

**PEDIATRIC FALLS FROM WINDOWS:  
A REGIONAL INJURY PATTERN  
EPIDEMIOLOGY AND PREVENTION**

UW Medicine EMS & Trauma Conference  
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**CASE**



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**CASE**

3yo female fell from 2<sup>nd</sup> story window  
Landed on deck

Initial assessment at scene:

HR 112 BP 112/78 RR 20 Sat 98%

Eyes closed, moaning, withdraws to pain



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**TRAUMA: PRIMARY SURVEY**

**A**irway  
Moaning, minimally protected  
Intubated at scene



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**TRAUMA: PRIMARY SURVEY**

**A**irway  
**B**reathing  
Clear lungs bilaterally  
No chest wall crepitus  
Sat 100% with BVM



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**TRAUMA: PRIMARY SURVEY**

**A**irway  
**B**reathing  
**C**irculation  
HR 132 BP 102/78  
Delayed cap refill (4sec)  
20mL/kg IVF bolus



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**TRAUMA: PRIMARY SURVEY**

Airway  
Breathing  
Circulation  
Disability  
Obvious head trauma,  
periorbital ecchymoses  
Eyes closed, moaning,  
withdraws to pain  
GCS=7



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**TRAUMA: PRIMARY SURVEY**

Airway  
Breathing  
Circulation  
Disability  
Exposure/Environment  
Temp 36.7C  
Full exposure  
Warm blankets and fluid



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**CASE OUTCOME**

Injuries  
Bilateral epidural and subdural hematomas  
Splenic laceration  
Facial fractures and lacerations

Outcome  
Extubated after 12 hours  
Did not require surgery  
Discharged 2 days later  
2 month follow-up back to regular health

