and a grading and methodological scoring system based on published criteria for critical appraisal. A reference librarian did searches using the following: ED visits, patients >64 years old, falls, high risk, and effectiveness of intervention. Emergency Medical Abstracts, Science Citation Index, and the Cochrane Collaboration database were searched. Two team members reviewed the abstracts and selected pertinent articles. References were screened for additional pertinent articles. Twenty-six articles were reviewed. None were ED-based primary or secondary falls prevention in older patients.

Quick Facts:

Randomized controlled trial showed structured interdisciplinary approach significantly reduced the number of falls in elderly patients

2 emergency room studies showed that it was possible to identify ER patients at risk for falls

1 randomized controlled trial showed significant reduction in the risk of further falls; authors recommend that EDs conduct research to evaluate the effectiveness of clinical interventions to identify, counsel, and refer ED patients >64 years old who are at high risk for an unintentional fall.

★ 6. Agostini, Joseph V., Dorothy I Baker, and Sidney T. Bogardus. “Prevention of Falls in Hospitalized and Institutionalized Older People” Chapter 26 in **Making Health Care Safer: A Critical Analysis of Patient Safety Practices** by The Agency for Healthcare Research and Quality. July 2001. <http://www.ahrq.gov/clinic/ptsafety/chap26a.htm>

Falls are among the most common incidents reported in hospital settings. Risk factors include age, gait or balance impairment, sensory or cognitive impairment, environmental hazards, and previously fallen. Despite the common occurrence of falls, there are few hospital or other institution-based randomized controlled trails of falls interventions. In Chapter 26, Agostini et al briefly evaluate five prominent falls prevention programs among community-dwelling and hospitalized elders. These programs include (1) identification bracelets for high-risk patients, (2) interventions that decrease the use of physical restraints, (3) bed alarms, (4) special hospital flooring materials to reduce injuries from patient falls, and (5) hip protectors to prevent hip fractures. They are evaluated based on the opportunities for impact, evidence for effectiveness, potential for harm, and implementation costs.

Quick Facts:

50% of 1.7 million nursing home residents fall at least once a year, resulting in serious injury in about 10% of residents

In 1994, the total cost of falls injuries for adults aged 65 and older was estimated at \$20.2 billion

20% of people sustaining hip fractures become non-ambulatory and only 14-21% recover their ability to carry out ADLs

Difference in cost of caring for an individual up to a year after a hip fracture is between \$16,300 and \$18,700

In 1991, Medicare expenditures for hip fractures were \$2.9 billion

★ 7. "Guidelines for the prevention of falls in older persons." *Journal of the American Geriatrics Society*, 2001. 49:665-672

The American Geriatrics Society, British Geriatrics Society and American Academy of Orthopedic Surgeons Panel on Falls Prevention developed a set of guidelines to assist in the assessment and management older patients who are at risk for falling. The recommendations are divided into categories and graded based on the methodology of the research and the strength of the recommendations. The categories cover fall risk assessment, multifactorial interventions and specific single recommendations and comments about potential interventions that have not been as thoroughly studied. In addition the panel outlines recommendations for future research relating to falls.

8. Przbelske RJ, Shea TA. "Falls in the geriatric patient." *Wisconsin Medical Journal*. 2001, 100(2): 53-6.

Falls are common in the geriatric and older adult population, often causing significant morbidity or mortality. The geometry of the human body in motion requires a highly functional individual to remain balanced and upright under a variety of conditions and perturbations. Balance in this population is adversely affected by intrinsic and extrinsic factors. Medications' therapeutic and side effects frequently contribute to falls. An aggressive approach to falls reduction, including eliminating balance-altering medication, obtaining sub-specialty and balance evaluations when warranted, and requesting home safety assessments is advocated in this review of the current concepts and literature.

9. Wu G. "Distinguishing fall activities from normal activities by velocity characteristics." *Journal of Biomechanics*. Nov 2000, 33(11): 1497-500.

The purpose of this study was to identify unique features of the velocity profile during normal and abnormal (i.e., fall) activities so as to make the automatic detection of falls during the descending phase of a fall possible. Normal activities included walking, rising from a chair and sitting down, descending stairs, picking up an object from the floor, transferring in and out of a tub, and lying down on a bed. The fall activities included tripping, forward and backward falls from standing. The horizontal and vertical velocities ($V(h)$ and $V(v)$) at various locations of the trunk was measured. It was found that the $V(h)$ and $V(v)$ of the trunk during normal activities were within a well-controlled range, and that when the velocity in one direction increased, the velocity in the other direction usually did not. In contrast, the $V(h)$ and $V(v)$ demonstrated two different characteristics for the fall movement. Firstly, the magnitude of both $V(h)$ and $V(v)$ of the trunk increased dramatically during the falling phase, reaching up to 2-3 times that of normal velocities. Secondly, the increase of $V(h)$ and $V(v)$ magnitude usually occurred simultaneously, and usually about 300-400 ms before the end of the fall. These two velocity characteristics, that is, the magnitude change and the timing of the magnitude change of both $V(h)$ and $V(v)$, could be used to distinguish fall movements from normal activities during the descending phase of the fall. It is hoped that the application of these two velocity characteristics could lead to potentially preventing or degrading fall-related injuries in the elderly population when connected with other devices.

10. Feder G, Cryer C, Donovan S, et al. Guidelines for the prevention of falls in people over 65. *British Medical Journal (BMJ)*. Oct 2000, 321: 1007-1011.

Feder et al. developed a set of guidelines for several different groups within the community. The guidelines stressed the importance of a multifaceted intervention program which included exercise aimed at improving balance, lower extremity strength, and range of motion. The most relevant recommendations centered on residential settings, such as nursing homes. For nursing home patients the guidelines suggest implementing a program of risk assessment and offering hip protectors to all patients. The facilities participating in the hip protector program will be implementing a risk assessment using the guidelines in the Fall Prevention and Management handbook produced by the VHA National Center for Patient Safety, and will be providing each of the residents in the study with hip protectors. The hip protector study will be studying the durability and usability of various models of protectors in a setting with a hip protector program, which is developed by the facility.

Quick Facts:

Definition of Fall: a sudden, unintentional change in position causing an individual to land at a lower level, on an object, the floor, or the ground, other than as a consequence of sudden onset of paralysis, epileptic seizure, or overwhelming external force

Research is still needed in the following areas: further hip protector trials, validation of risk assessment as a guide to intervention, economic evaluations of interventions, and trials

11. Fuller GF. "Falls in the Elderly." American Family Physician, 2001. 61:2159-68, 2173-4.

This article provides a review of the issues surrounding falls. It provides information on the epidemiology of falls, evaluation of elderly patients who fall and preventing falls. The evaluation of elderly patients who fall is the most comprehensive section. It covers the importance of screening, obtaining a patient history using a mnemonic device, risk factor assessment, physical examination and a recommendation to perform the "Up & Go" test or the "Get-Up and Go" test. Also included with the article is a patient information handout developed by the author.

Quick Facts:

- Emergency department visits related to falls are more common in children less than 5 years old and adults at least 65 years old
- Elderly patients who fall are 10 times more likely to be hospitalized and 8 times more likely to die as a result of a fall when compared with children
- 70% of accidental deaths in people 75 years and older are related to falls

12. Hanson JP. Redfern MS. Mazumdar M. "Predicting slips and falls considering required and available friction." Ergonomics. Dec 1999, 42(12): 1619-33.

This study investigated the relationship among measurements of friction, the biomechanics of gait, and actual slip and fall events. The goal was to develop a method for estimating the probability of slips and falls based on measurements of available friction and required friction. Five subjects wearing safety harnesses walked down a ramp at various angles on dry, wet or soapy conditions. Ramp angles of 0 degree, 10 degrees and 20 degrees were used. The dynamic coefficient of friction (DCOF) of shoe, floor surface and contaminant interfaces was measured. Required friction was assessed by examining the foot forces during walking trials when no slips occurred. Slips with recoveries and slips resulting in falls were recorded and categorized using a high-speed video camera. These data were then incorporated into a logistic regression to model the probability of a slip or fall event occurring based on the difference between the COF required by the foot forces generated and the measured DCOF.

Quick Facts:

Results showed number of slip and fall events increased as difference between the required COF and the measured DCOF increased

DCOF = .40 is the cut-off for a safe environment according to British Standards Institute

Subjects involved in the study were found to be highly capable of evaluating the slipperiness of a shoe, floor, or contaminant interface

Relationship between frictional requirements of walking and measured friction of the shoe, floor or contaminant interface can be used to predict slips and falls

13. Hilliard DJ. Frederick L. Tierney-Gumaer R. Simpson MJ. "Exploring the relationship between cultural values, beliefs, and practices and patient falls: a Middle Eastern study." Journal for Healthcare Quality: Promoting Excellence in Healthcare. Jan-Feb 1999, 21(1): 42-8.

Patient falls have been a concern in North American healthcare for many years. Studies have examined environmental, clinical, and patient variables for purposes of risk identification and fall reduction, primarily in the context of Western societies. An investigation at King Faisal Specialist Hospital and Research Center in Riyadh, Saudi Arabia, began in 1993 to determine whether commonly reported risk factors apply to the Saudi patient population and whether cultural values, beliefs, and practices such as the performance of ablution before prayer, fasting during the holy month of Ramadan, and the need for socialization influence the rate of

patient falls. The study included all inpatients (N = 379) who fell during a 3-year period.

14. Rubenstein L, Josephson ZKR, et al. "Falls in the nursing home." **Annals of Internal Medicine**. 1994, 121(6): 442-51.

Large scale published studies documenting incidence, causes, risk factors, and other information pertaining to patient falls were aggregated and reviewed. The mean incidence of falls in nursing homes is 1.5 falls per patient bed per year.

