

# FALLS

## DESCRIPTION:

All unintentional fall-related deaths and hospitalizations.

This section is a priority area for the Washington State Department of Health.



## Washington State Goal Statement

To reduce deaths and hospitalizations caused by falls among older adults

## National Healthy People 2010 Objectives

- Reduce deaths from unintentional falls from 4.7 deaths per 100,000 in 1998 to 2.9 deaths per 100,000
- For older adults, reduce rate of hip fracture.
  - For females age 65 or older, reduce hip fractures from 1056 per 100,000 in 1998 to 416 per 100,000.
  - For males age 65 or older, reduce hip fractures from 593 per 100,000 in 1998 to 474 per 100,000

## Statement of the Problem in

### Washington State

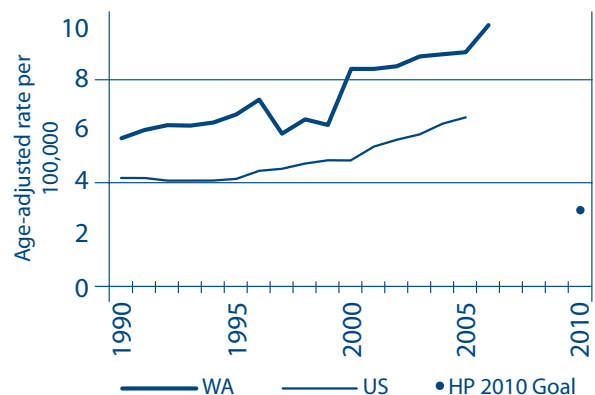
In 2006, falls was the leading cause of injury-related hospitalizations in Washington State. There were almost 19,000. Falls were the third leading cause of injury-related deaths, with 656 deaths. Adults age 65 or older had over two thirds of the hospitalized falls (12,502 hospitalizations) and 82% (537) of fall-related deaths.

## Washington State Data

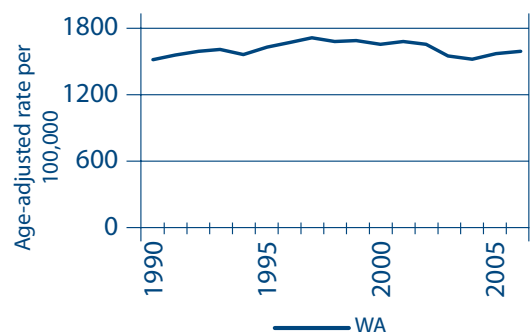
In 2006, Washington State's unintentional death rate from falls of 10.2 per 100,000 exceeded the Healthy People 2010 Objective of 2.9. It was more than double the national baseline of 4.6 deaths per 100,000 in 1999.

Older adults are the population at greatest risk for unintentional falls. Children and workers are two other groups at risk for falls. Second to motor vehicle crashes, the National Institute for Occupational Safety and Health reports that falls and homicide, with the same rate, are the second leading cause of occupational injury death.<sup>1</sup>

**Unintentional Fall Deaths**  
Washington State & United States Death Certificates, 1990-2006



**Unintentional Fall Hospitalizations Among Older Adults**  
Washington Hospital Discharge Data, 1990-2006



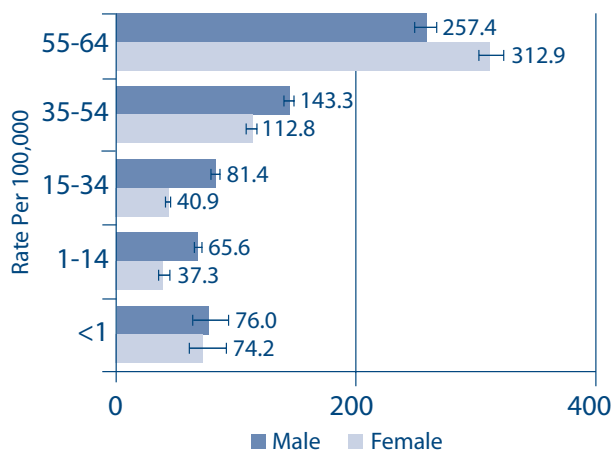
## Age and Gender

After infancy, the risk of falling increases rapidly with age. Older women have the highest fall hospitalization rates. One of the major risk factors for falling is being a female, age 80 or older.

