

Pediatric Injury Update

Los Angeles County

Trauma Symposium 2014: Injury Prevention

Antelope Valley Hospital

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Overview

- **Background on injury**
 - Define injury epidemiology & injury
 - Classification & types of injury
 - Obtaining injury data
- **Childhood injuries in Los Angeles County**
 - Leading Causes of Injury Fatality & Hospitalization
 - Contributing Factors
- **Protective Factors**
- **Preventive Resources & Patient Handouts**

Learning Objectives

- Describe at least three types of childhood injury classifications
- Identify at least three leading causes of injury hospitalizations for children
- Explain at two contributing factors for childhood motor vehicle occupant injuries
- Describe two protective factors for fall related injuries among children
- Name a lead National organization on childhood injury prevention



Background on Injury

➤ Injury epidemiology involves:

- Characterization of injury occurrence
- Identification of risk factors
- Development & evaluation of injury prevention programs

➤ Injury is defined (ACS):

- Physical damage due to transfer of energy (kinetic, thermal, chemical, electrical, or radiant)
- Absence of oxygen or heat
- Over a period of time, “exposure” that is either acute or chronic

Injuries-Classified by Intent

- Intentional
- Unintentional

Intentional Injuries

Self-Inflicted/Suicide	Assault/Homicide
Cut/Pierce	Abuse and Neglect
Firearm	Blunt Object
Hanging/Suffocation	Cut/Pierce
Jump	Fight, Unarmed
Poisoning	Firearm

Unintentional Injuries

Burn, Fire/Flame	MVT, Occupant
Burn, Hot Object/Substance	MVT, Motorcyclist
Cut/Pierce	MVT, Bicyclist
Drowning/Submersion	MVT, Pedestrian
Fall	Poisoning
Firearm	Struck by Object
Machinery	Suffocation
Bicyclist, Other	Transport, Other
Pedestrian, Other	Natural/Environmental

Where do we obtain injury data?

- **Primary Injury Data**
 - Hospitalization records
 - Emergency department records
 - Coroner-death certificates



Acquiring your own injury data?

➤ Acquire injury and population data

➤ <http://epicenter.cdph.ca.gov>

The screenshot shows the EpiCenter website interface. At the top, there are logos for the California Department of Public Health, CDPH, EpiCenter, and Safe and Active communities. Below these is a navigation bar with eight green buttons: Overall Injury Surveillance, Selected Injury Topics, Injury Data Summaries, Traumatic Brain Injuries, Violent Death Circumstances, Alcohol/Drug Consequences, Population Data, and Linked Crash-Medical Data. The main content area has a left sidebar with links like 'About our data', 'Tell us how you use our data', 'Help with building tables', 'Help with ICD-9 and ICD-10 codes', 'EpiCenter Home', 'CDPH Home', 'SAC Branch Home', and 'Contact Us'. The main body features a red headline: '2012 Death, Hospital and ED data now available! Build Your Own Tables'. Below this, there are three columns of information. The first column has links for 'Overall Injury Surveillance' and 'Traumatic Brain Injury (TBI)' with descriptive text. The second column has a link for 'California Electronic Violent Death Reporting System' with descriptive text. The third column has a link for 'Selected Injury Topics' and a list of injury types: Assault (homicide), Bicycle, Firearm, Heat, Motor vehicle occupant, Pedestrian, Self-inflicted (suicide), Senior falls, Assaults on females, and Intimate partner assaults on females.

California Department of Public Health CDPH EpiCenter California Injury Data Online Safe and Active communities

Overall Injury Surveillance Selected Injury Topics Injury Data Summaries Traumatic Brain Injuries Violent Death Circumstances Alcohol/Drug Consequences Population Data Linked Crash-Medical Data

About our data
Tell us how you use our data
Help with building tables
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2012 Death, Hospital and ED data now available!
Build Your Own Tables

[Overall Injury Surveillance](#)
The most versatile and comprehensive source of California injury data. It includes all types of injuries that result in death, hospitalization, or an emergency department visit.

[Traumatic Brain Injury \(TBI\)](#)
Data on hospital and emergency department patients with non-fatal TBIs.

[California Electronic Violent Death Reporting System](#)
Data on violent death circumstances from several sources. Includes homicides, suicides, unintentional firearm deaths, and deaths of undetermined intent.

