Pediatric Falls from Windows: Implications for Health Policy
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Saturday, November 2nd, 2013
SF NAPNAP Fall Conference

Objectives
- Describe background data and significance of pediatric window falls
- Describe potential related injuries and associated costs
- Review pediatric window fall data in various communities and challenges in collecting data
- Review and analyze state and city-side legislation related to prevention of pediatric window falls
- List anticipatory guidance points for nurse practitioners and opportunities for interaction with legislators

Background
- Falls are the leading cause of unintentional injury for all children ages 14 and under
- Everyday, approximately 8,000 children are treated in U.S. emergency rooms for fall related injuries
- Window falls account for approximately eight deaths and 3,300 injuries among children ages 5 and under annually.
- In California, nearly 107 deaths secondary to falls occurred between 2000-2005, the highest amongst all states

Figure 43: Nonfatal Unintentional Injury Rates among Children 0 to 19 years, by Cause, United States, 2001-2006

Figure 52: Nonfatal Unintentional Injury Rates due to Falls among Children 0 to 19 Years, by Age Group, United States, 2001-2006

Figure 52b: Unintentional Injury Death Rates due to Falls among Children 0 to 19 Years, by Age Group, United States, 2000-2005

Figure 53: Nonfatal Unintentional Injury Rates due to Falls among Children 0 to 19 Years, by Age Group, United States, 2001-2006

Figure 55: Unintentional Injury Death Rates due to Falls among Children 0 to 19 Years, by Age Group, United States, 2000-2005

Centers for Disease Control and Prevention, Protect the Ones you love: Child Injuries are Preventable.
Safe Kids, USA, Fall Prevention Fact Sheet
Significance of Problem

- Younger children have more serious injury due to the large proportion of head injuries in this age group.
- The mortality rate of falls from windows has been noted to be significantly higher than that of other types of falls in children and adolescents.
- A fall from a height of three stories or more and landing on a hard surface (concrete) also increased the risk for serious injuries.
- Falls from heights tend to occur in urban areas, with multiple story housing and in low-income neighborhoods.
- Falls tend to occur in summer months, presumably as families have windows open more during that season.

Potential Injuries

- Potential injuries include fractures (radial, ulnar, femur) internal injuries, concussions, intracranial hematomas, and intracranial hemorrhages.
- Children tend to use their arms to protect their head and have flexible bones. Therefore, craniofacial trauma is particularly found in fatal falls.
- One of the most significant injuries sustained was a fractured skull.
- Abdominal and chest injuries are more common in falls from greater heights. The degree to which the fall is broken changes the severity of injury.
- Long term health consequences such as orthopedic, neurologic and post traumatic stress have also been described.

Burden of Cost

- Data compiled by the National Center for Health Statistics National Hospital Ambulatory Medical Care Survey for 1992–1994 revealed a national cost of $958 million for emergency care for children who were seen for falls.
- Although fewer than 3% were falls from buildings or extreme heights, they would still account for almost $10 million annually, including 26% paid by Medicaid.

Challenges in Collecting Data

- Window falls do not have a separate trauma code, which makes them difficult to track.
- If there are limited trauma centers in a given area, then collecting data is even more difficult.
- In addition, the media including newspapers, do not always track falls and police data may be inaccessible.
- The National Electronic Injury Surveillance System: the study could not estimate those deaths attributable to fall injury for those children who did not present to the emergency room. Equally, it could not account for deaths, which occurred after admission to the hospital.

Falls in the Community: Northern Virginia

- At Inova Regional Trauma Center
- 4% of children 0-14 years admitted were due to window falls.
- 62% were boys, 83% < 4 years.
- 66% sustained head injuries and 39% percent warranted ICU admission.
- 4% died.
- Most common setting where injury occurred was single home at 35%.