### Nonfatal Unintentional Falls

Age and Gender, Ages <1-64

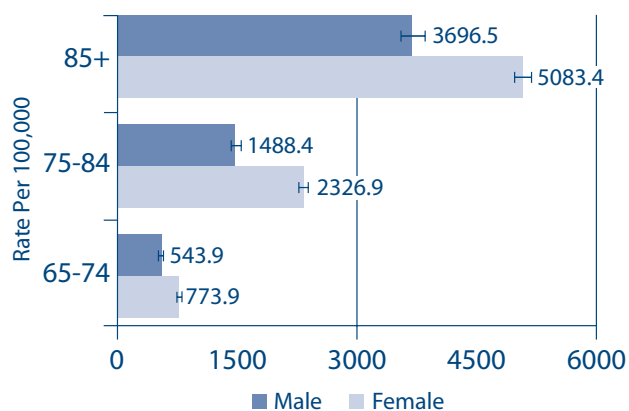
Washington Hospital Discharge Data, 2004-2006



### Nonfatal Unintentional Falls

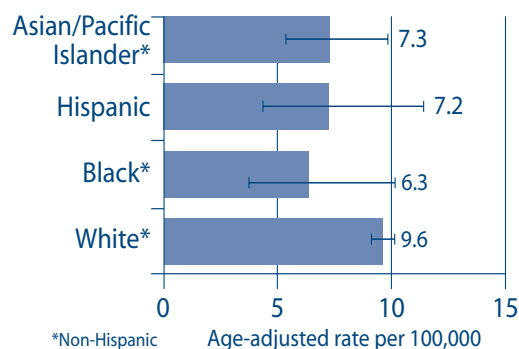
Age and Gender, Ages 65-85+

Washington Hospital Discharge Data, 2004-2006



### Fall Deaths

Race and Hispanic Origin  
Death Certificates, 2004-2006



## Falls Among Older Adults

Falls are a major health problem among older adults. In the United States, one out of three people age 65 or older living in a community fall at least once a year. Fall-related injuries cause significant mortality, disability, loss of independence and early admission to nursing homes. Fall rates increase sharply with advancing age.<sup>5</sup> The 12,502 hospitalizations in 2006 of older adults due to falls was an increase of about 300 from the year before. Falls among older adults are the leading cause of injury hospitalizations in Washington State. In Washington State from 1990-2006, the hospitalization rate for falls among adults age 65 or older increased 12%. Women have much higher rates of fall hospitalizations, but men have higher rates of fall deaths.

Falling has been found to be associated with subsequent admission to a nursing home. In 2005, among Washington State seniors who were hospitalized for a fall, 22% were released to their home under self-care and about 59% were moved to skilled nursing facilities or to intermediate care facilities for additional care. Many nursing home placements are temporary, with the patient returning home after two or three months of rehabilitation. However, falls remain a strong predictor of long-term placement in a nursing home.<sup>6</sup>

## Costs Associated with Falls

The costs of health care associated with treating fall-related injuries and fractures are staggering. In 2000, the national lifetime medical costs for treatment for falls were estimated at \$19.2 billion. This was more than the lifetime costs for treatment of motor vehicle crashes, estimated at \$14 billion. Because falls are more likely to occur among older adults, in 2000 the national cost for treatment of fall-related injuries accounted for 34% of the total medical costs of injuries even though falls accounted for only 23% of all injuries.<sup>7</sup>

The high rate of fall-related injury in elderly persons is due to a high prevalence of clinical diseases like osteoporosis, and age-related physiologic changes such as slowed protective reflexes. These make even a mild fall particularly dangerous.<sup>2</sup> Potential age-related risk factors for falls include:

- Decreased muscle strength and mass.
- Chronic diseases.
- Impairments of gait and balance.
- Impaired visual acuity and depth perception.
- Impaired mental status.

Washington State has one of the most rapidly aging populations in the country.<sup>3</sup> In 2006, there are 726,665 residents age 65 or older, and that number is projected to reach 1.2 million by 2020. After 2015, this population group is expected to show the most rapid growth.<sup>4</sup>

## Race and Ethnicity

From 2004-2006, fall deaths in Washington State are highest among whites. American Indians and Alaska Natives had fewer than 20 fall deaths. The chart does not include this group.

