

# Injury Prevention

Anne Armstrong-Coben, MD

# Overview

- Personal Stories/ Patients seen
- Epidemiology
- Basics of Injury Prevention
- Prevention
  - Office-based
    - TIPP
  - Legislative Advocacy
  - Community-wide/ building into structure of society

# Personal Stories

- My stories
- Any stories
- Cases- what have you seen?

# Epidemiology of Childhood Injuries - United States

- Unintentional injuries are the leading cause of death and acquired disability in children from 1 - 19 years of age in the U.S.
- 33 children die every day because of injuries; 12,175 die each year
- Each year, 20-25% of children sustain an injury requiring medical attention, missed school, and/or bedrest
- 9.2 million children age 0 -19 are seen in EDs each year for injuries
- Leading cause of childhood medical spending in U.S.

# Global Problem of Injuries to Children and Adolescents

- Nearly 1 million deaths annually
- >98.4% of the world's childhood drowning occur in low- and middle-income countries
  - US: 1.53 per 100,000 population
  - Bangladesh age 1 to 4: 156.4 per 100,000

# Example Specific Injury- Drowning (US)

- In 2002 – 838 children <14 years old died from accidental drowning
- 2003- 4200 children < 14 years old treated in ERs
- Typical medical cost “near drowning”- \$8K for hospital visit up to \$250K/year for long-term care
- Other sequelae – the witnesses, the families

# Basics of Injury Prevention

- INJURIES ARE NOT ACCIDENTS
- Injuries are often understandable, predictable, and preventable
- Specific injuries share similar characteristics of person, place , and time
- By understanding injuries, interventions can be developed and implemented to prevent or limit the extent of a given injury

# William Haddon and the Phase Factor Matrix

- First conceptual framework for studying injuries causes and prevention, developed by William Haddon
- By studying a specific injury with this matrix in mind, one can identify **modifiable** risk factors and identify points of intervention in the causal sequence



# Phase-Factor Matrix cont.

- Much like an infectious disease:
  - Host=person experiencing injury
  - Vector=e.g. a bicycle or car
  - Environment=physical and socioeconomic condition surrounding event
- Three Phases during which each factor must be evaluated:
  - pre-event phase
  - event phase
  - post-event phase

# Example

	Host	Vector	Environment
Pre-event			
Event			
Post-event			

# Example: Ingestion

	Host (child)	Vector (medicine)	Environment (home)
Pre-event	Age of child	How lethal	Where bottle stored
Event	Manual dexterity	Child proof package	supervision
Post-event	Other medical problems	How quickly absorbed	Proximity to hospital

# Strategies for Prevention

Intervention or countermeasures are classified based on requirements for behavior change

- **Active** - rely on actions taken by an individual (e.g. storing meds in high/locked cabinets)
- **Passive** - do not rely on the efforts of an individual to be successful (e.g. packaging meds in nonlethal amounts/child safety caps)

# Methods of Prevention - Three "Es"

- Engineering
- Environmental change
- Education

# How do we do it?

- Office-based counseling
- Legislative advocacy
- Multisectorial woven into the fabric of communities as they develop and grow

# Primary Care Based Injury Prevention Counseling

- American Academy of Pediatrics - injury prevention counseling is standard of care
- Residency Review Committee - among educational goals

# Effectiveness of office-based counseling

- Comprehensive review of the literature shows positive results
  - increased knowledge
  - improved behavior
  - decreases in number of certain injuries (Bass et.al.)
- Cost effective
  - for each dollar invested in effective program, return \$13 (Miller and Gailbraith)



# Need for Patient Education

- Parents think they would be most likely to obtain safety information from physician's office; physicians were cited as parents' first choice for such info (Eichelberger et.al.)
- Relatively small proportion of households with young children (39.3% of 0 - 14 year olds) report receiving injury prevention counseling (Quinlan et. al.)

# AAP Policy Statement on Office-Based Counseling

Counseling as a standard of health care

- “All children deserve to live in a safe environment”
- “Anticipatory guidance for injury prevention should be an integral part of the medical care provided for all infants, children, and adolescents”
- “appropriate to age and locale”

# The Injury Prevention Program (TIPP)

- Initiated in 1983 by the American Academy of Pediatrics
- Initially for children ages birth to 4 years
- October 1988 expanded to include children age 5 to 12 years
- 1994 - revised and updated to reflect the current pattern of childhood injuries

# TIPP

- introduces and reinforces safety concepts in an organized manner
- emphasizes those injuries most important developmentally to help parents anticipate and prevent injuries
- Injuries covered: MV, burns, falls, firearms, drowning, poisoning, choking, bike safety, pedestrian safety

# How to implement in practice

- \_\_\_ Discuss importance of injury prevention to child's health
- \_\_\_ Give parent/child age and language appropriate safety sheet
- \_\_\_ Read through TIPP sheet with parent and child (approx. 3 topics)
- \_\_\_ Ask if any questions
- \_\_\_ Ask if any barriers to implementing
- \_\_\_ Document counseling in medical record

# Implementation continued

- Counsel at each well child care visit and during any other appropriate patient encounter (“teachable moment”)
- Ask follow-up questions on subsequent visits to see if parents are implementing

# Legislative Advocacy

- Window guard legislation - Deaths fell by 50% in 2 years
- Aspirin packaging - Ingestion rates fell by 50% in 2 years
- Seat Belt laws enforced - Fatality rates dropped 20% vs. 8% in control states
- State booster seat law NY- traffic injuries in children ages 4 to 6 dropped 18%

# Example of Legislation

- “Children Can’t Fly”
- Program developed by NYC DOH in 1970s
- Required window bars in apts.
- Rates of falls decreased 50%





# Example of Legislation

- Poison Prevention Packaging Act
- 45% decrease in poisonings
- How?
- Childproof containers/ caps
- Packaging in nonlethal doses

# One Doctor Can Make a Difference-

## Abraham Bergman, MD

- Flammable fabric burns
  - Flammable Fabrics Act '67
- Aspirin poisoning
  - Poison Prevention Packaging Act '70
- Power lawn mower injuries
  - Consumer Product Safety Commission '72

# Individuals Can Make a Difference- “Through Grief to Advocacy”

- Cindy Lightner- MADD
- Rose Lineweaver- Crib Safety
- Jeanette Fennel - Trunk Releases
- Terrill Struttmann - Children in Cars
- June McCarroll - Highway Center Markers

# Example of Legislation

- Can occur after family tragedy
- Virginian Graeme Baker Pool and Spa Safety Act
- Antientrapment Devices
- Vacuum release systems



# John Stuart Mill

- “One person with a belief is equal to the force of 99 who have only an interest”

# Multisectorial

- Most effective are programs woven into the fabric of communities
- Sweden did this as industrialized- made injury prevention part of urban planning, road construction, transportation, education, and health systems- child injury rates in Sweden are the lowest in the world

# Cases

- A 4 month old is in your office with the parents. What are some of the topics you want to cover.
- Parents of a 5 and 8 year old come to you and want to put a pool in their backyard
- An almost 17 year old is in your office and is describing how excited she is to receive her driver's license next week

# You Can Make a Difference

- Injuries are not accidents
- Gather your “stories” to help give advice
- Patients do listen