Quick Facts:

About 4% of falls result in fractures and 11% of falls result other serious injuries such as head traumas, soft-tissue injuries, and lacerations

About 1800 fatal falls occur in nursing homes per year

Weakness and gait problems were the most common causes of falls in nursing home patients, accounting for 24%

Environmental hazards including wet floors, poor lighting, lack of bed rails, clutter, incorrect bed height, and improperly maintained or fitted wheelchairs account for between 16% and 27% of nursing home falls

15. Tinetti, Mary E. Baker, Dorothy I. McAvary, Gail. Claus, Elizabeth B. Garrett, Patricia. Gottschalk, Margaret. Koch, Marie L. Trainor, Kathryn. Horwitz, Ralph I. "A multi-factorial intervention to reduce the risk of falling among elderly people living in the community." **The New England Journal of Medicine**. Sept 1994, 331(13): 821-827.

The authors investigated whether the risk of falling in the elderly could be reduced by modifying known risk factors. A sample of 301 men and women, at least 70 years old, living in the community, who had at least one of several risk factors for falling, were given either a combination of adjustment in their medications, behavioral instructions, or exercise programs aimed at modifying their risk factors. During one year of follow-up, 35 percent of the intervention group fell, as compared to 47 percent of the control group. The authors conclude that multiple-risk-factor intervention strategies resulted in significant reduction of falling among elderly persons in the community.

★ 16. Morse JM. **Preventing Patient Falls**. 1997, Thousand Oaks: Sage Publications.

This book contains information on how to start a falls program, how to assess patients using the Morse scale, benchmarking information on falls and suggestions for measuring fall and injury rates.

II. SPECIFIC FALL PREVENTION INTERVENTIONS:

A. HIP PROTECTORS:

- ★ 17. van Schoor NM. Smit JH. Twisk JWR. Bouter LM. Lips P. “Prevention of Hip Fractures by External Hip Protectors.” *JAMA*. April 16, 2003, vol. 289(15): 1957-1962.

The authors examine the effectiveness of hip protectors in reducing the incidence of hip fractures in a randomized controlled trial of elderly persons aged 70 years or older, who have low bone density, and are at high risk for falls. Participants were enrolled in the study between March 1999 and March 2001. The intervention was an external hip protector. The main outcome measured was time to first hip fracture. Survival analysis was used to include all participants for the time they participated. In the intervention group, 18 hip fractures occurred vs. 20 in the control group. Four hip fractures in the intervention group occurred while an individual was wearing a hip protector. At least 4 hip fractures in the intervention group occurred late at night or early in the morning. Both in univariate analysis (log-rank $P = .86$) and in multivariate analysis (hazard ratio [HR], 1.05; 95% confidence interval [CI], 0.55-2.03), no statistically significant difference between the intervention group and control group was found with regard to time to first hip fracture. In addition, the protocol analysis in compliant participants did not show a statistically significant difference between the groups (HR, 0.77; 95% CI, 0.25-2.38). In conclusion, the hip protector studied was not effective in preventing hip fractures.

Quick Facts:

Patient compliance with hard-shelled hip protectors was: 61% after one month of wearing hip pads, 45% after six months, and 37% after twelve months

16% of patients wore hip protectors at night

The findings of this study appear to refute the effectiveness of hip protectors in preventing fractures during patient falls. NCPS and other researchers disagree with the findings of this study.

Adherence was measured by three random site visits at one, six, and twelve months

Compliance with hip protectors was low to begin with and decreased over time

Of the 18 fractures in the intervention group, 78% occurred while patients were not wearing hip protectors

- ★ 18. Parker MJ. Gillespie LD. Gillespie WJ. “Hip protectors for preventing hip fractures in the elderly” (**Cochrane Review**). In: **The Cochrane Library**. Issue 1, 2003. Oxford. <http://www.update-software.com/abstracts/ab001255.htm>

Parker et al., in their review of seven studies on the effectiveness of hip protectors, confirmed that hip protectors are effective in preventing hip fractures. Compliance was a problem in all of the studies reviewed. While it ranged from 24 to 68 percent, the majority were less than 50 percent compliant and two were below 30 percent. Most of the hip fractures that occurred in the protector groups occurred while the patient was not wearing the hip protector when he or she fell. One occurred because the hip protector was not fitted correctly to the person. The most salient reasons for non-compliance were skin irritation and discomfort; however, other important reasons were mentioned, such as, difficulty in putting on or taking off the undergarment for patients who were bedridden, confused or infirm, difficulty in fitting the undergarment, forgetfulness and perceived lack of personal risk. This review exemplifies the effectiveness of hip protectors in preventing hip fractures and the role non-compliance may play in the reduction of hip fractures. Given that compliance is a major issue, the hip protector study will focus on compliance and the relationship between compliance and different models of hip protectors.

Quick Facts:

In patient groups wearing hip protectors, 2.2% of falls resulted in a hip fracture

In patient groups not wearing hip protectors, 6.2% of falls resulted in a hip fracture

Individually, 5 studies involving 4,316 participants reported a reduced incidence of hip fractures in hospital units allocated to receive hip protectors.

19. Burl J. Centola J. Bonner A. Burque C. “Hip protector compliance: a 13-month study on factors and cost in a long-term care facility.” **J Am Med Dir Assoc.** 2003 4:245-250.

Purpose of the study was to determine if a high compliance rate for wearing hip protectors could be achieved in a long-term care setting. It was a 13-month prospective analysis in a 100-bed long-term care facility. There were 38 participants all of whom were ambulatory and had at least one of the four risk factors: osteoporosis, recent fall, positive fall risk assessment, and previous fracture. The intervention involved: patient, family, and staff education and usage of hip protectors. The study found that hip protector compliance is feasible and sustainable in a long-term care setting. Compliance, however, requires the enthusiasm of one department, acting as a leader and champion. It was believed that the cost of hip protectors could be a barrier to widespread use.

Quick Facts:

The education-based intervention achieved greater than 90% compliance in hip protector use

Average number of falls in intervention group was 3.9 per patient

Average number of falls in control group was 1.3 per patient

Zero hip fractures occurred during the 13-month study, whereas 2 occurred the year prior

Total cost of the intervention (staff hours and hip protectors) was \$6300

- ★ 20. Kannus P. Parkkari J. Niemi S. Pasanen M. Palvannen M. Jarvinen M. Vuori I. “Prevention of Hip fracture in Elderly People with the use of a Hip Protector.” **The New England Journal of Medicine.** Nov 23, 2000, 343(21), 1506-13.

The authors investigated the effect of an anatomically designed external hip protector on the risk of these age-related fractures. 1801 ambulatory but frail elderly adults (1409 women and 392 men; mean age, 82 years) were randomly assigned to a group that wore hip protectors or a control group. Fractures of the hip and all other fractures were recorded until the end of the first full month after 62 hip fractures had occurred in the control group. The risk of fracture in the two groups was compared, and in the hip-protector group the risk of fracture was also analyzed according to whether the protector had been in use at time of fall. It was found that the risk of hip fracture can be reduced in frail elderly adults by the use of an anatomically designed external hip protector.

Quick Facts:

13 patients in hip protector group had a fracture during the study, with a fracture rate of 21.3 per 1000 person-years

67 patients in control group had a fracture during the study, with a fracture rate of 46.0 per 1000 person-years

Risk of pelvic fracture was slightly but not significantly lower in the hip-protector group than in the control group (2 subjects and 12 subjects, respectively, had pelvic fracture)

4 patients in hip protector group had a hip fracture (among 1034 falls) while wearing the protector

9 patients had a hip fracture (among 370 falls) while not wearing the protector

21. Rubenstein, LZ. “Hip Protectors – A Breakthrough in Fracture Prevention.” **NEJM.** Editorial. Nov 2000, 343(21): 1562-3.

Quick Facts:

Each year in US, more than 300,000 people over 65 are hospitalized because of hip fractures

A quarter of these people survive for less than one year

The cost of a hip protector is small compared to the cost associated with a hip fracture

Number needed to treat: one example, only 41 persons need be offered a hip protector to prevent 1 fracture during the course of 1 year

22. Cameron ID. Stafford B. Cumming RG. Birks C. Kurrle SE. Lockwood K. Quine S. Finnegan T. Salkeld G. “Hip protectors improve falls self-efficacy.” **Age & Ageing.** Jan 2000, 29(1): 57-62.

Does the use of hip protectors affect an individual’s fear of falling and falls self-efficacy (belief in their own ability to avoid falling). A randomized controlled trial in aged-care health services in Sydney, Australia tests this question. 131 women aged 75 years or older who had two or more falls or one fall requiring hospital admission in the previous year and who live at home were included. Sixty-one subjects were in the interven-

tion group and 70 in the control group. An adherence nurse encouraged use of external hip protectors. At the time of enrollment into a wider study examining the effect of hip protectors on hip fractures, participants recruited at home completed an assessment of fear of falling and falls efficacy as measured by the Falls Efficacy Scale and the Modified Falls Efficacy Scale. At 4-month follow-up, these scales were re-administered by a blinded observer (who was not aware of the allocation of the participant to intervention or control groups). Hip protectors improve falls self-efficacy. As users of hip protectors feel more confident that they can complete tasks safely, they may become more physically active and require less assistance with activities of daily living.

Quick Facts:

43% of subjects using hip protectors at the end of the study had a fear in falling

57% of the control group at the end of the study had a fear in falling

Hip protector users had greater improvement in falls self-efficacy at follow-up

23. Lauritzen JB. Peterse MM. Lund B. “Effect of external hip protectors on hip fractures.” **The Lancet**. 1993, 341(8836), 11-13.

The authors investigated the effect of hip protectors on the prevention of hip fractures in nursing home residents. The controlled trial included 497 women and 204 men over 69 years in one nursing home in Copenhagen. Ten of the 28 nursing home wards were selected to receive hip protectors (intervention group). According to the authors, the use of external hip protectors in the randomized study reduced the risk of hip fracture by 53% and nine hip fractures were avoided entirely.