[Selected Injury Topics](#)
Data on the following injuries:

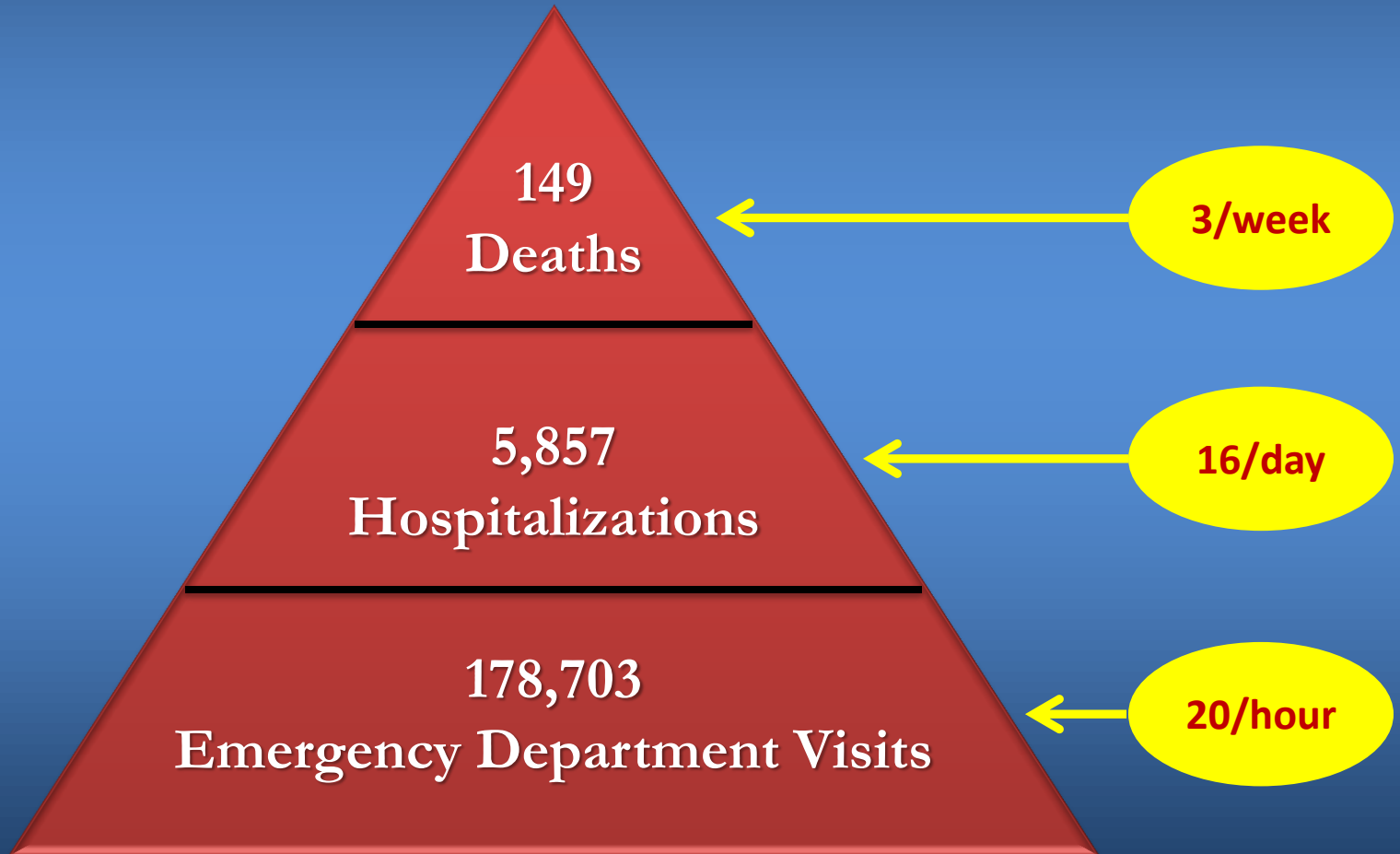
- Assault (homicide)
- Bicycle
- Firearm
- Heat
- Motor vehicle occupant
- Pedestrian
- Self-inflicted (suicide)
- Senior falls
- Assaults on females
- Intimate partner assaults on females