## Risk Factors for Falls

The major risk factors for falling are diverse, and many of them can be addressed. Risk factors for falls among older adults include:

- A history of previous falls.
- Muscle weakness.
- Certain chronic conditions.
- Over age 80, female gender.
- Gait deficit.
- Balance deficit.
- Use of assistive devices.
- Taking four or more medications.
- Taking any psychoactive medications.
- Cognitive impairment.
- Visual deficit.
- Sensory impairments.
- Postural hypotension.
- Depression.<sup>8</sup>

The risk of falling increases with the number of risk factors present.<sup>9</sup> Osteoporosis, while not a risk factor for falling, increases the likelihood of a fracture in the event of a fall.<sup>10</sup>

Environmental risk factors include fall hazards in and around the home. These include tripping hazards such as:

- Throw rugs and clutter in walkways.
- Lack of stair railings and grab bars.
- Slippery surfaces.
- Unstable furniture.
- Poor lighting.

For persons aged 65 years or older:

- 60% of fatal falls occur in the home.
- 30% in public places.
- 10% occur in health care institutions.<sup>5</sup>

## Childhood Falls

Even though the rate of falls among children is markedly lower than the rate for older adults, falls are still the leading cause of injury hospitalizations for Washington State children ages 0-17. In 2006, there were 814 hospitalizations of children ages 0-17. The 2004-2006 data for this group of Washington State children indicates that fall hospitalization rates for male children are highest for teens 15-17 years old. For females, rates are highest for infants less than one, and decrease as the age of the children increases. Overall, male children were about twice as likely as female children to be hospitalized due to a fall.

Safe Kids Worldwide reports:

- Infants are at greater risk for falls associated with furniture, stairs, and baby walkers.
- Toddlers are at risk from window-related falls.
- Children age 0-14 are at higher risk of playground equipment-related falls.<sup>11</sup>

Unfortunately, there are very few evidence-based recommendations to prevent these injuries.

## Recommended Strategies

### Evidence-Based Strategies

Several meta-analyses<sup>2, 12, 13</sup> concluded that a falls risk assessment and management program is the most effective prevention. A strength and balance exercise program is the next most effective intervention. Exercise can reduce falls when used alone and when included as part of a multi-component intervention. A variety of providers have successfully intervened to prevent falls. These providers include:

- Exercise instructors.
- Nurses.
- Physical therapists.

- Social workers.
- Teams of multiple providers.

There is no evidence that either environmental modification or education is effective by itself. Studies have not demonstrated that home modification alone will reduce falls; environmental factors do play a part in about half of all home falls. When focusing on those at high risk, and when conducted by trained professionals such as occupational therapists, home assessment and modification may help reduce falls.

## **Increase multi-factorial fall risk assessment and management programs that include individually tailored follow-up interventions for older adults at high risk for falls**

Older adults are most likely to fall due to multiple risk factors. The most effective intervention combines multi-factor risk assessments and interventions. Generally, the most effective interventions have included:

- Risk assessment.
- Tailored exercise.
- Physical therapy to improve gait, balance and strength.
- Medication review and modification.
- Education about fall risk factors.
- Referrals to health care providers for treatment of chronic conditions that may contribute to fall risk.
- Having vision assessed and corrected.<sup>2,14</sup>

Interventions that focus on high-risk individuals (for example, those who had fallen and were at increased risk of falling again) were more effective than those that targeted an unselected group of seniors based on risk factors or age. Other studies have found that a multi-factor approach has proven less effective in older adults with cognitive impairment and dementia.

## **Increase the availability of low cost, accessible exercise programs tailored for older adults that include strength, balance, and mobility exercises**

A meta-analysis of exercise interventions found that balance training should be part of any exercise program designed to decrease falls.

Provide education to older adults on risk factors for falls and fall prevention strategies, in combination with exercise programs and assessments.

Conduct professional education on fall risk factor assessment and interventions for physicians and other health care provider. These should include nurse practitioners, physician assistants, and allied health care professionals.

Develop a statewide community infrastructure to help implement comprehensive fall prevention programs.

Community partnerships should designate specific agencies to provide on-going leadership to implement the listed strategies. Essential components include:

- Programs for individuals who are at especially high risk of falling.
- Programs for older adults at lower risk, to keep them active, independent, and in the low-risk, falls-free category.

