

Fall Related Injuries in Older Virginians, 2004-2008

Dear Injury Prevention Advocate,

Falls can be a frightening experience for everyone, but especially older adults. Falls can result in a variety of injuries ranging from minor bruising to traumatic brain injuries. Pre-existing health conditions and age can complicate the treatment of and recovery from a fall related injury. Fall related injuries can have a substantially negative impact on the health of society as well as one's quality of life.

However it is important to remember that falls are not an inevitable part of life. There are a number of behavioral and environmental changes that can prevent falls from occurring.

This report examines the available data in Virginia pertaining to fall related injuries among older adults in Virginia. It is our hope that the information provided in this report will aid you in your efforts to prevent fall related injuries in your community.

Sincerely,



Heather Funkhouser Board, MPH
Director, Injury Prevention Program



Stephanie Goodman, MPH
Data and Evaluation Coordinator

Introduction

Each day in the United States an average of 50 older adults (65+ years) die from injuries sustained during a fall; making falls the leading cause of injury death for this age group.¹ An additional 1,200 older adults are hospitalized each day from fall related injuries. Older adults who fall often suffer injuries such as hip fractures or traumatic brain injuries (TBIs) that can make it difficult to get around or live independently.

In addition to the actual physical trauma sustained during a fall, many people develop a fear of falling again. This fear often causes them to limit their activities. This not only prevents them from doing the things that they enjoy, but actually increases their risk of another fall due to reduced mobility and loss of physical fitness.²

This report discusses fall among older adults (65 years and older) in Virginia. Mortality data were coded using ICD-10 codes and hospital discharge data were coded using ICD-9-CM E-codes. This report uses the ICD-10 injury mortality framework developed by The International Collaborative Effort (ICE) on Injury Statistics, sponsored by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS)². All rates were calculated using population data from the national Center for Health Statistics and are per 100,000 population. Age-adjusted rates were computed using 2000 U.S standard population.

Hospital discharge data was coded using ICD-9-CM E-codes. The validity and reliability of the data relies on coding accuracy. A hospital discharge was included for analysis only if the case had an ICD-9-CD injury related code and a valid E-code for Fall. All hospital discharge rates were calculated using population data from the National Center for Health Statistics and are per 100,000.

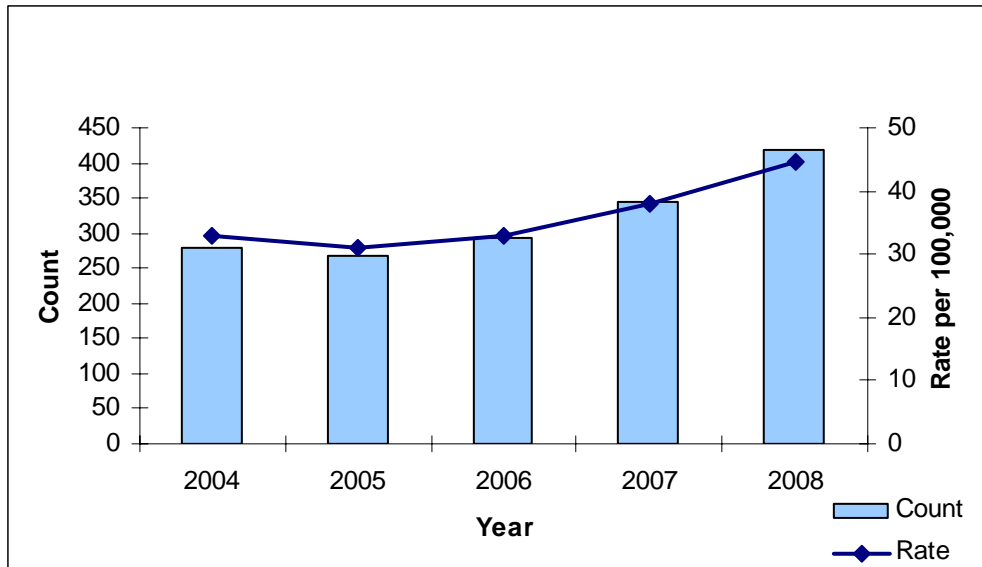
Case Brief

An 82 year old woman, who lived alone, was cleaning her house. She started down the basement stairs to put laundry in the washing machine. The light switch for the basement was located at the bottom of the steps. The woman missed the last step in the dark and fell forward, unable to catch herself because of the load in her arms. She struck her head on the dryer and landed on the floor. She was able to activate her emergency alert button and EMS arrived within 5 minutes of the fall. Radiographs at the hospital indicated a fracture of her right cheek bone and a right femoral neck fracture. She spent 3 days in the acute care hospital followed by 7 days in an inpatient rehabilitation hospital. She returned home with assistance from her daughter who came in from out of state. Outpatient physical therapy was required for another 6 weeks to help the woman regain her independence.