Childhood Injuries in Los Angeles County

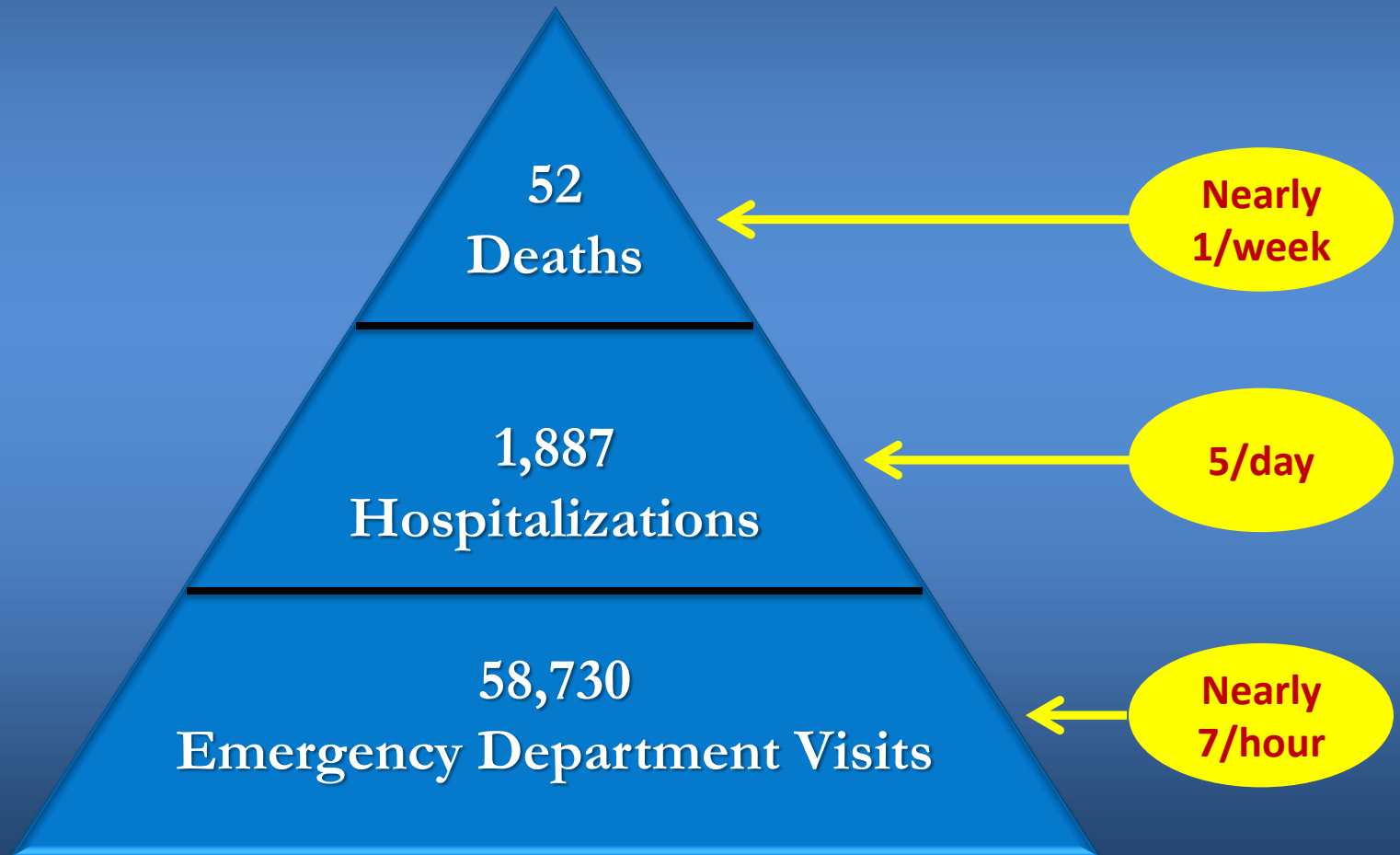
- Injuries are the leading cause of death 1-44 year olds in Los Angeles County
 - 2.3 million children ages 0-17
 - 650,000 children ages 0-4

Frequency of Injury Children Ages 0-17 (2012)