## **Promising or Experimental Strategies** **Increase community awareness**

Teach parents the following:

- Supervise infants and toddlers when using a changing table or when they are on furniture.
- Use stationary activity centers in place of baby walkers on wheels.
- Use safety gates at the top and bottom of stairs.
- Move chairs and furniture away from windows.
- Install window guards that meet federal standards for emergency exits on windows.
- Open double-hung windows from the top only.
- Consistently secure children using straps on changing tables, strollers, grocery cars, and on other equipment.
- Assure that playground surfaces can absorb the shock of falls by using materials such as shredded rubber, wood chips, and sand, and by avoiding playgrounds with asphalt, concrete, grass, and dirt surfaces.

## **Encourage policies and regulations that prevent fall injury**

- Promote schools and community parks to adopt Consumer Product Safety Commission standards for playground safety.
- Encourage people to adopt the American Society for Testing and Materials voluntary safety standards for window guards. In case of a fire, these standards ensure that window guards for single-family homes or for apartment building lower floors have simple emergency-release mechanisms.

## **Occupational Falls**

(see Occupational Injury chapter)

## Implementation Plan for Preventing Falls Among Older Adults

The four priority areas have a DOH Implementation Plan.

These specific plans provide an outline of DOH's Injury and Violence Prevention efforts through 2010.

<b>Objectives</b>	<b>Implementing Organizations</b>	<b>Timeline</b>
Provide consultation and education to integrate falls prevention best practices into the Area Agencies on Aging contract network services.	Washington State Department of Health, Northwest Orthopaedic Institute	ongoing
Develop and provide continuing education for health care professionals.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31,2008
Provide training to community exercise instructors, including development of a "stand alone" training manual, on the Stay Active & Independent for Life Exercise and Education Program.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31,2008
Print additional copies of the Stay Active & Independent for Life – Information Guide for Adults 65 or older for distribution by Area Agencies on Aging and partner organizations.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31,2008
Initiate development of a statewide coalition for senior falls prevention.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008
Work with the Area Agencies on Aging to promote their leadership role on a statewide coalition, including identification of, and partnerships with un-served or under-served communities.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008 ongoing
Disseminate the cost effective senior falls prevention model developed under the Community for Disease Control (CDC) Senior Falls Prevention Grant.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008
Seek new funding resources to enable community agencies to undertake ongoing senior falls prevention interventions.	Washington State Department of Health	July 31, 2008
Facilitate and coordinate dissemination of best practices for falls prevention.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008 ongoing
Work with local communities to identify opportunities for integrating best practices into existing programs.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008 ongoing
Promote development of community based senior falls prevention coalitions to pool community resources and develop collaborative solutions.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008
Develop a communication strategy to facilitate and coordinate dissemination of best practice and evidence-based information and intervention strategies.	Washington State Department of Health, Northwest Orthopaedic Institute	July 31, 2008 ongoing

## For More Information

### Falls Among Older Adults

#### Washington State

Falls Among Older Adults: Strategies for Prevention. Washington State Department of Health

[www.doh.wa.gov/hsqa/emstrauma/injury/pubs/FallsAmongOlderAdults.pdf](http://www.doh.wa.gov/hsqa/emstrauma/injury/pubs/FallsAmongOlderAdults.pdf)

*The Health of Washington State. Falls Among Older Adults Chapter*  
[www.doh.wa.gov/HWS/doc/iv/iv-falls2007](http://www.doh.wa.gov/HWS/doc/iv/iv-falls2007)

Washington State Department of Health Injury & Violence Prevention Program, *“Stay Active and Independent for Life – An Information Guide for Adults 65+”*

[www.doh.wa.gov/hsqa/emstrauma/injury/pubs/SAILguide.pdf](http://www.doh.wa.gov/hsqa/emstrauma/injury/pubs/SAILguide.pdf)

#### National

American Academy of Orthopaedic Surgeons, Resources on preventing falls

[http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=439&topcategory=Injury%20Prevention](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=439&topcategory=Injury%20Prevention)

California Blueprint For Falls Prevention

[www.archstone.org/publications2292/publications\\_show.htm?doc\\_id=246660](http://www.archstone.org/publications2292/publications_show.htm?doc_id=246660)

CDC Falls Prevention page

[www.cdc.gov/ncipc/factsheets/falls.htm](http://www.cdc.gov/ncipc/factsheets/falls.htm)

CDC’s “What YOU Can Do To Prevent Falls”, and “Check For Safety: A Home Fall Prevention Checklist for Older Adults”

