

# Reducing Fall Injuries through design and new technology

Gail Nash  
 Vice President Healthcare Strategy  
 InterfaceFLOR

---

---

---

---

---

---

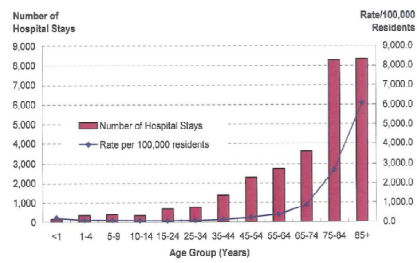
---

---

---

---

Figure A. Hospital Stays Associated with Nonfatal Unintentional Fall Injuries by Age Group Massachusetts Residents, 2006



N=28,313  
 Data Source: FY2006 Massachusetts Inpatient Hospital Discharge and Outpatient Observation Stay Databases, Massachusetts Division of Health Care Finance and Policy

2

---

---

---

---

---

---

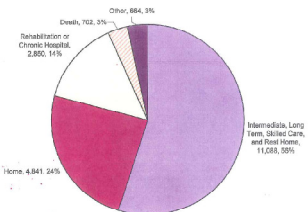
---

---

---

---

Figure 4. Disposition Status for Inpatient Hospital Discharges Associated with Unintentional Fall Injuries Massachusetts Residents Ages 65+, 2006



N=20,145  
 Data Source: FY2006 Massachusetts Inpatient Hospital Discharge, Massachusetts Division of Health Care Finance and Policy  
 Patient Disposition designates the home or facility to which patients are discharged. Home refers to either the patient's home, a family home, or a home in a long-term care facility. Intermediate, Long Term, Skilled Care, and Rest Home refers to patients discharged to a skilled nursing facility, intermediate care facility, or other type of facility for the patient care or referred for subsequent care in a similar facility, or to a rest home. Rehabilitation or Chronic Hospital includes discharges to rehabilitation and chronic hospitals. Other includes discharges and transfers to another inpatient care unit, hospital, shelter or a mental hospital, the patient left against medical advice, discharge status unknown, discharges to other facility, or response received other.

3

---

---

---

---

---

---

---

---

---

---

### Fall facts

- In healthcare settings, falls are a frequent occurrence, costing about \$3.6 billion annually, while having significant quality of life and morbidity outcomes for fallers (Gulwadi & Calkins, 2008)
- The average healthcare cost for a fall injury was close to \$20,000, without factoring in physician services (Gulwadi & Calkins, 2008)
- These costs do not include litigation resulting from falls. One lawsuit is filed for every 7.6 hospital injuries (Miller, Murtha, and Psoras, 2009)

---

---

---

---

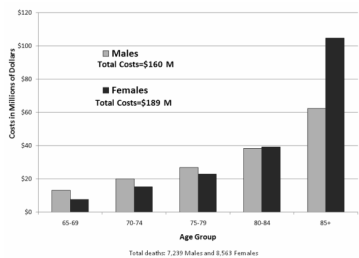
---

---

---

---

**Total Lifetime Medical Costs of Unintentional Fatal Fall-Related Injuries\* in People 65 Years and Older By Sex and Age, US 2005**



•Costs were similar for men and women until age 85, when the costs for women (\$105 million) exceeded those of men (\$62 million).  
 \*Lifetime medical costs refer to the medical costs (treatment and rehabilitation) associated with the fatal injury event.

---

---

---

---

---

---

---

---

### CMS Never Events

- **CURRENT NATIONAL QUALITY FORUM LIST OF “NEVER EVENTS”**
- Environmental Events
- Patient death or serious disability associated with an electric shock while being cared for in a healthcare facility
- Any incident in which a line designated for oxygen or other gas to be delivered to a patient contains the wrong gas or is contaminated by toxic substances
- Patient death or serious disability associated with a burn incurred from any source while being cared for in a healthcare facility
- Patient death associated with a fall while being cared for in a healthcare facility
- Patient death or serious disability associated with the use of restraints or bedrails while being cared for in a healthcare facility
- 