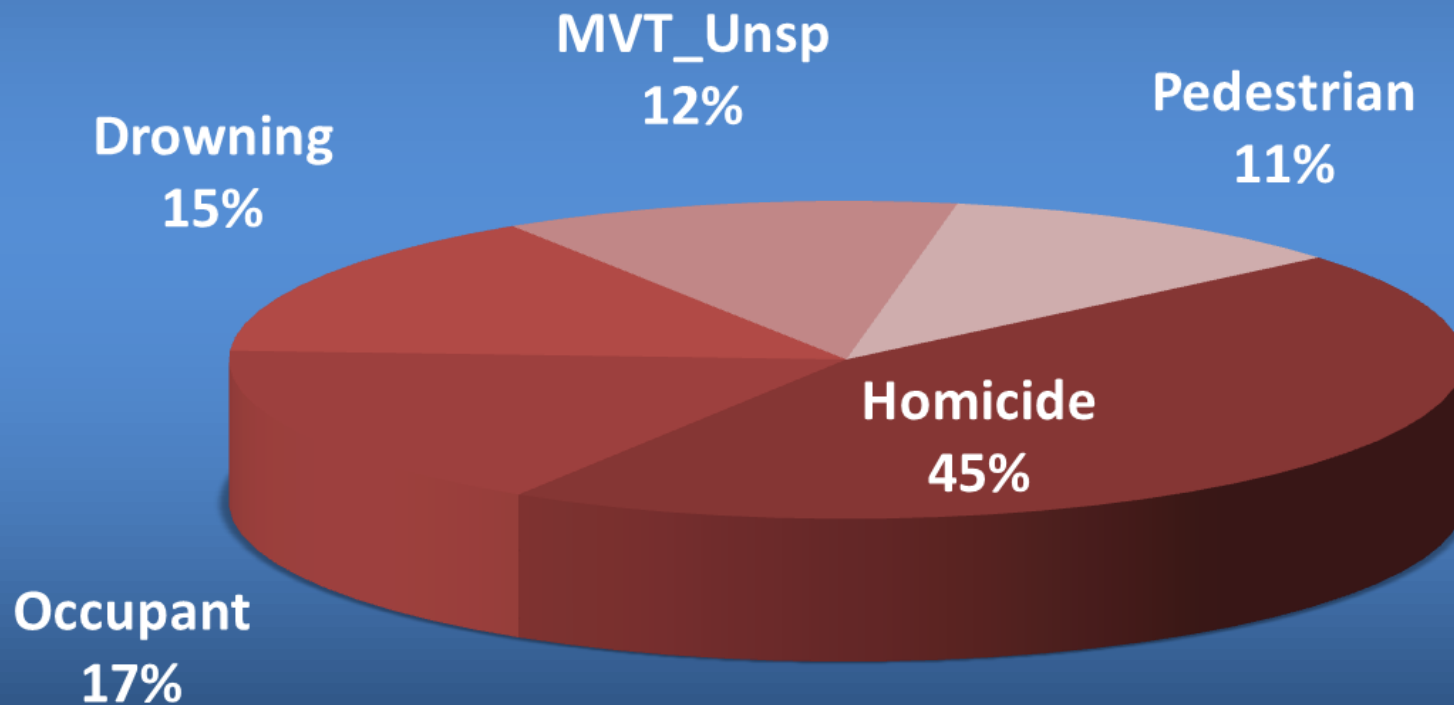
Frequency of Injury

Infant & Toddler Ages 0-4 (2012)