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**WHY IS THIS IMPORTANT?**



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**WHY IS THIS IMPORTANT?**

Traumatic injuries are the #1 cause of death for age 1-18 years old

Most are preventable

We need to look for patterns

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**FALLS FROM WINDOWS**

Over 5000 children treated annually for falls from windows in the US

1/3 of children hospitalized in ICU

1/4 discharged with some disability

Variation in injury patterns

- Geographic
- By age

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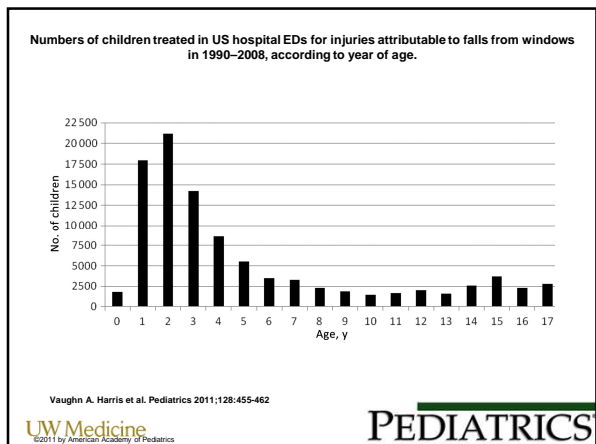
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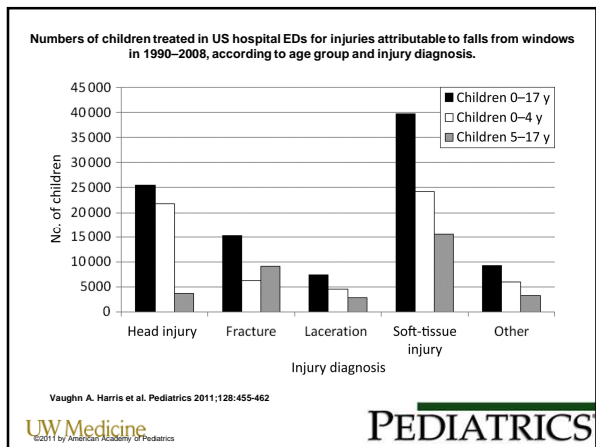
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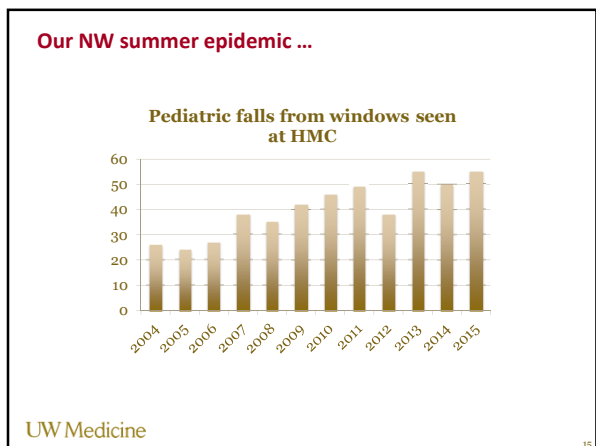
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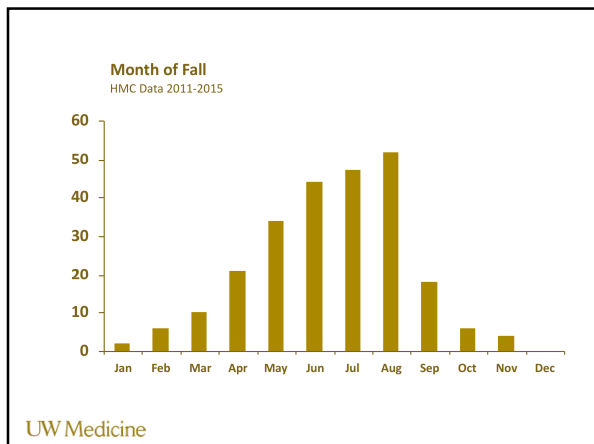
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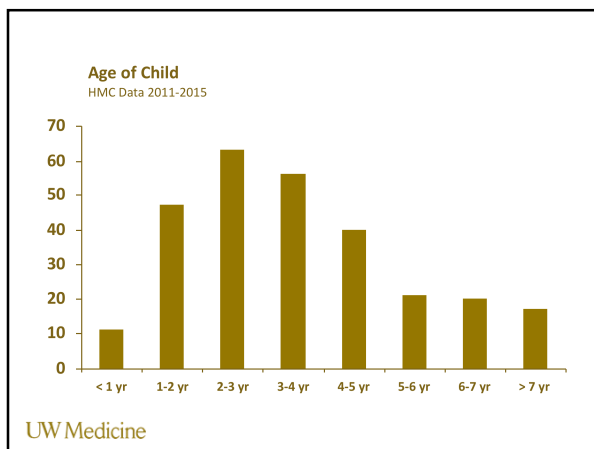
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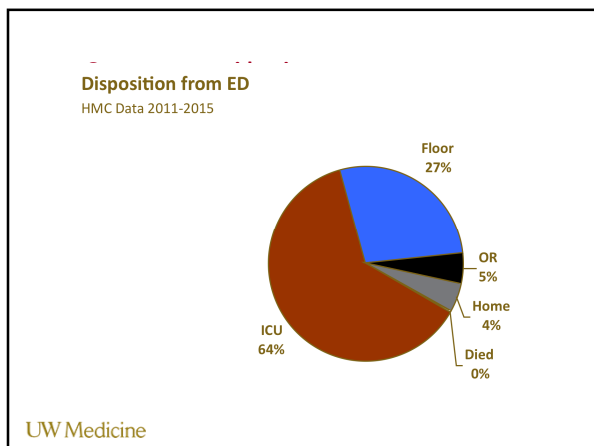
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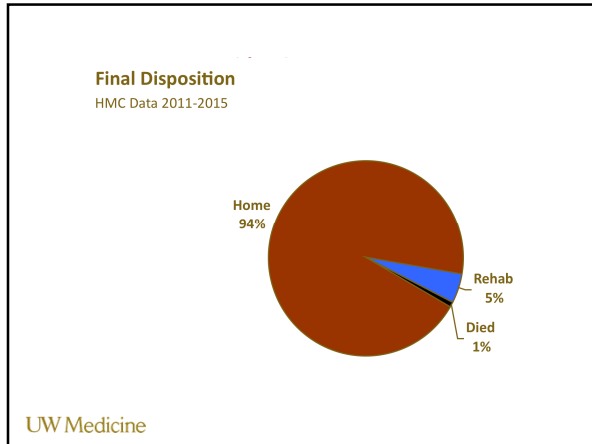
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### OUR SUMMER EPIDEMIC

Mean age: 3.2 years  
(range 11 mo – 14 yr)

Mean height: 15.2 feet  
(range 6 - 35 feet)