Fall Mortality Among Older Virginians (65 years and older)

During 2004-2008 there were 2,081 deaths attributed to unintentional falls in Virginia. Of these falls, older Virginians 65 years of age and older accounted for 77%. Ninety-nine percent of these deaths were unintentional, as such data analysis will only include unintentional falls unless otherwise specified. The 5-year crude rate for all unintentional fall deaths in Virginia was 5.45 per 100,000. This rate is significantly less than the what was experienced by older Virginians. The 5-year crude rate for fall deaths among older Virginians was 36.02 (1,613 deaths). Between 2004 and 2008, the rate of older adult fall deaths increased by 35%.

Figure 1. Older Adult Fall Death Rates by Year, 2004-2008



Source: VDH Vital Records

The mean age for older adult fall deaths was 83 years old. Forty percent of falls were categorized as same level falls and 11% occurred on stairs. The female mortality rate (33.4 per 100,000) was slightly lower than the male rate (39.6 per 100,000). As age increased the rate of death due to falls increased as well. Those in the youngest age group (65-69 years) had a death rate of 8.96 per 100,000. The next age group (70-74) rate was 1.7 times higher than the first group. Those in the 85 years of age and older group had a 5-year crude rate 14 times higher than the youngest age group (65-69 years). Traumatic brain injuries (TBI) occurred in one-third of the fall victims. The 5-year crude rate for fall related TBI deaths was 12.4 per 100,000 Virginians aged 65 or older. The rate of TBI for males was 1.5 times that of the female rate.

Table 1. Rate Ratios for Older Adult Fall Deaths

Age Group	Rate	Rate Ratio
65-69	33.06	-
70-74	30.98	1.66
75-79	32.89	3.47
80-84	37.82	6.18
85+	44.55	14.00

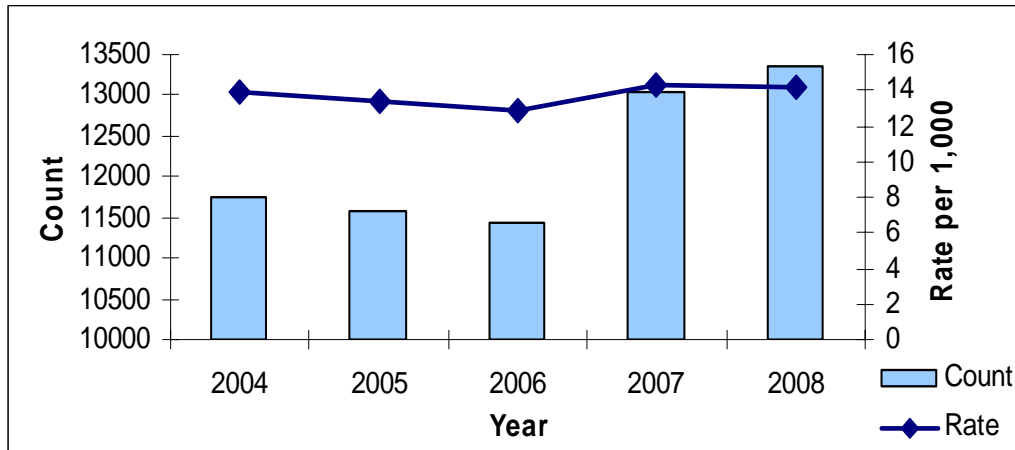
Source: VDH Vital Records

Fall Morbidity Among Older Virginians (65 years and older)

During the same five year period (2004-2008), there were 88,135 hospitalizations related to unintentional falls in Virginia. The five year crude rate was 2.31 per 1,000. Older Virginians accounted for nearly 70% of these hospitalizations. The total number of fall related hospitalizations for older adults was 61,182. All but 8 of the hospitalizations were unintentional. Further data analysis will only include unintentional falls unless otherwise specified.

Yearly fall hospitalization rates were consistent between 2004 and 2008. The 5-year crude rate for older adult fall related hospitalizations was 13.75 per 1,000 adults age 65 and older.