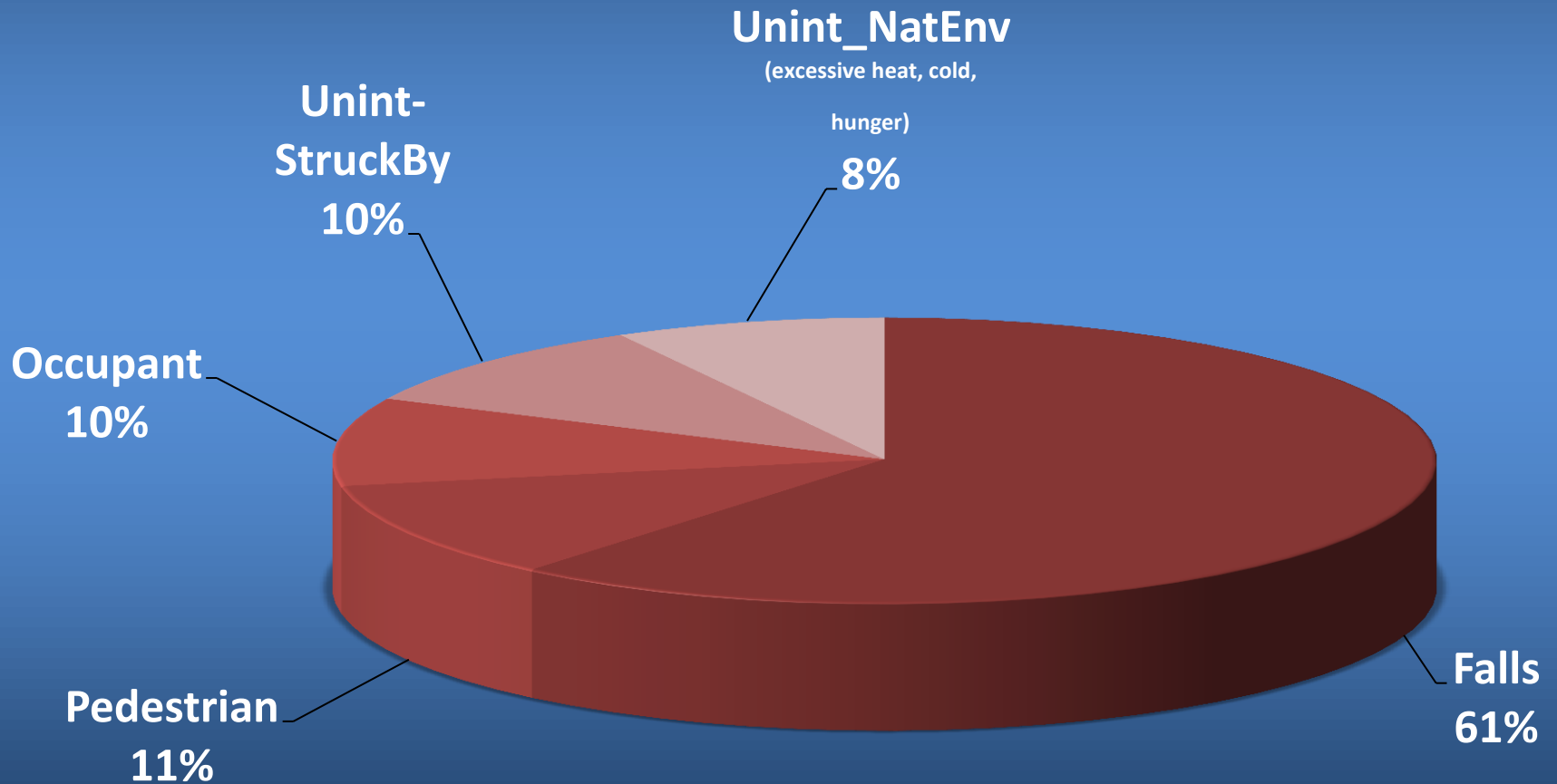
Fatalities

Ages 0-4, Los Angeles County (2012)



Hospitalizations

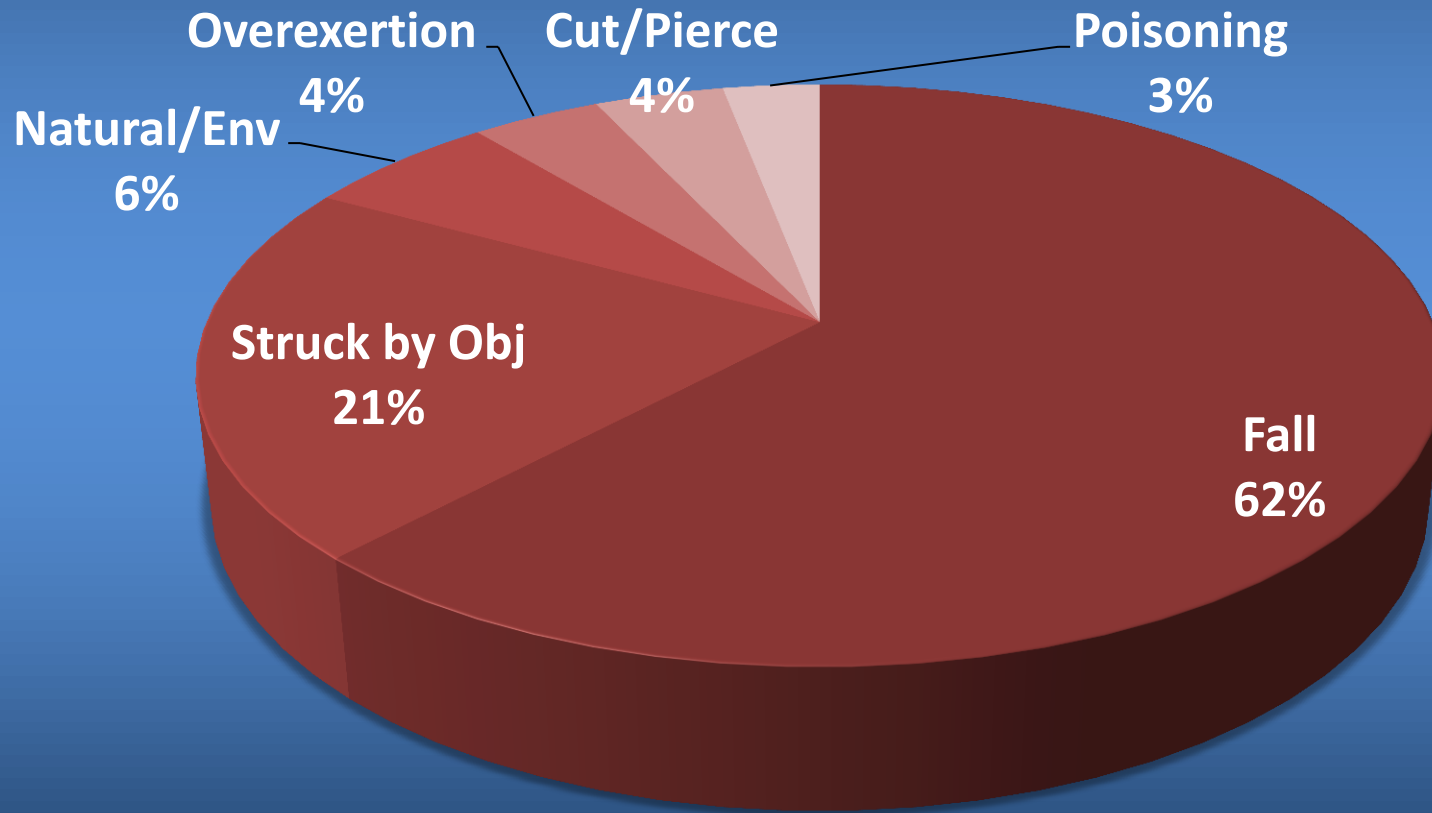
Ages 0-4, Los Angeles County (2008-2012)