[www.cdc.gov/ncipc/pub-res/toolkit/brochures.htm](http://www.cdc.gov/ncipc/pub-res/toolkit/brochures.htm)

Falls Free: A National Falls Prevention Action Plan

[www.healthyingagingprograms.org/content.asp?sectionid=98](http://www.healthyingagingprograms.org/content.asp?sectionid=98)

Fall Prevention Center of Excellence

[www.stopfalls.org](http://www.stopfalls.org)

National Council on Aging, Fall Prevention Resources

[www.healthyingagingprograms.com/content.asp?sectionid=69](http://www.healthyingagingprograms.com/content.asp?sectionid=69), and checklist for assessing the quality of fall exercise programs

[www.healthyingagingprograms.com/resources/FallPrevention\\_ProgramsChecklist.pdf](http://www.healthyingagingprograms.com/resources/FallPrevention_ProgramsChecklist.pdf)

National Council on Aging’s Center for Healthy Aging Best Practices: Partnering to Promote Healthy Aging: Creative Best Practice Community Partnerships

[www.healthyingagingprograms.org/content.asp?sectionid=31&ElementID=160](http://www.healthyingagingprograms.org/content.asp?sectionid=31&ElementID=160)

Prevention of Falls Network Europe

[www.profane.eu.org](http://www.profane.eu.org)

Office of the Provincial Health Officer (2004) Prevention of falls and injuries among the elderly. British Columbia, Ministry of Health Planning

[www.healthservices.gov.bc.ca/pho/pdf/falls.pdf](http://www.healthservices.gov.bc.ca/pho/pdf/falls.pdf)

### Childhood Falls

#### Washington State

Washington State Department of Health Injury Prevention Program, Washington State Childhood Injury Report. (2004).  
[www.doh.wa.gov/hsqa/emstrauma/injury/pubs/wscir/default.htm](http://www.doh.wa.gov/hsqa/emstrauma/injury/pubs/wscir/default.htm)

Harborview Injury Prevention Resource Center press release. (May, 2006).

<http://depts.washington.edu/hiprc/news/press/Falls%20From%20Windows.html>.

#### National

American Academy of Pediatrics: Committee on Injury and Poison Prevention. Falls From Heights: Windows, Roofs, and Balconies Pediatrics 2001 107: 1188-1191 (doi:10.1542/peds.107.5.1188)

Automatic Specialties web site, a window guard supplier

[www.auspin.com/angel2.htm](http://www.auspin.com/angel2.htm)

Boston Public Health Commission, Kids Can’t Fly Campaign.

[www.bphc.org/bphc/pdfs/cipp\\_kidscantfly.pdf](http://www.bphc.org/bphc/pdfs/cipp_kidscantfly.pdf).

Children Can’t Fly: a program to prevent childhood morbidity and mortality from window falls

[www.ajph.org/cgi/content/abstract/67/12/1143](http://www.ajph.org/cgi/content/abstract/67/12/1143)

Consumer Product Safety Commission, *Childproofing Your Home – 12 Safety Devices to Protect Your Children.*

[www.cpsc.gov/CPSPUB/PUBS/GRAND/12steps/12steps.html](http://www.cpsc.gov/CPSPUB/PUBS/GRAND/12steps/12steps.html)

Consumer Product Safety Commission, *Handbook for Public Playground Safety.*

[www.cpsc.gov/cpscpub/pubs/325.pdf](http://www.cpsc.gov/cpscpub/pubs/325.pdf)

Consumer Product Safety Commission, *Home Playground Safety Checklist.*

[www.cpsc.gov/CPSPUB/PUBS/Pg1.pdf](http://www.cpsc.gov/CPSPUB/PUBS/Pg1.pdf)

Istre GR, McCoy MA, Stowe M, Davies K, Zane D, Anderson RJ, Wiebe R. Childhood injuries due to falls from apartment balconies and windows. Inj Prev. 2003 Dec;9(4):349-52

National Safety Council

[www.nsc.org/aware/window/](http://www.nsc.org/aware/window/)

Safe Kids USA

[www.usa.safekids.org/content\\_documents/Falls\\_facts.pdf](http://www.usa.safekids.org/content_documents/Falls_facts.pdf)

[www.usa.safekids.org/tier3\\_cd.cfm?folder\\_id=540&content\\_item\\_id=1050](http://www.usa.safekids.org/tier3_cd.cfm?folder_id=540&content_item_id=1050)