Quick Facts:

24% of patients wore the hip protectors regularly.

Treatment group did not have a higher risk of non-hip fractures

B. SIDE RAILS:

24. Talerico KA. Capezuti E. “Myths and facts about side rails.” **American Journal of Nursing**. 2001, 101(7): 43-8.

25. Capezuti E. et al. “Individualized interventions to prevent bed-related falls and reduce siderail use.” **Journal of Gerontological Nursing**. 1999, 25(11) 26: 52-3.

Five situations that often impair siderail use: memory disorder, impaired mobility, injury risk, nocturia/incontinence, and sleep disturbance. As nursing homes work toward meeting the Health Care Financing Administration’s mandate to examine siderail use, administrators and staff need to implement interventions that support safety and individualize care for residents. While no one intervention represents a singular solution to siderail use, there is a range of interventions tailored to individual needs. This article describes the process of selecting individualized interventions to reduce bed-related falls.

C. EXERCISE PROGRAMS:

26. Carter ND. Kannus P. Khan KM. “Exercise in the prevention of falls in older people: a systematic literature review examining the rationale and the evidence.” **Sports Medicine**. 2001, 31(6): 427–438.

Falls cause 90% of hip fractures. The current cost of hip fractures in the US is estimated to be about 10 billion dollars. Age-related changes in physiologic systems (somatosensory, vestibular and visual), which contribute to the maintenance of balance, are well documented in older adults. These changes coupled with age-related changes in muscle and bone, are likely to contribute to an increased risk of falls. The integrated rehabilitation-based model of fall risk factors reveals multiple sites for interventions that may reverse fall risk factors. Regular exercise may be one way of preventing falls and fall-related fractures. On the basis of 9 randomized controlled studies conducted since 1996, exercise appears to enhance fall prevention in older adults, significantly reducing the incidence of falls compared with control groups. Current limitations such as inconsisten-

cies in the measurement of key dependent and independent variables do not, at present, permit a meta-analysis of intervention trials. Further investigation, using trials designed with the current limitations in mind, is necessary to establish the optimum exercise program to maximize fall prevention in older adults.

27. Edelberg HK. “Falls and Function. How to prevent falls and injuries in patients with impaired mobility.” **Geriatrics**. 2001, 56(3): 41-5 (quiz 49).

Patient falls typically result from a number of different risk factors including age, neurologic and musculoskeletal conditions, decreased physical strength, foot disorders, and use of medications or alcohol. This article presents the “DDROPP” mnemonic, a useful device for evaluating the risk of recurrent falls:

D-Is there a presence of disease?

D-What drugs is the patient taking?

R-Was the patient able to recover (i.e. get up off the floor) after the fall?

O-What was the onset? Did the patient fall suddenly? Was it a drop attack, or was it a gradual slumping to the ground?

P-What were the warning signs or symptoms (prodrome)?

P-What were the acute precipitants?

Additionally, this article presents a mobility and balance assessment tool called the “up and go” screen.

28. Christmas C. Andersen RA. “Exercise and older patients: guidelines for the physician.” **Journal of the American Geriatrics Society**. Mar 2000, 48(3): 318-24.

Sedentary persons who improve their physical fitness are less likely to die of all causes and of cardiovascular disease than are those who remain sedentary. There now exists a wealth of data demonstrating that physical activity and exercise may ameliorate disease and delay decline in function in the geriatric population. We review evidence that exercise can improve body composition, diminish falls, increase strength, reduce depression, reduce arthritis pain, reduce risks for diabetes and coronary artery disease, and improve longevity. However, many healthcare professionals do not feel adequately prepared to design and prescribe exercise programs for their patients. This review provides a basic overview of the benefits of exercise in the geriatric population and guidelines indicating how to prescribe and facilitate adherence to an exercise program. Healthcare providers are strongly encouraged to promote a less sedentary lifestyle for older patients, which may augment quality of life in these older individuals.

29. Gregg EW. Pereira MA. Caspersen CJ. “Physical activity, falls, and fractures among older adults: a review of the epidemiologic evidence.” **Journal of the American Geriatric Society**. Aug 2000, 48(8): 883-93.

Assess the relationship between physical activity and risk for falls and osteoporotic fractures among older adults. Review and synthesis of published literature. Literature was searched using MEDLINE, Current Contents, and the bibliographies of articles identified. Randomized controlled trials (RCT) of the effects of physical activity on the incidence of falls and case-control and prospective cohort studies of the association of physical activity with osteoporotic fracture risk were included. Epidemiologic studies suggest that higher levels of leisure time physical activity prevent hip fractures and RCTs suggest certain exercise programs may reduce risk of falls. Future research needs to evaluate the types and quantity of physical activity needed for optimal protection from falls and identify which populations will benefit most from exercise.

Quick Facts:

Consistent evidence from prospective and case-control studies that physical activity is associated with a 20-40% reduced risk of hip fracture relative to sedentary individuals.

III. FALL RISK ASSESSMENT TOOLS:

30. Gowdy M. Godfrey S. “Using tools to assess and prevent inpatient falls.” **Joint Commission Journal on Quality & Safety**. 2003, 29(7): 363-8.

A fall prevention program that includes a comprehensive fall risk assessment, root cause analysis of falls, and Failure Mode and Effect Analysis (FMEA) of falls. The fall risk assessment tool uses 11 patient indexes such as gait disturbance, confusion, previous falls in past 12 months, generalized weakness, and incontinence.

Quick Facts:

Fall rate for 450-bed community hospital is 6.1 falls per 1,000 patient days

Internal benchmark is 4.1 falls per 1,000 patient days

Geriatric psychiatry unit had 58% of all falls: 67 falls per 1,000 patient days

Surgical patients more likely to fall during middle or later part of hospitalization

Medical diagnosis patients fall soon after day of admission

After intervention, overall fall rate decreased 43% from 6.1 to 2.6 falls per 1,000 patient days

31. Perell KL. Nelson A., et al. “Fall risk assessment measures: an analytic review.” **Journals of Gerontology Series A-Biological Sciences & Medical Sciences**. 2001, 56(12): M761-6.

In a summary of existing fall risk assessment scales, the authors analyze 21 published articles from 1984 through 2000. The scales are divided into two categories: comprehensive assessments mainly used by physicians and nursing assessments. The nursing instruments studied include: Morse Fall Scale, STRATIFY, RAI, Hendrich Fall Risk Model, High Risk for Falls Assessment Form, and Royal Melbourne Hospital Risk Assessment Tool. It was found that the majority of scales discussed in these articles were developed for elderly populations. The patient characteristics evaluated in each assessment were quite similar, but the time to complete the assessments varied from less than one minute to 80 minutes.

Quick Facts:

Inter-rater reliability ranged from 79% to 100% across the nursing assessment tools

Inter-rater reliability ranged from 58% to 98% across the functional assessment tools

32. Doughty K. Lewis R. McIntosh A. “The design of a practical and reliable fall detector for community and institutional telecare.” **Journal of Telemedicine & Telecare**. 2000, 6 Suppl. 1: S150-4.

Falls are one of the greatest obstacles to independent living for frail and elderly people. Their early detection is an important step in providing people with the reassurance and confidence necessary to maintain an active lifestyle. The authors investigated a worn fall detector linked to a community alarm system. A worn device is the only one that is satisfactory, provided it generates few false alarms. The fall detector developed is the size of a small radio pager. It uses a two-stage detection process, which senses shock and the orientation of the wearer. A fall is detected within 20 seconds and triggers a radio signal to a community alarm system. Tests were devised using a jointed mannequin to simulate five modes of falling to understand the effects of impact at different parts of the body. This allowed the selection of appropriate trigger thresholds and wearing positions for the sensor. Prototypes were evaluated with 20 people to observe false alarms. The final design allowed reliable detection in 180 different falling scenarios.

33. Eagle DJ. Salama S. Whitman D. Evans LA. Ho E. Olde J. “Comparison of three instruments in predicting accidental falls in selected inpatients in a general teaching hospital.” **Journal of Gerontological Nursing**. Jul 1999, 25(7): 40-5.

Accidental patient falls are a cause of concern for hospitalized inpatients. It is known that patients who fall once during their hospital stay are more likely to fall again and that fall rates tend to be higher in hospitalized elderly individuals. Many accidental patient falls can be predicted and, thus, prevented. The best tool to predict falls has not been determined yet. The purpose of this study was to compare the Morse Fall Scale (MFS), the Functional Reach (FR) test, and the nurses' clinical judgment in predicting those inpatients on a rehabilitation unit and a geriatric medical ward who were most likely to fall. A total of 98 patients were screened in a 3-month period, with each patient undergoing all three instruments the same day. The results showed that the two objective standardized tests (i.e., MFS, FR) were time consuming and often inconvenient and were no better at prediction than the clinical judgments made by the primary nurses.

IV. FALLS PREVENTION PROGRAMS:

34. Oliver D. Hopper A. Seed P. “Do hospital fall prevention programs work? A systematic review.” **Journal of the American Geriatrics Society**. Dec 2000, 48(12): 1679-89.

To analyze published hospital fall prevention programs to determine whether there is any effect on fall rates. Keyword searches of Medline, CINAHL, monographs, and secondary references. All papers were included that described fall rates before and during intervention. Risk ratios and 95% Confidence Intervals (95% CI) were estimated and random effects meta-analysis employed. Begg’s test was applied to detect possible publication bias. Separate meta-analysis regressions were performed to determine whether individual components of multifaceted interventions were effective. The pooled effect of about 25% reduction in the fall rate may be a result of intervention but may also be biased by studies that used historical controls not allowing for historical trends in the fall rate before and during the intervention. The randomized controlled trials apparent lack of effect might be due to a change in practice when patients and controls were in the same unit at the same time during a study. Studies did not analyze compliance with the intervention or opportunity costs resulting from the intervention. Research and clinical programs in hospital fall prevention should pay more attention to study design and the nature of interventions.

