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2008 ISSA

National Floor Safety Institute
Symposium



Howard W. Harris, MD

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- Private practice – Orthopaedic sports medicine, arthroscopy and trauma specialist

Slip & Fall Injuries

- Prevalence
- Medical Significance
- Risk Factors & Etiology
- Prevention & Management
- Summary

Slip & Fall Prevalence

- > 33% of individuals over 65 fall annually (12 million)
- Half are repeat fallers
- Incidence of falls goes up with each decade of life
- Over 60% of nursing homes residents will fall each year

Prevalence & Economic Significance Slip & Fall Injuries

- Third most common cause of work-comp claims over all
- In the top three causes for claims in most segments of private industry
- Most common in healthcare

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Medical Significance

Morbidity

- Most common cause of nonfatal injuries annually
- ~ 8 million ER visits for fall related injuries annually
- > 1.8 million ER visits for fall related injuries in seniors annually
- Most common cause of hospital admissions for trauma
- ~ 425,000 hospital admissions annually
- \$19 billion in direct medical costs

Medical Significance

Mortality

- Leading cause of accidental death in ambulators > 75 years of age (%70)
- Second leading cause of accidental death in 45 and older age group
- ~ 13,000 fatalities from fall related injuries annually in age 65 or greater
- > \$179 million in direct medical costs

Medical Significance

Causes of death associated with a fall

- Head injury
- Pneumonia
- DVT → Pulmonary embolism
- Infection
- Cardiac arrest

Medical Significance

Consequences of a Fall

- Fractures result in 6% of falls (400-500K)
 - Hip, vertebra, forearm, leg, ankle, pelvis, humerus, hand
- Head injury – subdural hematoma, TBI
- Soft tissue injury
- Fear of falling can result in decreased activity, isolation, and further functional decline
- Nursing home placement and loss of independence (4-5 x greater risk)
- Increased dependence on family & society

Medical Significance

Hip Fractures

- 1% of falls result in hip fracture
- 90 % of hip fractures are from a fall
 - > 340,000 hospital admission annually
- Risk exponentially increases with age
- > \$10 billion in medical costs annually
- 60% have long term restricted mobility
- 25% remain functionally more dependent
- 25% die within 6 months
- In 2040 – estimated >500K hip fractures from falls

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Falls are Multi-factorial

Intrinsic Factors

Medical conditions

Impaired vision and hearing

Age related changes

Extrinsic Factors

Medications

Improper use of assistive devices

Environment

FALLS

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graph TD; MC[Medical conditions] --> FALLS; IVH[Impaired vision and hearing] --> FALLS; ARC[Age related changes] --> FALLS; M[Medications] --> FALLS; IUA[Improper use of assistive devices] --> FALLS; ENV[Environment] --> FALLS;
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Risk Factors & Etiology

Changes with Aging

- Neurologic
 - Increased reaction time
 - Decreased righting reflexes
 - Decreased proprioception
- Vision Changes
 - Decreased accommodation & dark adaptation
- Decreased muscle mass
 - Loss of core stability
 - Loss of extremity strength & endurance

Risk Factors & Etiology

Effects on Ambulation

- Slower gait
- Decreased stride length and arm swing
- Forward flexion of head and torso
- Increased flexion at shoulders, hips and knees
- Increased lateral sway

Risk Factors & Etiology

Dysmobility

- Dysmobility and falling closely related
- 15% over age 65 have trouble walking
- 25% men and 33% women over age 85 have difficulty with walking
- 2/3 of people in hospital or NH are unable to ambulate without assistance

Risk Factors & Etiology

Additional Pathology

- Ophthalmologic diseases
- Arthritis
- Foot problems
- Neurologic illness
 - Parkinson's & related disorders
 - Strokes
 - Peripheral neuropathy
- Dizziness and dysequilibrium

Risk Factors & Etiology

Where do falls occur?

- 50-60% of all falls occur at home
- Majority of falls occur on the same level
- Majority of falls occur while standing

Therefore,

40-50% of falls occur outside the home on the same level while standing

Risk Factors & Etiology

Community Falls

- Accidents/environment 37%
- Weakness, balance, gait 12%
- Drop attack 11%
- Dizziness or vertigo 8%
- Orthostatic hypotension 5%
- Acute illness, confusion, drugs, decreased vision 18%
- Unknown 8%

Risk Factors & Etiology

Residential Care Facility Falls

- Generalized weakness 31%
- Environmental hazard 27%
- Orthostatic hypotension 16%
- Acute illness 5%
- Gait or balance disorder 4%
- Drugs 5%
- Other or unknown 10%

Risk Factors & Etiology

Work related falls

- Review of six governmental and one industrial injury surveillance system
- 40-50% of fall related work injuries were attributable to slipperiness or slipping

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Prevention & Management

Intervention

- Adjustment in medication
- Behavioral instruction
- Exercise program
- Decrease environmental risk

Prevention & Management

An estimated 90% of all falls
are preventable

Summary

- Falls are a major potential health risk for all individuals, especially the elderly
- Falls result in major financial, independence and health changes in millions of individuals each year

Challenge

- Increase the corporate, public and political awareness of the risks and effects of falls on our society
- Support and contribute to increasing safety and protecting individual's independence
- Plan to decrease the risk of falls effecting yourself and your family in the future