Timothy Healey Foundation

[www.windowSAFE.org](http://www.windowSAFE.org)

Vish NL, Powell EC, Wiltsek D, Sheehan KM. Pediatric window falls: not just a problem for children in high rises. Inj Prev. 2005 Oct;11(5):300-3

Window Guards

[www.windowguard.org](http://www.windowguard.org)

## Endnotes

- <sup>1</sup> National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. (2004). Worker Health Chartbook 2004. DHHS (NIOSH) Publication No. 2004-146. Retrieved on May 10, 2007 from [www.cdc.gov/niosh/docs/chartbook](http://www.cdc.gov/niosh/docs/chartbook).
- <sup>2</sup> Rubenstein, L. Z. & Josephson, K. R. (2006). Falls and their prevention in elderly people: what does the evidence show? *Medical Clinics of North America*, 90, 807-824.
- <sup>3</sup> Office of Health Promotion. Washington State Department of Health. Healthy Aging in Washington State. Department of Health (DOH) Publication, 130-048. Retrieved on May 14, 2007, [www.doh.wa.gov/cfh/OHP/\\_private/healthyaging.htm](http://www.doh.wa.gov/cfh/OHP/_private/healthyaging.htm).
- <sup>4</sup> Office of Financial Management. (2006, November). *Forecast of the State Population by Age and Sex: 1990-2030*. [www.ofm.wa.gov/pop/stfc/default.asp](http://www.ofm.wa.gov/pop/stfc/default.asp). Retrieved May 8, 2007.
- <sup>5</sup> Stevens, J. A. (2005). Falls among older adults – risk factors and prevention strategies. Falls Free: Promoting a National Falls Prevention Action Plan. Research Review Papers. National Council on Aging, pp. 3-18. Retrieved on December 20, 2006, from [www.healthyagingprograms.org/resources/FFReview%20Paper\\_Final.pdf](http://www.healthyagingprograms.org/resources/FFReview%20Paper_Final.pdf).
- <sup>6</sup> Kenny, R. A. & O'Shea, D. (2002). Falls and Syncope in Elderly Patients. *Clinics in Geriatric Medicine*, 18(2), xiii-xiv.
- <sup>7</sup> Finkelstein, E. A., Corso, P. S., Miller, T. R., & Associates. (2006). *The incidence and economic burden of injuries in the United States*. New York: Oxford University Press.
- <sup>8</sup> American Geriatrics Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons Panel on Falls Prevention. (2001). Guideline for the prevention of falls in older persons, *Journal of the American Geriatrics Society*, 49 (5), 664-672.
- <sup>9</sup> Tinetti, M. E., Speechley, M. & Ginter, S. F. (1988). Risk factors for falls among elderly persons living in the community. *New England Journal of Medicine*, 319, 1701-1707.
- <sup>10</sup> Nguyen, N. D., Pongchaiyakul, C., Center, J. R., Eisman, J. A., & Nguyen, T. V. (2005). Identification of high-risk individuals for hip fracture: A 14-year prospective study. *Journal of Bone and Mineral Research*, 20(11), 1921-1928.
- <sup>11</sup> SafeKids USA. Injury Facts: Falls. Retrieved on May 15, 2007, from [http://www.usa.safekids.org/tier3\\_cd.cfm?folder\\_id=540&content\\_item\\_id=1050](http://www.usa.safekids.org/tier3_cd.cfm?folder_id=540&content_item_id=1050).
- <sup>12</sup> RAND Corporation Southern California Evidence-Based Practice Center. (2003). RAND Report. Evidence report and evidence-based recommendations: fall prevention interventions in the Medicare population. Contract number 500-98-0281.
- <sup>13</sup> Chang, J. T., Morton, S. C., Rubenstein, L. Z., Mojica, W. A., Moglione, M., Suttorp, M. J., et al. (2004). Interventions for the prevention of falls in older adults: Systematic review and meta-analysis of randomized clinical trials. *British Medical Journal*, 328, 680-686.
- <sup>14</sup> Tinetti, M. E., Baker, D. I., McAvay, G., Claus, E. B., Garrett, P., Gottschalk, M., et al. (1994). A multifactorial intervention to reduce the risk of falling among elderly people living in the community. *New England Journal of Medicine*, 331, 821-827.
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