Quick Facts:

21 papers met the criteria; 18 from North America

10 contained sufficient data to calculate confidence intervals

Interventions reduce fall rate by <1

35. Deery HA. Day LM. Fildes BN. “An impact evaluation of a falls prevention program among older people.” **Accident Analysis & Prevention**. May 2000, 32(3): 427-33.

The goal of the evaluation study was to assess the impact of peer-presented education sessions on falls-related attitude, knowledge and behavior of older people. The non-randomized pre-test post-test evaluation was undertaken on the Bellarine Peninsula in Victoria, Australia. Baseline, three and twelve months follow-up data were collected for 107 individuals who attended the education sessions and 116 controls, matched by age range and sex. The groups were not equivalent at baseline, with the intervention group having a greater knowledge about falls and falls prevention. Analyses that controlled for baseline differences showed that those who attended the education sessions maintained a greater knowledge of factors that prevent falls at 12 months follow-up. The intervention group also made more changes in and around their home to prevent falls by 3 and 12-month follow-ups. Younger participants who reported a previous history of falls and having taken action to prevent falls were most likely to take additional action. The results elucidate the major benefit in providing education programs, with voluntary attendance, in reducing falls and increasing fall awareness and prevention among the elderly.

V. COMORBID CONDITIONS:

36. van Doorn C. Gruber-Baldini AL. Zimmerman S. “Dementia as a Risk Factor for Falls and Fall Injuries Among Nursing Home Residents.” **Journal of the American Geriatrics Society**. September 2003, 51(8): 1213-1218.

To compare fall rates between nursing home residents with and without dementia and to examine dementia as an independent risk factor for falls and fall injuries. Prospective cohort study with 2 years of follow-up. Fifty-nine randomly selected nursing homes stratified by geographic region and facility size. Two thousand fifteen newly admitted residents aged 65 and older. During 2 years after nursing home admission, fall data were collected from nursing home charts and hospital discharge summaries. Dementia is an independent risk factor for falling. Although most falls do not result in injury, the fact that residents with dementia fall more often than their counterparts without dementia leaves them with a higher overall risk of sustaining injurious falls over time. Nursing home residents with dementia should be considered important candidates for fall-prevention and fall-injury-prevention strategies.

Quick Facts:

1700 residents fell 5,438 times during the 2-year follow-up period of this study

Fall rate for nursing home residents with dementia was 4.05 falls per year

Fall rate for nursing home residents without dementia was 2.33 falls per year

Unimpaired residents were less likely to fall than impaired residents (RR = .67, CI = .49-.92)

★ 37. Gray P. Hildebrand K. “Fall risk factors in Parkinson’s disease.” **Journal of Neuroscience Nursing**. Aug 2000, 32(4): 222-8.

Parkinson’s Disease (PD) is a neurodegenerative disorder characterized by tremor, rigidity, bradykinesia, gait disturbance, and postural instability. Patients with PD suffer frequent falls, yet little research has been done to identify risks specific to PD patients. The objective of this study was to identify the risk factors associated with falls for PD patients through the collection of demographic, environmental, and medical information as well as fall diaries completed during a 3-month period. Patients with a diagnosis of idiopathic PD, with and without falls, were included in the study provided they could stand and walk and had no other condition that could predispose them to falls.

Quick Facts:

59% of 118 participants reported one or more falls

Total of 237 falls were reported

40% of falls resulted in injury, but serious injury was rare

Duration and severity of PD symptoms, particularly freezing, involuntary movements, and walking and postural difficulties, were significantly associated with an increased risk of falls

Other factors associated with falls: postural hypotension and daily intake of alcohol

38. Brown JS. Vittinghoff E. Wyman JF. Stone KL. Nevitt MC. Ensrud KE. Grady D. “Urinary incontinence: does it increase risk for falls and fractures? Study of Osteoporotic Fractures Research Group.” **Journal of the American Geriatric Society**. Jul 2000, 48(7): 721-5.

Is urinary incontinence associated with risk of falls and fractures (non-spinal) in older women. To answer this question, type and frequency of incontinent episodes were assessed in 6,049 community-dwelling women using a self-administered questionnaire. Follow-up postcards were mailed every 4 months inquiring about falls and fractures. Incident fractures were confirmed by radiographic report. Logistic and proportional hazard models were used to assess the independent association between urge urinary incontinence and risk of falling or fracture. Weekly or more frequent urge incontinence was associated independently with an increased risk of falls and (non-spine and non-traumatic) fractures in older women. Urinary frequency, nocturia, and rushing to the bathroom to avoid urge incontinent episodes most likely increase the risk of falling, which then results in fractures. Early diagnosis and appropriate treatment of urge incontinence may decrease the risk of fracture.

Quick Facts:

During an average follow-up of 3 years, 55% of women reported falling, and 8.5% reported fractures

One-quarter of the women (1,493) reported weekly or more frequent urge incontinence, 19% (1,137) reported

weekly or more frequent stress incontinence, and 708 (12%) reported both types of incontinence. Weekly or more frequent urge incontinence was associated independently with risk of falling (odds ratio = 1.26; 95% confidence interval (CI), 1.14-1.40) and with non-traumatic (non-spine) fracture (relative hazard 1.34; 95% CI, 1.06-1.69; $P = .02$).

Stress incontinence was not associated independently with falls or fracture.

39. Ooi WL. Hossain M. Lipsitz LA. "The association between orthostatic hypotension and recurrent falls in nursing home residents." **American Journal of Medicine**. Feb 2000, 108(2): 106-11.

Is orthostatic hypotension, including its timing and frequency, associated with falls in elderly nursing home residents? A prospective study of 844 elderly (60 years of age and older), long-stay residents at 40 facilities that were part of a multistate nursing home chain was conducted. All subjects were able to maintain weight bearing for at least 1 minute. Orthostatic hypotension was defined as a 20 mm Hg or greater decrease in systolic blood pressure from supine to standing, as measured after 1 or 3 minutes of standing on four occasions (before or after breakfast, or before or after lunch). The outcome was any subsequent fall during a mean of 1.2 years of follow-up. Orthostatic hypotension is an independent risk factor for recurrent falls among elderly nursing home residents. Although the benefit of treating orthostatic hypotension will require further study, it may be prudent to identify high-risk residents and institute precautionary measures.

Quick Facts:

Orthostatic hypotension present in 50% of the subjects but not associated with subsequent falls

Among subjects with a history of previous falls in the past 6 months, those with orthostatic hypotension had increased risk of recurrent falls [adjusted relative risk (RR) = 2.1]

Risk of subsequent falls was greatest in previous fallers with orthostatic hypotension at two or more measurements (RR = 2.6)

Independent association between orthostatic hypotension and recurrent falls

Timing of orthostatic hypotension (before or after meals) did not affect the risk of falls

40. Liu BA. Topper AK. Reeves RA. Gryfe C. Maki BE. "Falls among older people: Relationship to medication use and hypotension." **Journal of American Geriatric Society**. 1995, 43: 1141-1145.

To assess the risk of falls attributable to medication use and orthostatic hypotension. Prospective cohort study. Two self-care, apartment-style residential facilities in the Toronto area. A total of 100 consecutive older volunteers (mean age = 83, range 62-96) who were independent in activities of daily living and able to stand unaided. Prescription medications used by each subject were documented at baseline. Blood pressure measurements were performed supine, immediately after standing, and after 5 minutes. Subjects reported falls weekly, by postcard, for a period of 1 year; nonreporters were contacted by telephone.

Patients using antidepressants should be followed closely because the risk of falls is increased. Previously reported relationships between benzodiazepines and diuretics and falls are not supported by the present findings. Clinical detection of orthostatic hypotension is unlikely to be useful in predicting future risk of falling.

Quick Facts:

59% of subjects fell at least once during the 1-year follow-up

Antidepressants were associated with increase risk of experiencing one or more falls (RR = 1.6, $P = .02$)

Other drugs examined, including diuretics and sedative-hypnotics, were not associated with an increased risk of falling

Orthostatic hypotension was not predictive of falls

Increase in the diastolic blood pressure of fallers after 5 minutes

VI. ECONOMIC FACTORS:

41. Robertson MC. Devlin N. Scuffham P. Gardner MM. Buchner DM. Campbell AJ. "Economic evaluation of a community-based exercise program to prevent falls." **Journal of Epidemiology & Community Health**. Aug 2001, 55(8): 600-6.

To assess the incremental costs and cost effectiveness of implementing a home-based muscle strengthening and balance retraining program that reduced falls and injuries in older women. An economic evaluation carried out within a randomized controlled trial with two years of follow up. Participants were individually prescribed an exercise program (exercise group, n=116) or received usual care and social visits (control group, n=117). Seventeen general practices in Dunedin, New Zealand. Women aged 80 years and older living in the community and invited by their general practitioner to take part. Number of falls and injuries related to falls, costs of implementing the intervention, healthcare service costs resulting from falls and total healthcare service costs during the trial. Cost effectiveness was measured as the incremental cost of implementing the exercise program per fall event prevented. The costs resulting from falls make up a substantial proportion of the hospital costs for older people. Despite a reduction in falls as a result of this home exercise program there was no significant reduction in healthcare costs. However, the results reported will provide information on the cost effectiveness of the program for those making decisions on falls prevention strategies.

Quick Facts:

27% of total hospital costs during the trial were related to falls

Implementing the exercise program for one year cost \$314 (1995 New Zealand dollars) per fall prevented and \$457 per fall resulting in moderate/serious injury prevented

Implementing exercise program for two years \$265 per fall prevented and \$426 per fall resulting in a moderate or serious injury prevented

★ 42. US Department of Health and Human Services / Public Health Service. Centers for Disease Control and Prevention. "Incidence and Costs to Medicare of Fractures Among Medicare Beneficiaries Aged > 65 Years - United States, July 1991 - June 1992." **Morbidity and Mortality Weekly Report (MMWR)**. Oct 18, 1996, 45(41): 877-83.