Figure 2. Older Adult Fall Hospitalization Rates by Year, 2004-2008



Source: VHI, Patient level database

The mean age at time of injury was 81 years. For nearly half of the hospitalizations no specification was given for the cause of the fall. Of those where a cause was specified, the leading cause of falls were slipping/tripping (64%), bed/chair/toilet (12%) and stairs (10%). The average length of stay for a fall related hospitalization was 5.67 days. These hospitalizations resulted in charges of more than \$1.6 billion, with a median charge of \$19,146 per episode of care. The female hospitalization rate (17.30) was nearly twice that of the male rate (8.83). As with fall related deaths, fall related hospitalization rates increased with age. The hospitalization rate for those in the 85 years and older group had a rate 9.9 times higher than the 65-69 year age group. Traumatic brain injuries (TBI) occurred in 10% of the fall victims.

Patients can and often do sustain more than one type of injury per hospitalization. When evaluating the nature of injury it is important to remember that the number of injuries may exceed the number of hospitalizations. Percentages displayed in Table 2 will not sum to 100. During the 5-year period of analysis adults aged 65 and older sustained over 92,000 injuries, averaging 1.5 injuries per hospitalization. In 87% of fall related hospitalizations the victim sustained a fracture. Other common types of injuries included: superficial contusions, internal organ injuries and open wounds. The nature of injury was not specified in two percent of hospitalizations.

Table 2. Nature of the Injury

Nature of the Injury	Count	% of Hospitalizations
Fracture	53,506	87.47
Superficial Contusion	11,506	18.81
Internal Organ	8,667	14.17
Open Wound	7,075	11.57
System Wide & Late Effects	6,366	10.41
Sprains/Strains	2,632	4.30
Dislocation	721	1.18
Burn	408	0.67
Blood Vessel	139	0.23
Nerve	124	0.20
Amputation	86	0.14
Crushing	58	0.09
Total	91,288	-
Unspecified	1,445	2.0

Source: VHI, Patient level database

PREVENTION TIPS

Fall Prevention Tips for Older Adults :

- Modify slippery surfaces and remove hazards whenever possible.
- Avoid loose rugs or use double-sided tape to keep rugs in place.
- Improve lighting in the home. Turn on the lights when entering the house at night.
- Place no slip mats in the bathtub and on shower floors.
- Remove clutter.
- Keep wires behind furniture.
- Exercise regularly. Exercise is one of the most important ways to reduce falls because it increases strength and agility, lessening the likelihood of a fall.
- Have vision evaluated by a professional. Poor vision can increase the chances of falling.
- Install handrails and lights in staircases.
- Install grab bars next to toilets and tubs or showers.
- Gait training or balance training, along with muscle strengthening, can help to prevent falls.
- Review all medicines. As age increases, the physical effects of some medications— or combination of medicines—can change. Some of these effects can lead to falls by making a person drowsy or light headed.



RESOURCES

- ◆ Injury, Suicide and Violence Prevention Program, Virginia Department of Health
www.vahealth.org/injury
- ◆ Center for Disease Control and Prevention, National Center for Injury Prevention and Control
www.cdc.gov/ncipc/default.html
- ◆ American academy of Family Physicians
www.familydoctor.org
- ◆ Consumer Product Safety Commission
www.cpsc.gov
- ◆ National Safety Council
www.nsc.org/
- ◆ Northern Virginia Fall Prevention Coalition
<http://www.nvfpc.org/>
- ◆ National Institute on Aging
www.nia.nih.gov

REFERENCES

1. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (2007) Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. Accessed on October 2010. Available from URL: www.cdc.gov/ncipc/wisqars
2. Vellas BJ, Wayne SJ, Romero LJ, Baumgartner RN, Garry PJ. Fear of falling and restriction of mobility in elderly fallers. *Age and Ageing* 1997;26:189–193.
3. Virginia Health Information (VHI). 2004-2008 Patient level data.
4. Virginia Department of Health. 2004-2008 Vital Records.

The Virginia Injury Update has been prepared by the Injury, Suicide & Violence Prevention Program,
Virginia Department of Health.

For more information, or to obtain additional copies, contact:

Stephanie M Goodman, MPH
Data and Evaluation Coordinator
Injury, Suicide & Violence Prevention Program
Virginia Department of Health
109 Governor Street, 8th Floor
Richmond, VA 23219
Phone: (804) 864-7745
www.vahealth.org/injury

Case Brief provided by:

Dianne V. Jewell, PT, DPT, PhD, CCS, FAACVPR
Assistant Professor
Virginia Commonwealth University
Department of Physical Therapy
PO Box 980224
Richmond, VA 23298-0224
Phone: (804) 828-0234
Fax: (804) 828-8111
<http://www.vcu.edu/pt>