THE UNIVERSITY OF IOWA | IOWA GERIATRIC EDUCATION CENTER

INFO-CONNECT

Fall Prevention

The Facts . . .

⇒ *There are an estimated 0.6 to 3.6 falls per nursing home resident each year.*

⇒ *WHICH MEANS: 1600 falls per 1000 NH beds per year.*

⇒ *Approximately 12% (1-36%) of NH falls result in serious injury.*

⇒ *Approximately 4% (1-10%) of NH falls result in fracture.*

⇒ *1800 fatal falls occur in US nursing homes each year.*

Nursing Home Falls:
The 3 W's of Fall Prevention

Resident falls in nursing homes continue to be a serious problem. It is estimated that 50 percent of nursing home residents will fall each year.

To prevent falls, it is important to understand the 3 W's of Fall Prevention:

WHERE

- Falls commonly occur in residents' rooms.
- 12 percent of falls occur while the resident is exiting bed or in the bathroom.

WHO

- Residents older than 75 years.
- Newly admitted residents with a previous fall within the last year.
- Residents with moderate to severe dementia.
- Residents with gait instability, poor balance and multiple physical disabilities.
- Residents who are unable to carry out more than two basic activities of daily living.

WHEN

- Occur between the hours of 6 pm and 6 am.
- Occur when staff/resident ratio is low.

Causes of Falls in Nursing Homes

- Gait/balance disorder, weakness — 26%
- Dizziness/vertigo — 25%
- Environment — 16%
- Confusion — 10%
- Other — 12%
  - ⇒ Arthritis
  - ⇒ Falling from bed
  - ⇒ Pain
  - ⇒ Acute illness
  - ⇒ Alcohol
  - ⇒ Drugs
  - ⇒ Epilepsy

To Learn More:

Fiatarone MA, O'Neill EF, Ryan ND, et al. Exercise training and nutritional supplementation for physical frailty in very elderly people. *N Engl J Med*. 1994;330:1769-75.

AGS/BGS/AAOS Panel on Falls Prevention. Guideline for the prevention of falls in older persons. *J Am Geriatric Soc.* 2001; 49:664-72.

Jensen J, Nyberg L, Gustafson Y, Lundin-Olson L., et al. Fall and injury prevention in residential care - effects in residents with higher and lower levels of cognition. *J Am Geriatric Soc.* 2003;51:627-35.

Kannus P, Parkkari J, Niemi S., et al. Prevention of hip fractures in elderly people with use of a hip protector. *N Engl J Med.* 2000;343:1506-13.

Rubenstein LZ, Josephson KR, Robbins AS. Falls in the Nursing Home. *Ann Intern Med.* 1994;121:442-51.

Risk Factors

In order to decrease falls in nursing homes, it is crucial to understand the potential risk factors. These risk factors normally fall into the following two broad categories:

- **Extrinsic Risk Factors**
- **Intrinsic Risk Factors**

Although many falls can be linked to a primary cause, the most successful interventions take into account the multifactorial nature of falls.

> **MOST FALLS ARE CAUSED BY A COMBINATION OF EXTRINSIC AND INTRINSIC FACTORS.**

Extrinsic Risk Factors

⇒ Physical or functional disorders related to the environment

Factor	Modification (*or Intervention*)
Slippery or wet floors or bathroom surfaces	Carpeting, nonskid flooring, bed side commode
Insufficient or glaring light	Increased lighting, night lights
Low lying obstructions	Clear paths
Improper bed and chair height	Lowered beds, raised chairs and toilet seats
Unlocked bed or wheelchair	Individual seating, bed stabilizers
Improper use of a walking aid	Physical therapy assessment
Improper dress or ill-fitting shoes	Occupational therapy assessment
Restraints	Restraint reduction program