---

---

---

---

---

---

---

---

### The "cost" for falls

- Annually about 40% of nursing home residents fall (Gurwitz, Sanchez-Cross, Echler & Matulis, 1992; Ray et al., 1997, Tinetti & Williams, 1997)
- Approximately half (50%) of ambulatory long-term care residents experience at least one fall each year (American Geriatrics Society & British Geriatrics Society, 2010)
- 10% to 25% of these falls result in fractures, lacerations, or require admittance to the hospital (Hignett & Masud, 2006)
- 24% of those who suffer hip fractures will die within one year (University Health Systems Consortium, *supra*)
- Healthcare providers rank #2 for on the job injuries due to falls (US Department Labor)

---

---

---

---

---

---

---

---

- Falls may lead to injuries that are moderate to severe, including hip fractures and head traumas; and may influence the life expectancy of the faller (CDC, 2011)
- The psychological component where fallers experience the fear of falling may decrease their willingness to perform ADL's, such as walking, dressing and bathing; which contributes to the cost of care.

---

---

---

---

---

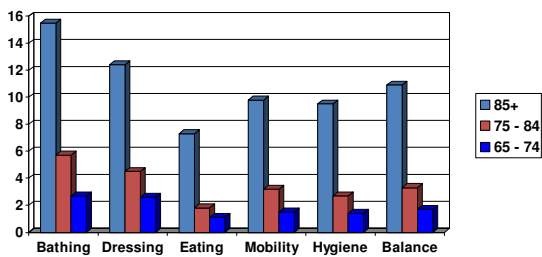
---

---

---

Percentage of Sr. Population needing assistance with daily activity

Source: University of Michigan; National Center of Health Statistics




---

---

---

---

---

---

---

---

### Residents fall for variety of reasons

**Intrinsic factors**

- Unsteady gait
- Balance
- Weak muscles
- Poor vision
- Medications
- Dementia & other medical conditions

**Extrinsic factors**

- Poor Lighting
- Noise (alarms, overhead paging)
- Floor clutter
- Staff's inability to monitor the resident
- Limited opening area for bathroom door
- Shared bathroom
- loose rugs
- flooring conditions

---

---

---

---

---

---

---

---

### Properties of Flooring Materials that may impact fall risk

- Glare
- Absorbency
- Slippery Surface
- Chipped Hard Surface Tiles
- Quality of Installation
- Transitions
- Floor pattern

---

---

---

---

---

---

---

---

### Fall injuries relating to flooring

- Patients who fell on vinyl flooring received more injuries than patients who fell on carpets. (Healey, 1994)
- The rate of fall-related hip fractures was lower for falls on a wooden sub-floor than for falls on a concrete sub-floor. (Simpson, Lamb, Roberts, Gardner, and Evans, 2004)

---

---

---

---

---

---

---

---

### Preventive strategy for a positive outcome

- Flooring intervention designed to mitigate the severity of injury and morbidity of falls
- Flooring with a shock-absorbent property to absorb impact forced during a fall
- Maintain a firm surface to support normal walking conditions.
- Allow mobility of rolling loads
- Avoid crushing from heavy weight loads (i.e. furniture)

---

---

---

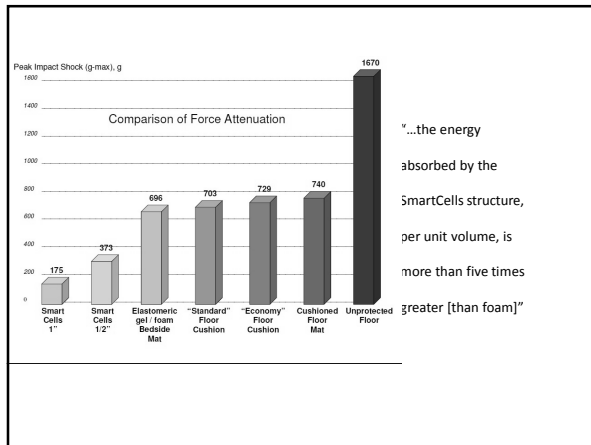
---

---

---

---

---



"...the energy absorbed by the SmartCells structure, per unit volume, is more than five times greater [than foam]"

---

---

---

---

---

---

---

---

### Thank you

For additional information on any above information please contact:  
Gail.Nash@interfaceflor.com

---

---

---

---

---

---

---

---