Most children fall from 2nd floor window

Most are supervised at time of fall

Most seem to fall through a screen

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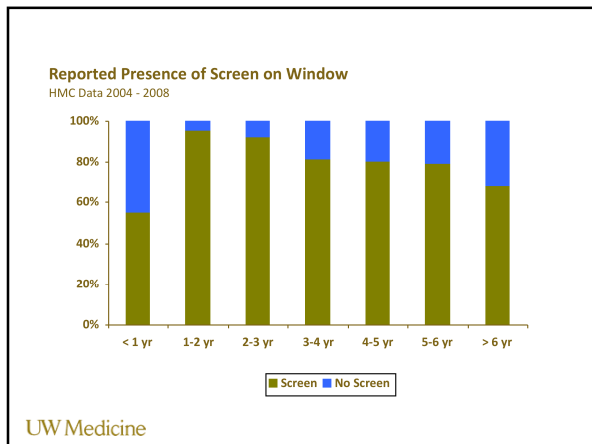
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**IDENTIFIED RISK FACTORS**

- Horizontal slider windows
- Windows on higher floors
- Deep sills
- Screen loosely mounted to window frame

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**CAN WE DO ANYTHING ABOUT THIS?**



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**PUBLIC HEALTH VIEW OF INJURIES**

Injuries are preventable diseases, caused by predictable events  
Examine contributing factors to injury to create prevention solutions



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### WHAT TO DO ABOUT INJURIES?

**Primary Prevention**

- Pre-event
- Reducing events with potential to cause injury

**Secondary Prevention**

- Time of event
- Reducing severity of injuries that occur

**Tertiary Prevention**

- Post-event
- Reducing secondary effects of injury and optimizing outcome

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### FRAMEWORK FOR INJURIES

	Host	Agent	Physical environment	Socio-cultural environment
<b>Pre-event</b>	Education	Gun locks Pool fence	Bicycle paths	Awareness of injury risks
<b>Event</b>	Swimming skills	Airbags Child safety seats	Break-away highway signs	Speed limits, Helmet laws
<b>Post-event</b>	Alcohol Intervention	Safe engines	Access to EMS and care	Level I Trauma Center, EMS Funding

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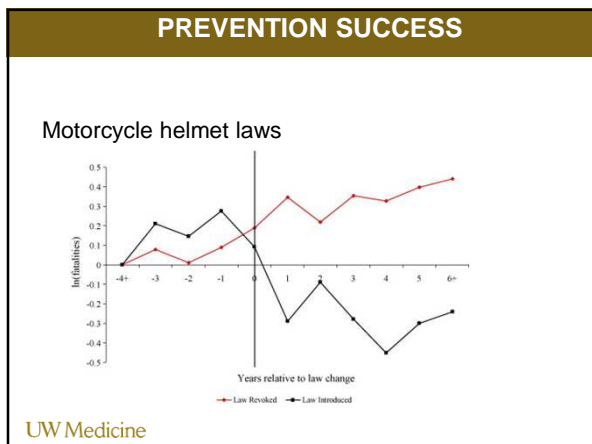
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HADDON MATRIX: WINDOW FALLS				
	Host	Agent	Physical environment	Socio-cultural environment
<b>Pre-event</b>				Building regulations, social awareness of fall risk
<b>Event</b>	Developmental stage, weight of child	Force-Height of fall	Surface landed on	Awareness of risk of potential injuries
<b>Post-event</b>	Prompt medical care	History of falls may change future behavior/home safety	Prompt access to quality medical care	Immediate recognition of occurrence and need to reduce recurrence