Claims data were analyzed (n=1,288,618) to determine the incidence of fractures in persons 65 years or older and to estimate the excess costs to Medicare of these fractures during the 1-year period following.

Quick Facts:

·In 1991-1992, 26,785 fractures were identified among 1,288,618 Medicare beneficiaries

·Daily costs for person with a hip fracture were the highest at \$191.50 / day

·Daily costs for person with a fracture of the lower femur at \$153.98 / day

·Total excess cost to Medicare for patient w/ hip fracture after a year was \$15,294

·Total excess cost to Medicare for 10 fractures was \$4.2 billion

·Total excess cost to Medicare for hip fractures was \$2.9 billion (69%)

VII. COGNITIVE AIDS, NEWSLETTERS, VIDEOS:

43. VA National Center for Patient Safety. "Tips on Reducing Falls." TIPS, Topics in Patient Safety, Newsletter. 2002, 2(3): <http://vawww.ncps.med.va.gov/TIPSarchive02.html>
44. VHA National Center for Patient Safety. Patient Personal Freedoms and Security. Fall Prevention and Management." October 2001: <http://www.patientsafety.gov/FallPrev/howtostart.html>
45. Video: Fear of Falling. FFH 5783. Films for the Humanities & Sciences, Box 2053 Princeton, NJ 08543-2053: 800-257-5126
46. Tennstedt S. Peterson E. Howland J. Lachman M. A Matter of Balance: Managing Concerns about Falls. 1998. Boston University Roybal Center Consortium, Trustees of Boston University.
A group program developed by the Boston University Roybal Center Consortium uses cognitive restructuring techniques and skills training to change perceptions and behaviors in older adults whose activity levels have been limited by their fears about falling. The program has been implemented successfully by senior centers, senior housing sites, hospitals, and home health agencies. The program is a nine session process.

VIII. SUGGESTED WEB PAGES

1. The Administration on Aging, <http://www.aoa.dhhs.gov/>
2. The American Association for Retired Persons, <http://www.aarp.org/>
3. CDC National Center for Injury Prevention, <http://www.cdc.gov/ncipc/falls/default.htm>
4. CDC - National Center for Injury Prevention: A Toolkit to Prevent Senior Falls, <http://www.cdc.gov/ncipc/pub-res/toolkit/toolkit.htm>
5. The Center for Aging Research and Clinical Care, <http://www.cornellaging.org/>
[go to http://www.cornellaging.org/medical/unit_gero.html to see a program showing the effect of disorders in the elderly on home design (Flash 6 required)]
6. The Gerontological Society of America, <http://www.geron.org/>
7. The Merck Institute of Aging & Health: Falls Toolkit, <http://www.miahonline.org/tools/falls/>
8. National Institute on Aging, <http://www.nia.nih.gov/>
9. Safe USA: Preventing Falls Among Older Adults, <http://www.safeusa.org/olderfalls.htm>
10. San Francisco Department of Public Health, <http://www.dph.sf.ca.us/PHP/CHIPPS.htm>

Additional Resources Online

1. Technology Assessment Guide, http://vaww.ncps.med.va.gov/fallstoolkit/resources/other/Technology_Assessment_Guide.pdf
2. Education Resource Guide, http://vaww.ncps.med.va.gov/fallstoolkit/resources/other/Education_Resource_Guide.pdf

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Video 1



Video 1



Video 1: Performing a Balance Assessment

The *Performing a Balance Assessment* video is designed to teach rehabilitation therapists about performing functional assessments relating to falls. Also included with the video is a handbook that provides more detailed explanations of each of the functional assessments. The therapists watching this video should have a copy of the balance assessment handbook and a pencil or pen to take notes.

IMPORTANT:

Only rehabilitation therapists should perform this assessment. This includes physical therapists, occupational therapists and kinesiotherapists.

Audience: Rehabilitation Therapists

Materials Needed: Balance Assessment Handbook (booklet following this page) and pencil or pen

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Balance Assessment Handbook

A Component of the Falls Toolkit



by Stephanie Hart-Hughes, PT, NCS
VISN 8 Patient Safety Center of Inquiry
James A. Haley Tampa Veterans' Hospital
Tampa, FL

This handbook should be used in conjunction with the Balance Assessment Video. The video is available in the Falls Toolkit Media Box on VHS and VCD formats.

PREFACE

This guide provides the narrative discussion designed to accompany the educational video that will standardize the Functional Rehabilitation Falls Team Assessment. The accompanying video-cassette demonstrates this assessment on a Falls Clinic patient from the James A. Haley Tampa Veterans' Hospital. The discussion following the video assessment provides rehabilitation therapists with a detailed explanation of sub-test administration and scoring (when applicable). The complete Tampa VA Physical Therapy Assessment has been provided as an example as it has been successfully used on all falls clinic patients since September 2001 to assist with team-based differential diagnosis of various pathologies that affect gait and balance.

This is a MODEL that has been successful in ONE clinic. Developers of this tool recognize the need to tailor the rehabilitation therapist assessment to the specific needs and goals of your falls clinic. Modification of the evaluation will be dependent on falls clinic team members' specialties, clinic resources (including time), general patient population / presentation and the manner in which each specific clinic decides to delegate various assessment elements among all its clinicians.

Please send all feedback regarding successful modifications you have made to optimize this assessment and maximize its diagnostic abilities to Stephanie Hart-Hughes via Outlook. This information will be shared throughout the entire program to assist other therapists.

***The Evidence-Based Fall Prevention Program would again like to thank Dr. Debra Rose for her collaboration in developing this tool. Dr. Rose is the co-director of the Center for Successful Aging at California State University in Fullerton, California.

★ *Please note that the 8-ft Up-and-Go Test, Chair Stand Test and Arm Curl Test are part of the Senior Fitness Test developed by Roberta E. Rikli and C. Jessie Jones.¹ **It is strongly recommended that this Senior Fitness Test manual be referred to for specific test administration instructions and norm-referenced data tables.** The manual can be purchased at <http://www.humankinetics.com>. The backward release maneuver is used with permission of Dr. Rose.*★

PART A: DESCRIPTION OF FUNCTIONAL ASSESSMENT SUB-TESTS

Section 1: Home Living Assessment

This information may be obtained from a patient questionnaire to optimize time. Quickly verify all reported environmental questionnaire data with the patient during the interview and any other data you feel pertinent to the assessment.

1. Home Living Environment:

a. Physical Layout

- | | | |
|--|--|--|
| <input type="checkbox"/> Stairs inside home | <input type="checkbox"/> Stairs to get into home | <input type="checkbox"/> Clutter |
| <input type="checkbox"/> Grab bars in bathroom | <input type="checkbox"/> Throw rugs | <input type="checkbox"/> Bright lighting |
| <input type="checkbox"/> Bath chair or bench | <input type="checkbox"/> Nonskid bath mats | <input type="checkbox"/> Bathtub |
| <input type="checkbox"/> Shower stall | <input type="checkbox"/> Hand held showerhead | <input type="checkbox"/> Nightlights |
| <input type="checkbox"/> Raised toilet seat | <input type="checkbox"/> Slick/slippery floors | <input type="checkbox"/> Uneven ground |
| <input type="checkbox"/> Electric cords on floor | <input type="checkbox"/> Ramps | <input type="checkbox"/> Hills around yard/grounds |
| <input type="checkbox"/> Other: | | |

b. Current Social Supports/Activity Level:

c. ADL Independence:

Section 2: Observations/Deformities

This section may be used to chart any significant observations that may impact the patient's balance, gait and resulting function. Examples of information that may be included are posture, tremors, swelling, bruising, deformities or demonstration of pain behaviors.

2. Observation/Deformities:

Section 3: Shoe Assessment

Evaluate the patient's footwear for support, wearing of treads, etc. Be especially mindful of footwear in patients with diabetes (need for pressure-relieving insoles, presence of sharp edges and restrictive elastic). Request information on use of footwear in their home and provide education if this may be increasing their fall risk.

3. Shoe Assessment:

Section 4: Motor Assessment

Quick evaluation performed with note of any impairment in ROM and strength that may impact functional mobility. If any significant deficits are discovered, take the time to investigate further (e.g., manual muscle test if prominent ankle dorsiflexion weakness is noted).

4. Motor Status:

Section 5: Functional Strength Test

a. L/E: Chair Stand Test^{1,2}:

Equipment/set-up: Straight backed chair without arms (seat height approximately 17”). Chair is placed against wall or heavy object (plinth) to prevent it from moving during test. A stopwatch is also required.

Starting Position: Patient sitting in middle of chair with back straight and feet on floor. Arms are crossed over chest.

Test Protocol: The participant is instructed to rise to a full stand and return back to a fully seated position after the signal “go” is given. They are encouraged to complete as many full stands as possible within a 30-second time limit. The examiner demonstrates the test for the patient and allows a practice trial of 1 to 2 repetitions to ensure correct form. One 30-second trial is performed and recorded.

Scoring: The score is the total number of stands executed correctly within 30 seconds. If the patient is more than half way up at the end of 30 seconds it is counted as a full stand. Results obtained with this test may be compared to age-related normative values listed in the Senior Fitness Test manual.¹

Adaptations if Hand Use is Required: If the participant is unable to perform the task without use of hands during the practice trial, check “YES” for the “Use of hands required?” question on the assessment form. The test continues with the patient using the chair or their thighs to push off. If the participant uses their hands, their score **can not** be compared with age-related normative values published in the Senior Fitness Test manual.¹

5. Functional Strength Tests

a. L/E (Chair Stand Test):

- Use of hands required? YES NO
- Number of repetitions completed in 30 seconds:

Section 5a: Chair Stand Test (Number of Stands)

Sex \ Age	60-64	65-69	70-74	75-79	80-84	85-89	90-94
Normal Range of Scores for Men* ¹	14-19	12-18	12-17	11-17	10-15	8-14	7-12
Normal Range of Scores for Women* ¹	12-17	11-16	10-15	10-15	9-14	8-13	4-11

*Normal range of scores is defined as the middle 50 percent of each age group. Scores above the range would be considered “above average” for the age group and those below the range would be “below average.” Scores reprinted with permission of the authors.

b. U/E: Arm Curl Test¹:

Equipment/set-up: Straight backed chair without arms (seat height approximately 17"). Dumbbells: 8 lbs for men and 5 lbs for women. A stopwatch is also required.