Source: California Office of Statewide Health Planning and Development, Patient Discharge

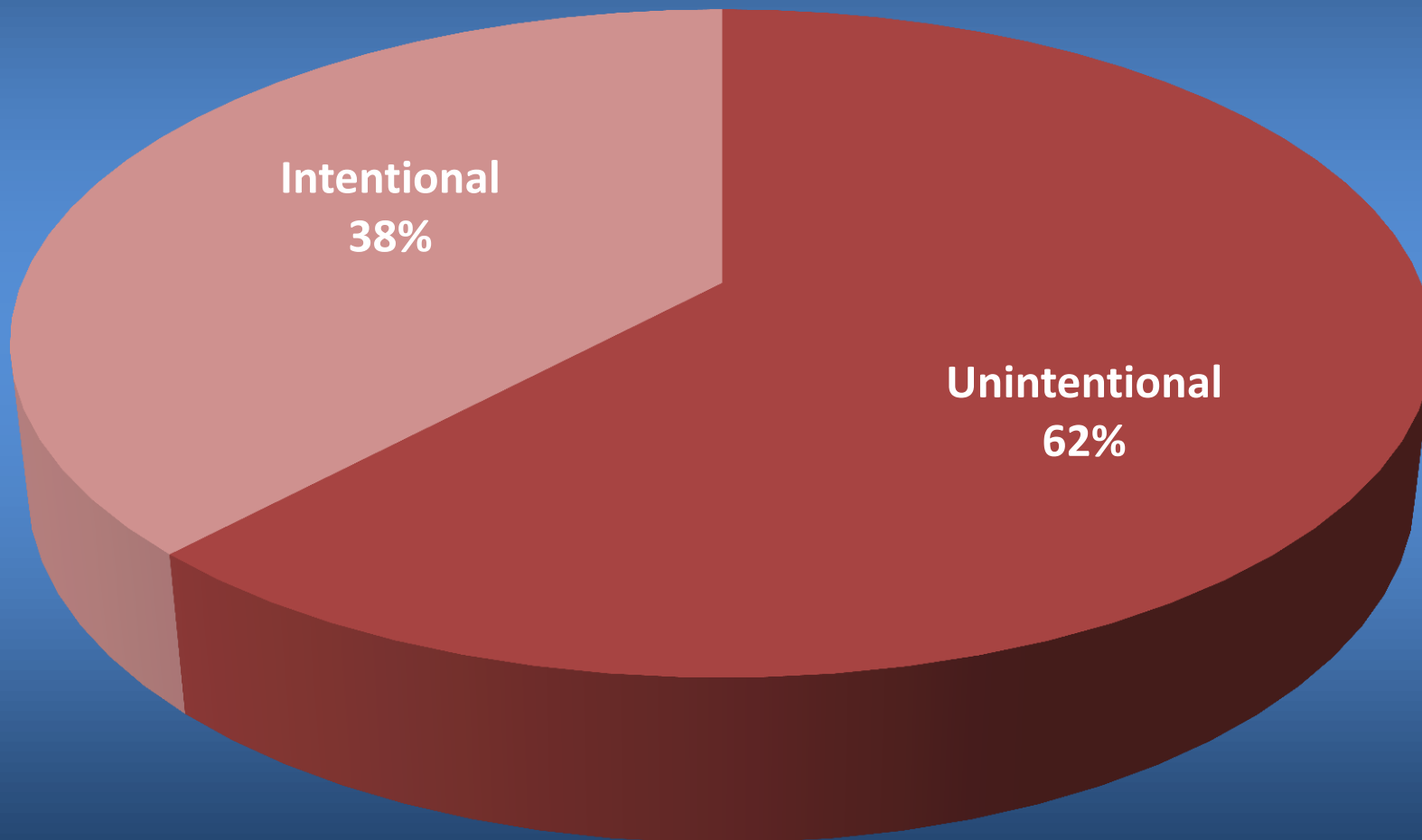
Emergency Department Visits