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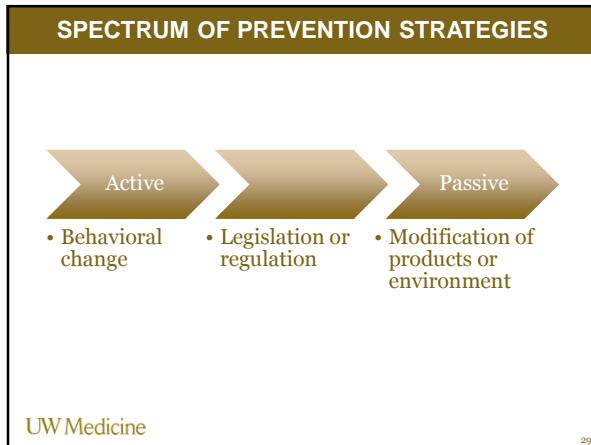
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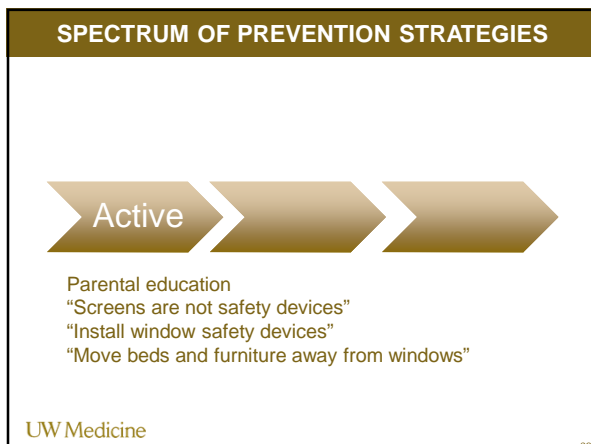
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## EDUCATION

### Kids Can't Fly!

Window Safety and Prevention Tips for Families with Young Children

**F**alls are the leading cause of injury to children, and falls from windows involving young children are especially serious. Window falls are preventable. To prevent window falls, parents and caregivers should:

- **Install approved window guards.** Massachusetts building codes require that a window guard must have a quick-release that can be operated by an adult or older child in an emergency. Be sure the window guards you purchase include this feature. Window stops and window guards can be purchased at local hardware stores and chain department stores. Window stops range in cost from \$5-10 each. Child safety window guards cost about \$40, depending upon the style/brand/window size. It is important to remember that these need to be installed correctly in order to work.
- **Keep all furniture, especially beds, sofas and dressers, or anything else children can climb, away from windows.**
- **Lock all unopened doors and windows.**
- **Open windows from the top down, especially when there are children in the home.**
- **If you must open windows from the bottom, buy window-stops at your local hardware store that will limit the opening to less than 4 inches.** Window-stops can be disabled by an adult or older child in an emergency.

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## WINDOW SAFETY DEVICES



Under \$5







Under \$10





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## WINDOW SAFETY DEVICES







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**PREVENTION SUCCESS**

Boston: 1993 Kids Can't Fly Campaign  
Education + window guard distribution  
Voluntary effort financially supported by building landlords and the city  
Targeted dwellings where children under 6 years of age reside  
Outcome: 83% reduction in window related death/injury since 1993

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**SPECTRUM OF PREVENTION STRATEGIES**



Require landlords to install window safety devices  
Modify building codes

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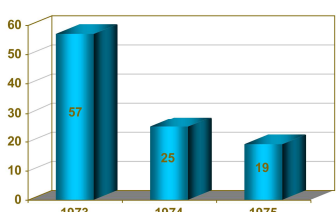
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**PREVENTION SUCCESS**



Year	Fatalities
1973	67
1974	25
1975	19

Window fall fatalities in New York City decreased with the implementation of window bars in public housing  
Spiegel & Lindaman. AJPH December 1977.

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**SPECTRUM OF PREVENTION STRATEGIES**



Passive

Install windows with integrated safety devices

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**INTEGRATED SAFETY DEVICE**



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**PREVENTION IN PROGRESS**

Minnesota: "Laela's Law"  
7/1/2009  
First statewide window fall legislation

Building code requiring installation of windows with safety devices in construction or remodeling of apartments or multi-family homes

Does not govern single family homes or new apartments to switch to safe windows

Too early to assess outcome

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**SUCCESSFUL PREVENTION STRATEGIES**

- Education
  - Multiple media, sustained
- Product Distribution
  - Window stops or guards, discounted or free and widely available
- Laws and Codes
  - Effective if new standards enforced

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**NEXT STEPS IN OUR REGION**

- Continue to gather data
- Continue education campaigns
- Seek out ways to widely distribute affordable or free window safety devices
- Ideally could change building codes

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**SUMMARY: INJURY PREVENTION**

- Injuries you see may be part of a bigger pattern
- Consider all factors that affect the injury
  - Before, during, and afterwards
- Successful prevention efforts target multiple factors
- Framework guides solutions

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**RESOURCES**

Prevent Child Injury  
<http://www.preventchildinjury.org/toolkits/window-falls>

Safe Kids  
<http://www.safekids.org/fall-prevention>

National Safety Council  
<http://www.nsc.org>

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**ANY QUESTIONS?**



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**THANK YOU!**

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