Starting Position: Patient sitting in middle of chair with back straight and feet on floor. The weight is held in their dominant hand (use other side if dominant hand is impaired and unable to maintain grasp). The arm is positioned with the elbow in extension by the side of the patient's torso, perpendicular with the floor. The wrist is initially positioned in neutral.

Test Protocol: The participant is requested to turn palm upwards (supinate forearm) while curling the arm through full range of motion and then return to full extension. In the downward position, the hand should have returned to the original starting position (wrist in neutral). The participant is encouraged to perform as many curls as possible within 30 seconds. The examiner demonstrates the test for the patient and allows a practice trial for 1 to 2 repetitions to ensure correct form. A 30-second trial is performed and recorded. Examiner positioning can be adjusted if the participant is unable to maintain their upper arm still against their body during the trial. If patient form is problematic, the therapist may either kneel or sit next to the patient (the side which they are holding the weight) and place their fingers on the anterior aspect of the participant's upper arm to stabilize it from moving and ensure full range of motion is achieved (patient's forearm should squeeze examiner's fingers).

Scoring: The score is the total number of curls executed correctly within 30 seconds. If the arm is more than half way up at the end of 30 seconds, it is counted as a curl. Results obtained with this test may be compared to age-related normative values listed in the Senior Fitness Test manual.¹

Adaptations: If the patient is unable to hold the dumbbell due to a medical condition affecting the hand or wrist, a Velcro wrist weight may be used. If the patient is unable to perform one (1) repetition with the appropriate weight, a lighter one may be substituted (ensure you note the change on the assessment form). Remember, comparison with age-related normative values is only possible if the standard testing protocol is followed.

5. Functional Strength Tests**b. U/E (Arm Curl Test):**

- Arm used: ___ Left ___ Right
- Weight:
 - 5lbs (Female): ___
 - 8lbs (Male): ___
- Number of repetitions completed in 30 seconds:

Section 5b: Arm Curl Test (Number of Curls)

Sex	Age	60-64	65-69	70-74	75-79	80-84	85-89	90-94
Normal Range of Scores for Men* ¹		16-22	15-21	14-21	13-19	13-19	11-17	10-14
Normal Range of Scores for Women* ¹		13-19	12-18	12-17	11-17	10-16	10-15	8-13

*Normal range of scores is defined as the middle 50 percent of each age group. Scores above the range would be considered "above average" for the age group and those below the range would be "below average." Scores reprinted with permission of the authors.

Section 6: Finger/Nose Test

Note movement quality, action tremors or targeting problems.

6. Finger/Nose Test: (IT = intact, IM = Impaired)

Right:

Left:

Section 7: mCTSIB: Modified Clinical Test of Sensory Integration on Balance^{3,4}

This test allows for preliminary assessment of how well a patient can integrate various senses with respect to balance and compensate when one or more of those senses are compromised.

Sensory system involvement is modulated within various conditions as follows:

- Condition 1: Three sensory systems available for balance (vision, vestibular, somatosensory).
- Condition 2: Vestibular and somatosensory available. Vision absent.
- Condition 3: Vestibular and vision available. Somatosensory compromised.
- Condition 4: Vestibular available. Vision absent, somatosensory compromised.

Equipment/set-up: Foam pad (dense enough to avoid bottoming out) and a stopwatch required.

Starting Position: Patient stands with feet shoulder width apart and arms crossed over chest.

Protocol: A 30-second trial is timed using a stopwatch. Time is stopped during a trial and recorded if: a) patient deviates from initial crossed arm position, b) patient opens eyes during an "eyes closed" trial condition, or c) patient moves feet (takes a step) or requires manual assistance to prevent loss of balance. A trial is successful if the patient is capable of maintaining the starting position independently for a period of 30 seconds.

A maximum of three (3) trials are performed for all conditions. Trials are performed until the patient either: a) successfully maintains the starting position for an entire 30-seconds, or b) completes three, 30-second trials to the best of their ability.

Scoring:

- Conditions 1 thru 4: Record the time (in seconds) the patient was able to maintain the starting position (maximum of 30 seconds). Remember to record the times for all trials.

• Total Score =

Average Time Cond 1 + Average time Cond 2 + Average Time Cond 3 + Average Time Cond 4
(if > 1 trial required) (if > 1 trial required) (if > 1 trial required) (if > 1 trial required)

7. Modified CTSIB

Proceed to next condition when one, 30-second trial is completed or all 3 trials are performed.

- Condition 1: Eyes open, firm surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean score _____
- Condition 2: Eyes closed, firm surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean score _____
- Condition 3: Eyes open, foam surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean score _____
- Condition 4: Eyes closed, foam surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean Score _____

TOTAL SCORE: ___/120 sec (mean score used for each condition if > 1 trial is performed)

Section 8: Multi-Directional Reach Test (MDRT)^{5,6}

This test allows for analysis of the patient's voluntary postural control. It is used to evaluate how far patients are able and/or willing to lean away from a stable base of support in multiple directions.

Equipment/set-up: Yardstick

Starting Position: Position a yardstick at the level of the patient's acromion process. This may be achieved by affixing the yardstick to the wall. Placing the yardstick on a rolling IV pole with height adjustable clamp or a rolling mirror with Velcro is also an option that may facilitate test administration. Participant stands with feet shoulder width apart and arm raised to 90 degrees (parallel to floor, palm facing medially).

Protocol: The patient is instructed to reach as far forward as possible without letting their feet raise off the floor or their hand touch the yardstick. Location of the middle finger (in inches) is recorded. Trial distance (in inches) is obtained by subtracting the end number from the starting position number. Perform one (1) practice trial to ensure patient understanding of instructions followed by 1 trial that is recorded. Repeat similar protocol for reach backwards, left and right.

★ *NOTE: True standardized test involves performance of one (1) practice attempt and three (3) trials. The mean of the three trials is recorded as the "distance reached" and the movement strategy that the participant used for each attempt is noted. The Tampa Falls Clinic has decided to perform only one practice and one trial due to time constraints and patient fatigability.*★

8. Multi-Directional Reach Test (MDRT)

- Forward Reach:
- Backward Reach:
- Lateral Reach Right:
- Lateral Reach Left:

Section 9: Backwards Release³

This maneuver enables the therapist to obtain preliminary information on the client's automatic postural control (involuntary).

Equipment/set-up: No specific equipment required.

Starting Position: Patient is asked to stand with feet shoulder width apart.

Protocol: Clinician places their hand between the patient's scapulae. Client is asked to "lean back against my hand." Once the patient is leaning backwards into the therapist's hand, the therapist unexpectedly removes the support. The amount of force created by the patient's lean should be sufficient to invoke a loss of balance that requires a change in the base of support (i.e., at least one backward step).

Scoring: Check on appropriate line if the patient is able to regain balance independently or requires physical assistance to do so. Note the number of steps taken by the patient if they are able to self-correct for imbalance created. "Unable to perform" option is available if the therapist feels that the maneuver is inappropriate (e.g., extreme anxiety) or unsafe (e.g., obesity) to be performed on a specific patient.

9. Backwards release:

- ___: Steadies self independently
 - Number of steps taken:
- ___: Requires physical assistance not to fall
- ___: Unable to perform

WARNING!

This test is dangerous. Do not perform this test if you will be unable to catch the patient or if the test is inappropriate in any way.

Section 10: 8 ft Up and Go Test^{1,7}

Equipment/set-up: Place a chair (approximately 17 inches in height) against a wall or firm object for safety to prevent it from sliding backwards. Place a cone on the floor exactly 8 ft away (distance measured is from the front edge of the chair to the back edge of the cone). Ensure a minimum of 4 ft of clearance beyond the cone to allow for turning room. A stopwatch is also required.

Starting Position: Patient is seated in the chair with hands on thighs and feet flat on the floor.

Protocol: Patient is instructed that on the signal “go,” they are to rise from the chair (pushing off of thighs or chair is permitted), walk “as quickly as possible” around the cone and return to a seated position in the chair. The participant is told that they will be timed and should therefore walk as quickly as possible but not to run. Following a demonstration, the patient is allowed one practice trial followed by two test trials.

Scoring: The clinician begins the timer when the “go” signal is given (even if the patient has not begun to move) and stops the time at the exact instant that the participant’s buttocks contacts the chair following the walk segment. Note the scores of both test trials to the 1/10th second yet the faster of the two times is recorded on the assessment form for evaluation purposes. Results obtained with this test may be compared to age-related normative values listed in the Senior Fitness Test manual.¹

Adaptation: Use of an assistive device is permitted if required (remember to mark what type of device the patient used on the evaluation form) yet does not allow for comparison with age related, normative values from the Senior Fitness Test. Be sure to retest the patient using the same device on following visits. Additional trials can be administered without a device or a different type of device if appropriate.