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Intrinsic Risk Factors

⇒ Physical or functional disorders related to the individual

Factor	Clue	Causes	Assessment	Intervention
Impaired vision	Difficulty seeing in low light	Cataracts, Macular Degeneration	Acuity, visual fields, dark adaptation	Appropriate refraction, appropriate lighting
Impaired vestibular function	Vertigo (spinning sensation)	Drugs (furosemide, aminoglycosides), tumors, benign positional vertigo, Meniere's disease	Nystagmus, ENT exam	Avoid toxic drugs, balance exercises
Impaired proprioception (position sense)	Balance worse in the dark or on uneven ground	Diabetes, vitamin B12 deficiency, cervical arthritis	Motor and sensory exam, vitamin B12 level, blood glucose	Treat disease, appropriate walking aids and footwear, balance exercises
Impaired cognition	Impaired judgment and problem-solving skills	Dementia, depression	Mini-mental state examination	Supervised environment
Weakness	Difficulty arising from a chair	Chronic arthritis, stroke, recent illness or hospitalization	Joint and muscle exam, strength testing, range of motion, foot exam	Medication, strengthening exercises, balance and gait training, adaptive devices, podiatric treatment
Lower extremity pain	Antalgic gait	Arthritis, foot disorder	Pain scale	Analgesia, assistive device
Postural hypotension	Light-headed with position change	Medications, Parkinson's disease, diabetes	Postural vital signs	Hydration, adjust medications, stockings, reconditioning exercise
Medications	More than 4 medications	Sedating medications, long-acting benzodiazepines, neuroleptics, vasodilators	Medication review	Reduce or eliminate medications when possible

Fall Reduction Programs

A fall reduction program consists of the following 3 steps:

- Identification of at-risk residents
- Implementation of fall intervention strategies
- Evaluation of success of strategies

Identification

All fall prevention programs should be directed at two categories of residents:

- Residents who have fallen. (A previous fall is a strong predictor of high fall risk.)
- Frail residents who have risk factors.

Two essential components of identifying residents are Clinical Evaluation and Screening Instruments.

Clinical Evaluation

It is important to identify fall risk factors that can be treated to reduce the likelihood of future falls.

The following steps are key:

- Fall History
- Physical Exam
- Functional Assessment

> **PREDICTED 1-YEAR RISK OF FALLING IS 100% IF ALL 3 OF THE FOLLOWING RISK FACTORS ARE PRESENT.**

Fall risk is directly related to the number of the following risk factors:

- Hip weakness
- Balance instability
- 4 or more prescription medications

Screening Instruments

The following instruments have been validated for fall risk assessment:

- Tinnetti's Balance and Gait Evaluation Index
- "Get Up and Go"

For copies of these screening instruments *(as well as other assessment tools for mobility, delirium and cognition),*

visit the Iowa GEC website:

http://www.healthcare.uiowa.edu/ igec

Implementation

After this information is gathered, specific interventions can be implemented.

Below are examples of three risk factors and potential interventions.

1. Proximal Muscle Weakness
   - Strengthening exercises
   - High firm chairs
   - Raised toilet seats

2. Balance Problems
   - Bright lights
   - Night lights
   - Appropriate walking aid

3. Abnormal Gait
   - Gait training
   - Elimination of tripping hazards

A comprehensive fall management and safety program should be combined with the use of positioning or mobility-monitoring devices and rehabilitative therapy intervention.

The goal of a fall intervention program is to lower a resident's fall risk with minimal change to mobility or independence.

Benefits of Fall Intervention Program

- Environmental fall prevention programs which are targeted at high-risk residents result in a 25 percent annual decrease in falls.

- Fall prevention programs can minimize residents' risks of falling without compromising mobility or functional independence.

Physical Restraints

Physical restraints are often used to prevent falls, to prevent resistance to treatment and to manage uncontrollable behavior.

However, restraints often increase a resident's risk of injury. In addition, the prolonged use of restraints increase risks for:

- Death (strangulation, asphyxiation, etc.)
- Pressure ulcers
- Contractures
- Urinary incontinence
- Patient confusion
- Learned helplessness

Reducing Restraints

To reduce restraints, the circumstances surrounding the unacceptable behaviors must be noted, not merely that the behavior occurred.

- **WHEN** does the behavior occur?
- **WHAT** specific actions, interactions and reactions comprise the behavior?
- **WHERE** does the behavior occur?
- **WHO** is present when the behavior occurs?
- **WHY** does the behavior occur?
- **HOW** do those present respond to the behavior?