Falls in the Community: Chicago

- 1995-2002 noted 90 falls.
- 96% of falls from buildings less than 4 stories.
- Height of the fall was noted to be poor indicator of injury as second floors ranged from 6.25 to 25 feet.
- 50% occurred between 12pm and 6pm.
- 23% had a piece of furniture near the window.
- 55% had a screen in place, and in some cases a parent (53%) or an adult (13%) was present.
Falls in the Community: Los Angeles

- 93 children hospitalized from January 1986 through July 1990 were due to window falls.
- 61% percent were male with a mean age of 3.2 years, playing at the time of the fall.
- In more than 70% of the cases reviewed, the child fell from a second-story window.
- The mortality rate was low (0.7%); however, 10% were left neurologically impaired.
- The most common type of dwelling was an apartment (93.2%)
- The cost for hospitalization was approximately $5000 to $8000 per child.

Summary

- more commonly in children less than five years of age.
- African American and Latino children were more likely to fall from windows than were children from other ethnicities
- Real times may reflect a change in the level of supervision, with family members being more likely to be preoccupied with meal preparation
- In adolescents, mental illness was more often present in intentional falls and substance use was a major factor in unintentional falls
- Death is rare, but falls are associated with a high morbidity.

Injury Prevention: Public Health Model

Criteria/Questions to Analyze Intervention

Risk Significant to Support State Action

- Nature of the risk
- Duration
- Probability of harm
- Severity of harm (individuals, population)

Constitutional Standards

1. Public Health necessity: can be exercised when necessary to prevent an avoidable harm
2. Reasonable means: methods used must be designed to prevent or ameliorate a health threat
3. Proportionality: may be unconstitutional if the burden imposed is wholly disproportionate to the expected benefit
4. Harm avoidance: control measure should not pose an undue health risk to its subject

Window Guards

- Proper installation and use is equally important
- One must install operable window guards that can be released or removed without the use of a separate key or excessive force.
- Fire codes in some communities prohibit the use of fixed bars on emergency and fire escape windows.
- Organizations of fire protection professionals decry their use, especially on first and second floors, but data are scarce that would permit the risk-benefit consideration of the use of operable guards, especially on higher floors.
- In most states, their use is entirely voluntary.
- Some districts have elected to put into place the mandatory placement of window guards in an effort to reduce the incidence of pediatric falls.

Window Guards

- children from falling through the window opening
- Types of window safety devices: window suction cups, window wedges, window guards, window stops, and child safety window screens
- Permanent child safety window guards can withstand 62.5 lb (28 kg) of pressure, need replacing less often, but adding them to existing construction would be costly.
- opening windows.
- Window guards are a minimum of 15 inches tall with horizontal bars spaced no more than four inches apart. When possible, window guards should be used in conjunction with window stops, which are devices that prevent the window from opening more than 4 inches above the top bar of the window guard.
- In June 2000, the American Society for Testing and Materials (ASTM) established voluntary safety standards for window guards, which ensure that those guards designed for single family homes or the lowest floor of apartment buildings have simple emergency-release mechanisms for use in the event of fire.
Statewide Advocacy: New Jersey

Background
- Between 2000-2005, New Jersey had 26 unintentional injury deaths for children between 0-19 years due to falls.
- At the time, a landlord's liability to its tenant was a common-law duty to maintain premises under its control.
- The duty to exercise reasonable care meant that the landlord must maintain the premises in a reasonably safe condition for the use and enjoyment of tenants and their guests.

Borse et al (2006)

Statewide Advocacy: New Jersey

History
- A window guard legislation had already been effect since 1995 but the state was still noticing falling injuries despite the presence of window guards, attributable to the windows being raised higher than the top of the guards
- Department inspections revealed that tampering by tenants with these stops had occurred, most likely to increase air ventilation during the heat of the summer.


Statewide Advocacy: New Jersey

New 2006 Bill
- Required Commissioner of Community Affairs to develop specifications for double hung windows to ensure that window guards protect the full openable area of each lower window
- Addressed the rights of tenants to request the window guards to be placed and distinguished different types of property
- Extended the ability to request window guards to tenants of rental units in which a child under ten years of age is regularly present for a substantial period of time.
- Requires owners to provide tenants with an orientation on the safe use and manipulation of window guards, upon installation and annually
- Window guards must be installed to all windows except those which give access to a fire escape or are on the first floor. They must also comply with the State Uniform Construction Code.