★ *Score > 8.5 seconds is associated with high fall-risk in community-dwelling older adults.*★

10. 8 Feet Up & Go:

Section 10: 8 Feet Up & Go (in Seconds)								
Sex	Age	60-64	65-69	70-74	75-79	80-84	85-89	90-94
Normal Range of Scores for Men* ¹		5.6 - 3.8	5.9 - 4.3	6.2 - 4.4	7.2 - 4.6	7.6 - 5.2	8.9 - 5.5	10.0 - 6.2
Normal Range of Scores for Women* ¹		6.0 - 4.4	6.4 - 4.8	7.1 - 4.9	7.4 - 5.2	8.7 - 5.7	9.6 - 6.2	11.5 - 7.3

*Normal range of scores is defined as the middle 50 percent of each age group. Scores above the range would be considered “above average” for the age group and those below the range would be “below average.”
Scores reprinted with permission of the authors.

Section 11: Gait Speed Test⁸

Equipment/Set-up: Mark off a 15 ft (4.57m), unobstructed course on the ground with the use of black carpenter's tape. An additional 2 ft is marked at either end of the course to allow for subject acceleration/deceleration. A stopwatch is also required.

Starting Position: Patient is set-up in a standing position at the beginning of the course.

Protocol: Patients are asked to walk across the course at their "usual, comfortable speed." Time is started when the subject's foot crosses the black tape line indicating the end of the course. One practice trial is performed prior to testing to ensure patient understanding of the task. Two timed walks are performed with the fastest of both trials recorded on the sheet.

Scoring: The fastest of both trials is recorded on the score sheet. Gait speed may be calculated by dividing the patient's timed score in seconds by 4.57. Van Swearingen and Branch⁹ noted 72% sensitivity and 74% specificity of gait speed for recognizing the risk of recurrent falls in frail older adults, including a cutoff score of 0.56 m/s for risk of recurrent falls.

Adaptation: Use of the patient's habitual assistive device is permitted.

11. Gait speed (time in seconds over 15 foot distance):

Section 12: Observational Gait

Gait Deviations:

Use the check-off list to record any gait deviations observed. Deviations not listed may be entered in the "other" section.

Current use of Assistive Devices:

This information may be obtained from the Patient Questionnaire to optimize time. Quickly verify all reported questionnaire data with patient during interview and record use of devices in check boxes provided.

12. Observational gait:

- Deviations observed
 - () No significant deviations observed
 - () Trunk lateral lean
 - () Forward trunk flexion
 - () Hip hiking
 - () Hip circumduction
 - () Scissoring
 - () Trendelenburg R ___ L ___
 - () Knee hyperextension R ___ L ___
 - () Foot drop R ___ L ___
 - () Ataxic gait pattern
 - () Antalgic gait pattern
 - () Festinating
 - () Shuffling
 - () Decreased gait speed
 - () Widened base of support
 - () OTHER:

- Current use of assistive device(s):

	INDOORS	OUTDOORS	ON BUS	SHOPPING
___ Orthotics/Shoes				
___ Cane				
___ Walker-Wheels				
___ Brace				
___ W/C				
___ Elec W/C-Scooter				
___ Prosthesis				
___ “Cruise Furniture”				

Section 13: Clinical Impression

Allows for narrative to hypothesize on etiology of falls according to physical evaluation performed.

13. Clinical Impression:

Section 14: Physical Therapy Recommendations

List any recommendations that arise from your evaluation (exercise program, equipment, etc.).

14. Physical Therapy Recommendations:

Part B: The Assessment Form

Part B: Assessment Form

Physical Therapy Assessment

1. Home Living Environment:

a. Physical Layout

- Stairs inside home Stairs to get into home Clutter
 Grab bars in bathroom Throw rugs Bright lighting
 Bath chair or bench Non-skid bath mats Bathtub
 Shower stall Hand held showerhead Nightlights
 Raised toilet seat Slick/slippery floors Uneven ground
 Electric cords on floor Ramps Hills around yard/grounds
 Other:

b. Current Social Supports/Activity Level:

c. ADL Independence:

2. Observation/Deformities:

3. Shoe Assessment:

4. Motor Status:

5. Functional Strength Tests:

a. L/E (Chair Stand Test):

- Use of hands required? YES NO
- Number of repetitions completed in 30 seconds:

b. U/E (Arm Curl Test):

- Arm used: Left Right
- Weight:
 5lbs (Female): ____
 8lbs (Male): ____
- Number of repetitions completed in 30 seconds:

6. Finger/Nose: (IT = intact, IM = Impaired)

Right:

Left:

7. Modified CTSIB: proceed to next condition when one, 30-second trial is completed or all three trials are performed.

- Condition 1: Eyes open, firm surface
- Total time: ____/30 sec

- Total time: ___/30 sec
- Total time: ___/30 sec Mean score _____
- Condition 2: Eyes closed, firm surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean score _____
- Condition 3: Eyes open, foam surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean score _____
- Condition 4: Eyes closed, foam surface
 - Total time: ___/30 sec
 - Total time: ___/30 sec
 - Total time: ___/30 sec Mean score _____

TOTAL SCORE: ___/120sec (mean score used for each condition if > 1 trial is performed)

8. Reach in 4 directions test.

- Forward Reach:
- Backward Reach:
- Lateral Reach Right:
- Lateral Reach Left:

9. Backwards release:

- ___: Steadies self independently
 - Number of steps taken:
- ___: Requires physical assistance not to fall
- ___: Unable to perform

10. 8 feet Up & Go:

11. Gait speed: (time in seconds over 15 foot distance)

12. Observational gait:

- Deviations observed
 - () No significant deviations observed
 - () Trunk lateral lean
 - () Forward trunk flexion
 - () Hip hiking

- () Hip circumduction
- () Scissoring
- () Trendelenburg R ___ L ___
- () Knee hyperextension R ___ L ___
- () Foot drop R ___ L ___
- () Ataxic gait pattern
- () Antalgic gait pattern
- () Festinating
- () Shuffling
- () Decreased gait speed
- () Widened base of support
- () OTHER:

• Current use of assistive device(s):

	INDOORS	OUTDOORS	ON BUS	SHOPPING
___ Orthotics/Shoes				
___ Cane				
___ Walker-Wheels				
___ Brace				
___ W/C				
___ Elec W/C-Scooter				
___ Prosthesis				
___ “Cruise Furniture”				

13. Clinical Impression:

14. Physical Therapy Recommendations:

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Video 2



Video 2



Video 2: Hip Protectors in an Inpatient Setting

The video *Hip Protectors in an Inpatient Setting* is designed for nursing staff to raise awareness about hip protectors and their place in a falls prevention program. Nursing staff will learn about what is included in a falls prevention program, how to choose hip protectors for patients, how to size patients for hip protectors and instructions on how to wash hip protectors.

Audience: Nursing staff, including RNs, LPNs and NAs

Materials Needed: Hip protector information package (see following pages) and a pencil or pen

Hip Protector Information Package

Introduction:

This handout accompanies a video providing you with information about hip protectors so that, if decided, you can implement their usage at your VA medical center. This handout contains factual information as it is presented in the video, but is not a direct outline of the video. Use this handout as a supplement while watching the video or during follow-up discussions.

At the end of this handout is a section entitled Success Factors, which contains comments and opinions of teams who trialed different types of hip protectors on select patient units during an NCPS initiative called the Hip Protector Quality Improvement Project. This information does not appear in the video.

Implementing hip protectors can be challenging. Keep in mind that many VA medical centers currently use hip protectors and are eager to share their success factors.

General Information about Falls, Fractures, and Prevention:

- Hip fractures result from lateral falls with greater impact on trochanter or proximal femur.
- 3-5% of falls in older adults result in fractures and this percentage increases for inpatients due to prevalence of osteoporosis.
- Fractures lead to patient decline in functional ability and independence.
- About ½ patients who fall don't return to their previous level of functioning and 20-30% die within one year.
- Restraints are not effective fall prevention measures. They drain nursing resources, cause patients to lose muscle strength, and can potentially cause entrapment.
- VA wants veterans to be as mobile as possible and this means they may fall more often.
- Hip protectors reduce risk of serious injury from these falls.

Hip Protectors:

Hip protectors are designed to prevent trochanter fractures during patient falls.

Research studies show that hip protectors can significantly reduce patient injuries. Six studies found a lower risk of fracture in the patient group wearing hip protectors. Three of these studies reported no hip fractures while patients were wearing hip protectors.

Two manufacturers of hip protectors are **HipSaver™** and **Posey™**.

There are several different models available by these manufacturers. These models are designed to meet the varying needs of different patients.

HipSaver™ Models

- *SlimFit™* – designed mostly for outpatients. The material is stretchy and form fitting. This model is also available with a male fly front.
- *Nursing Home* – designed for nursing home patients. The material is less stretchy than the SlimFit model. It has larger leg openings so that it is easier for patients with less mobility. This model is also available with a male fly front.
- *QuickChange™* – designed for incontinent patients or for self-toileting patients who have difficulty moving the hip protector up or down. This model has two snaps in the front of the garment. This model is good for patients who are able to stand while they are being changed.
- *Wrap&Snap™* – designed for patients who are unable to stand while they are being changed, because the garment can be laid flat underneath them and snapped around them. Some self-toileting patients may also like this model.
- *Open-Bottom™* – designed for self-toileting patients who are not able to pull the hip protectors up and down. The model is available with or without Velcro. The Velcro model can be wrapped around a patient, while the non-Velcro model is pulled up.

Posey™ Models

- *Hipster™ III (#6016)* – The standard model for continent patients.
- *Hipster™ Incontinent (#6017)* – This model features a snap front for easy application while the patient is lying in bed.
- *Hipster™ Fly Front (#6018)* – This model features a fly front and is white rather than the usual beige color.
- *EZ On (#6019)* – This model is mesh and has a Velcro closure around the waist and each leg. It is designed for patients who may be at risk for falling while toileting or while in the shower.

Choosing the Right Models for Patients:

After determining which patients need hip protectors using fall risk assessments (such as the Morse or Hendricks fall risk assessments or another method), find the appropriate hip protector model for the patient. Patient characteristics that will influence hip protector model choice include: patient continence level, weak grip strength, or cognitive impairment.