Ages 0-4, Los Angeles County (2008-2012)

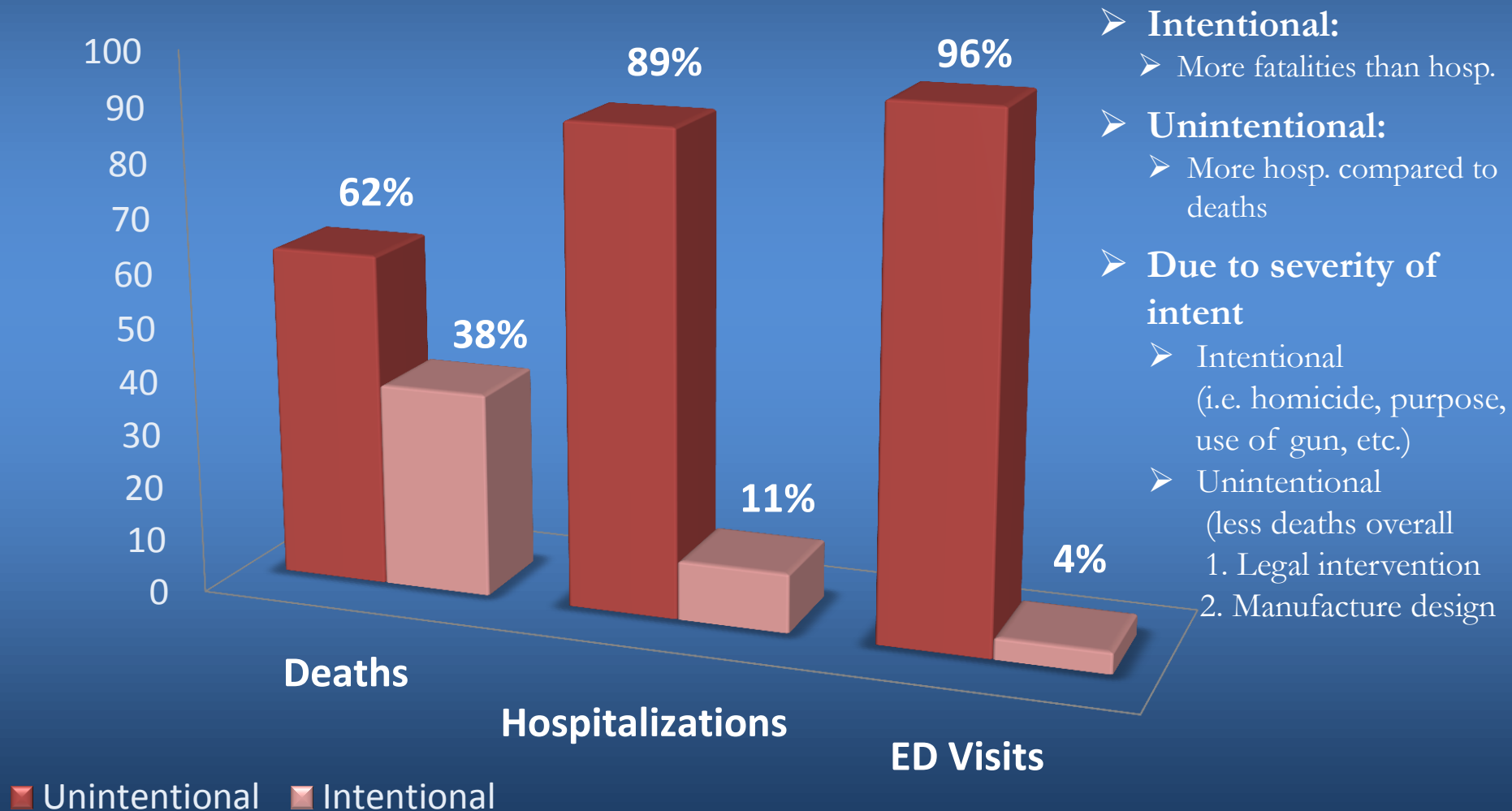


Injuries by Intent

Ages 0-4, Los Angeles County (2012)