Statewide Advocacy: New Jersey

New 2006 Cost
- Minimum penalty $100 per window/incident
- Subjects repeat offenders to criminal penalties
- Caps the amount of window guard protection that landlords may pass along to tenants at the amount of $20

Statewide Advocacy: Minnesota

Background
- Prior to law, MN falls were the number one reason children ages 1-14 go to the hospital and are leading cause of ED visits for children 1-9.
Statewide Advocacy: Minnesota

- Requires MN Department of Health (MDH) to provide targeted education on residential window safety and window safety requirements
- Collaborative effort: Family Home Visiting Program in the Community and Family Health Division, Injury Prevention Unit in the Health Promotion and Chronic Disease Division
- Multidisciplinary effort: residential building industry, windows product industry, & child safety advocacy groups in the community

Laela’s Law (2009)

- Commissioner of Minnesota Department of Labor and Industry (MDLI) adopted rules for window fall prevention devices as part of the Minnesota State Building Code by July 1, 2009.
- Requires builders to use windows with fall prevention devices in construction or remodeling of apartments or multi family homes
- Maternal and Child Health Section at MDH had childhood injury program imbedded into home visiting program; expanded assessment by public health nurses regarding window safety
- National Window Safety Week and Window Fall Prevention Advisory Committee

Laela’s Law: Follow up 2011

- Window Safety Messages incorporated into the home safety checklist used by local public health departments
- Window Safety web page
- Annual reminder to parents to check homes for window safety in the Spring
- Keep the Promise education brochures on MDH website
- Deaths decreased; however, nonfatal injury continue to occur (improvement in reporting?)

Analysis

- Periodic data collection must include the number of injury/deaths after legislation has been put into place.
- A cost analysis related to any potential savings in emergency room visits, hospital stays, and/or imaging is essential to demonstrate its fiscal impact.
- As noted from New Jersey, there may need to be mandatory reporting from hospitals after implementation to better track injuries that still occur such that specific situations can be assessed.
- It appears that well drafted legislation is imperative, but this must also occur in the setting of a multi-disciplinary effort in order for the policy to be effective.

Boston (1993): Kids Can’t Fly

- Education and Window Guard Distribution Program supported by landlords in the city
- Target: where children < 6 years reside
- Encourages, but does not mandate the installation of window guards
- Saw 83% reduction in hospitalization and no death after the implementation of the program
Chicago

- A team of pediatric trauma hospitals, advocates, architects, and governmental relations staff came together to find possible solutions.
- Chicago Building Code which requires window guards if the height of the window sill is less than 2 feet off the floor.
- Coupled with an education program advising parents to never open windows more than four inches, to open windows from the top down if possible, move furniture away from windows, and to install window stops/guards.

New York

- 1972 "No Child Can’t Fly Campaign: Pilot program targeting housing in South the Bronx.
- From 1974-75, it expanded to all 5 boroughs.
- Law requiring the owners of multiple-story dwellings to provide window guards in apartments where children 10 years and younger reside.
- Resulted in a 35% reduction in deaths attributable to falls from windows and a 50% reduction in incidents;
- No child fell from a window equipped with a window guard.
- The mandatory program resulted in a reduction of up to 96% in admissions to local hospitals for the treatment of window-fall-related injuries.

Prevention Tips

- Use home safety devices, such as guards on windows that are above ground level, stair gates, and guard rails.
- Supervise young children at all times around fall hazards, such as stairs and playground equipment, whether you’re at home or out to play.
- Keep windows locked and closed when they are not being used.
- For your crawlers and climbers, move chairs, cribs and other furniture away from windows to help prevent window falls.
Education

- Ask about the physical characteristics of the home, such as the number of floors in the home or apartment building, which floor the family lives on, and the presence of furniture in front of the windows, the distance of the window sill from the floor, and the presence of any WSDs.
- Never rely on screens to keep their children from falling out of windows.
- Windows should be opened from the top, not the bottom.
- WSDs are intended to prevent window falls but are not a replacement for proper adult supervision.
- NPs can increase public awareness that falls from windows are preventable by providing education to legislators, parents, health care practitioners, child care providers, and others in the community setting.

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