HipSaver™ Quick Checklist (table below)

✓ = Model designed with this particular patient type in mind

✗ = Model also works with this patient type

Models	Patient Characteristics						
	Outpatient	Self Toileting	Incontinent	Limited Mobility	Weak Grip	Dementia / Cognitive Impairment	Rehab Patients
SlimFit™	✓	✓					
Nursing Home	✗	✓		✓			
QuickChange™	✗	✗	✓	✓	✗	✗	✗
Wrap&Snap™	✗	✗	✓	✓		✗	
OpenBottom™	✗	✓		✓	✓	✗	✗

Posey™ Quick Checklist (table below)

✓ = Model was designed with the particular patient type in mind

✗ = Model is also useful with this patient type

Models	Patient Characteristics						
	Outpatient	Self Toileting	Incontinent	Limited Mobility	Weak Grip	Dementia/ Cognitive Impairment	Rehab Patients
Hipster™ III	✓	✓					
Incontinent	✗	✗	✓	✗		✗	
Fly Front	✗	✓					
Easy-On	✗	✓	✗	✗	✓	✗	✗

Choosing the Right Model for Patients Con't:

HipSaver™ vs. Posey™ Checklists (table below)

✓ = Model was designed with the particular patient type in mind

× = Model is also useful with this patient type

● = Option available on model considers this patient type

Models	Patient Characteristics									
	Outpatient	Self Toileting	Incontinent	Limited Mobility	Weak Grip	Dementia/ Cognitive Impairment	Rehab Patients	6 feet tall or more	Male Patient	
HipSaver™ Models										
SlimFit™	✓	✓						●	●	
Nursing Home	×	✓		✓				●	●	
QuickChange™	×	×	✓	✓	×	×	×	●	×	
Wrap&Snap™	×	×	✓	✓		×		●	×	
Open Bottom™	×	✓		✓	✓	×	×	●	×	
Posey™ Models										
Hipster™ III	✓	✓								
Incontinent	×	×	✓	×	×	×				
Fly Front	✓	✓							✓	
EZ On		✓		✓	✓	×	×		×	

Sizing Hip Protectors:

HipSaver™ Determining Correct Size Hip Protector for a Patient

Measure patient around the hip. If patient uses incontinent products, measure the patient's hip while he or she is wearing that product.

Sizing Chart			
Hip Measurement		Hip Protector Size	
Inches	Approx. Centimeters		
28" - 31"	71.1 cm - 78.7 cm	XS	Extra Small
32" - 35"	81.3 cm - 88.9 cm	S	Small
36" - 39"	91.4 cm - 99.1 cm	M	Medium
40" - 44"	101.6 cm - 111.8 cm	L	Large
45" - 50"	114.3 cm - 127 cm	XL	Extra Large
51" - 57"	129.5 cm - 144.8 cm	XXL	Extra Extra Large

Sizing Hip Protectors Con't:

Posey™ Determining Correct Size Hip Protector for a Patient

Posey Hipsters™ are sized differently from HipSavers™. A measurement is taken from around the waist and around the hips.

Posey™ Sizing Chart					
Waist Measurement		Hip Measurement		Hip Protector Size	
Inches	Approx. cm	Inches	Approx. cm		
28" - 30"	71.1 cm - 76.2 cm	35" - 37"	88.9 cm - 94 cm	S	Small
32" - 34"	81.3 cm - 86.4 cm	39" - 41"	99.1 cm - 101.4 cm	M	Medium
36" - 38"	91.4 cm - 96.5 cm	43" - 45"	109.2 cm - 114.3 cm	L	Large
40" - 42"	101.6 cm - 106.8 cm	47" - 49"	119.4 cm - 124.5 cm	XL	Extra Large
44" - 48"	111.8 cm - 121.9 cm	51" - 53"	129.5 cm - 134.6 cm	XXL	Extra Extra Large

Sizing Comparison Between HipSaver™ and Posey™

Size Comparison						
Posey™ Waist Measurement		Posey™ Hip Measurement		Size	HipSaver™ Hip Measurement	
Inches	Approx. Centimeters	Inches	Approx. Centimeters		Inches	Approx. Centimeters
N/A	N/A	N/A	N/A	XS	28" - 31"	71.1 cm - 78.7 cm
28" - 30"	71.1 cm - 76.2 cm	35" - 37"	88.9 cm - 94 cm	S	32" - 35"	81.3 cm - 88.9 cm
32" - 34"	81.3 cm - 86.4 cm	39" - 41"	99.1 cm - 101.4 cm	M	36" - 39"	91.4 cm - 99.1 cm
36" - 38"	91.4 cm - 96.5 cm	43" - 45"	109.2 cm - 114.3 cm	L	40" - 44"	101.6 cm - 111.8 cm
40" - 42"	101.6 cm - 106.8 cm	47" - 49"	119.4 cm - 124.5 cm	XL	45" - 50"	114.3 cm - 127 cm
44" - 48"	111.8 cm - 121.9 cm	51" - 53"	129.5 cm - 134.6 cm	XXL	51" - 57"	129.5 cm - 144.8 cm

Monitoring Patients Wearing Hip Protectors:

- Look for skin irritation, changes in patient continence, or signs of patient discomfort.
- Adjust hip protector models and usage accordingly.

Laundering Hip Protectors:

The following laundry instructions may prevent the spread of hospital infections.

Washing Hip Protectors on the Unit	Washing Hip Protectors in Hospital Laundry
Wash with regular detergent and a small amount of bleach. Note: Dissolve bleach in water prior to putting hip protectors in the machine. Or, wash with detergent supplied by the laundry service for washing clothes on the unit. Dry at 160° Fahrenheit	Wash and dry in clothing/pajama’s cycle. Use heavy soil cycle <i>only</i> as necessary

If using the hospital laundry, consider purchasing mesh laundry bags to ensure that the hip protectors stay together and are returned to the correct unit or facility. Mesh bags are also useful if laundry gets sent to another facility. Consider using special bins for the hip protectors so that they are always together. If you do this, make sure that the facility management and laundry people know what the bins are for and that they need to pick them up daily to ensure the hip protectors get washed in timely fashion.

HipSaver™ Laundry Notes

Choosing the right hip protectors is important for both the patients and the staff. Consider your laundry facilities prior to purchasing hip protectors. HipSaver™ hip protectors can be washed in hospital laundry facilities. Additionally, using small amounts of bleach does not degrade the products quickly. Drying temperatures should be low. The hip protectors should be removed promptly from the dryer, especially if using the hospital or a commercial/industrial laundry.

Posey™ Laundry Notes

As a general rule, Posey™ hip protectors should not be washed in the hospital laundry. They degrade more quickly and pads may crack or dissolve. Bleach appears to accelerate this degrading process. However, if necessary, small amounts of bleach

should be used. Hip protectors should be dried in low heat and removed promptly from the dryer.

If the hip protectors come with removable pads, then remove pads and wipe them clean using a mild, liquid disinfectant. The pads may be removable because they do not tolerate washing conditions well and may disintegrate.

Contact Manufacturers:

HipSaver™ Contact Information

Ed Goodwin	Helen Brogna	Phone: 1-800-358-4477
President	Vice President	E-mail: <i>hipsavers@msn.com</i>
HipSaver™ Inc.	HipSaver™ Inc.	Web site: <i>www.hipsaver.com</i>

Posey™ Contact Information

Gary Platzman	Phone: 1-800-447-6739 extension 193
Vice President, Sales	E-mail: <i>gplatzman@posey.com</i>
Posey™ Company	Web site: <i>www.posey.com</i>

Success Factors:

Facilities participating in the Hip Protector Quality Improvement Project identified factors that lead to successful implementation of hip protectors. The following success factors apply specifically to the choice of hip protector models:

- *Start with a small number of a variety of hip protectors and allow the staff to use them in the care setting. Use recommendations from staff and patients to make a final decision on the models of hip protectors purchased.*
- *Allowing nursing staff and patients to have more input on implementation process increases the likelihood that they will comply with hip protector use.*
- *Ensure that there are at least two different models available, for example having both an incontinent and continent version available for patients to choose. This allows both patients and caregivers to have a choice in the models that they use, increasing the likelihood that they will use hip protectors.*
- *Allow patients to switch between the models available. This allows patients to choose the hip protector model that works best for them.*
- *One facility found that patients who were continent would start off wearing the incontinent brief, switch to the continent brief then switch back again when they found that it was easier to use the incontinent brief.*
- *When telling patients about the different models available, refer to the models in non-stigmatizing language, such as brief with snaps versus the brief without snaps. This reduces the stigma associated with incontinence, allowing patients to use the hip protector that best meets their need.*

Facilities identified some success factors directly related to the logistics of implementing hip protectors:

- *Implement hip protectors using a team that includes laundry/facility management staff and acquisitions staff.*
- *Include nursing assistants on the implementation team. This increases the involvement and ownership among nursing assistants, who are the staff that will utilize the hip protectors the most.*
- *Provide management with regular updates on the program and the reduction of fall injury rates. This increases the likelihood that they will provide the support needed for hip protectors.*
- *Providing updates to VA Directors meetings increases the likelihood that management will support the project.*

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Video 3



Video 3



Video 3: Protecting Your Hips with Hip Protectors

The video *Protecting Your Hips with Hip Protectors* is designed to inform patients about hip protectors and to help caregivers convince patients to wear the hip protectors. A copy of the video should be given to patients who are provided with hip protectors or to patients whom caregivers believe should be wearing hip protectors. The video can also help educate families about the importance of hip protectors. This video can be used as part of an information package for caregivers including pamphlets and flyers.

Audience: Outpatients who are starting to use hip protectors or who caregivers think should wear hip protectors, and families of patients who are or should be wearing hip protectors.

Materials Needed: **Hip Protectors** brochure (found in the front of this binder)

Supplemental Materials: **Fall Prevention at Home** brochure (found in the front of this binder)