Percent of Injuries by Disposition & Intent, Ages 0-4 (2012)

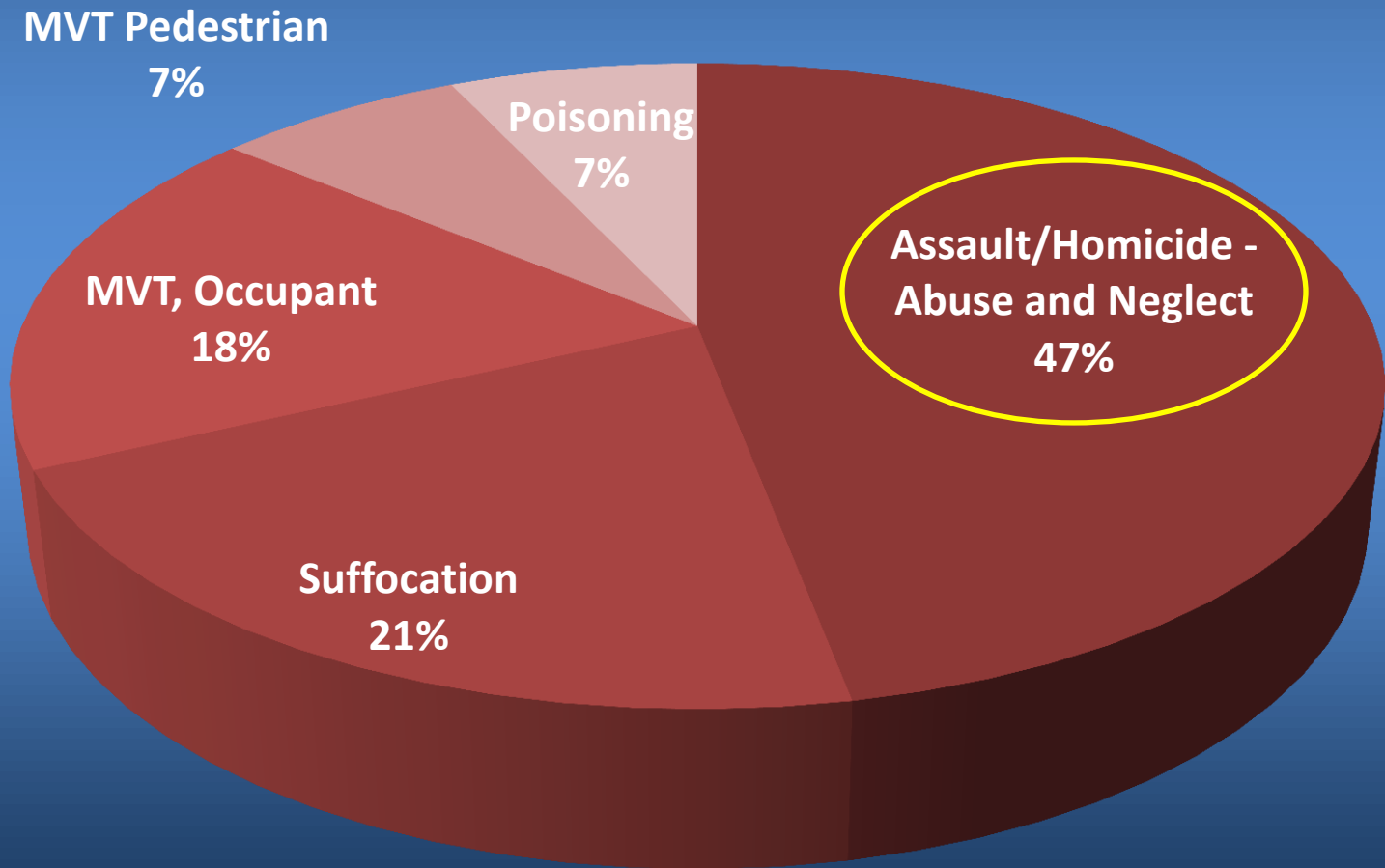




Injuries Among Infants

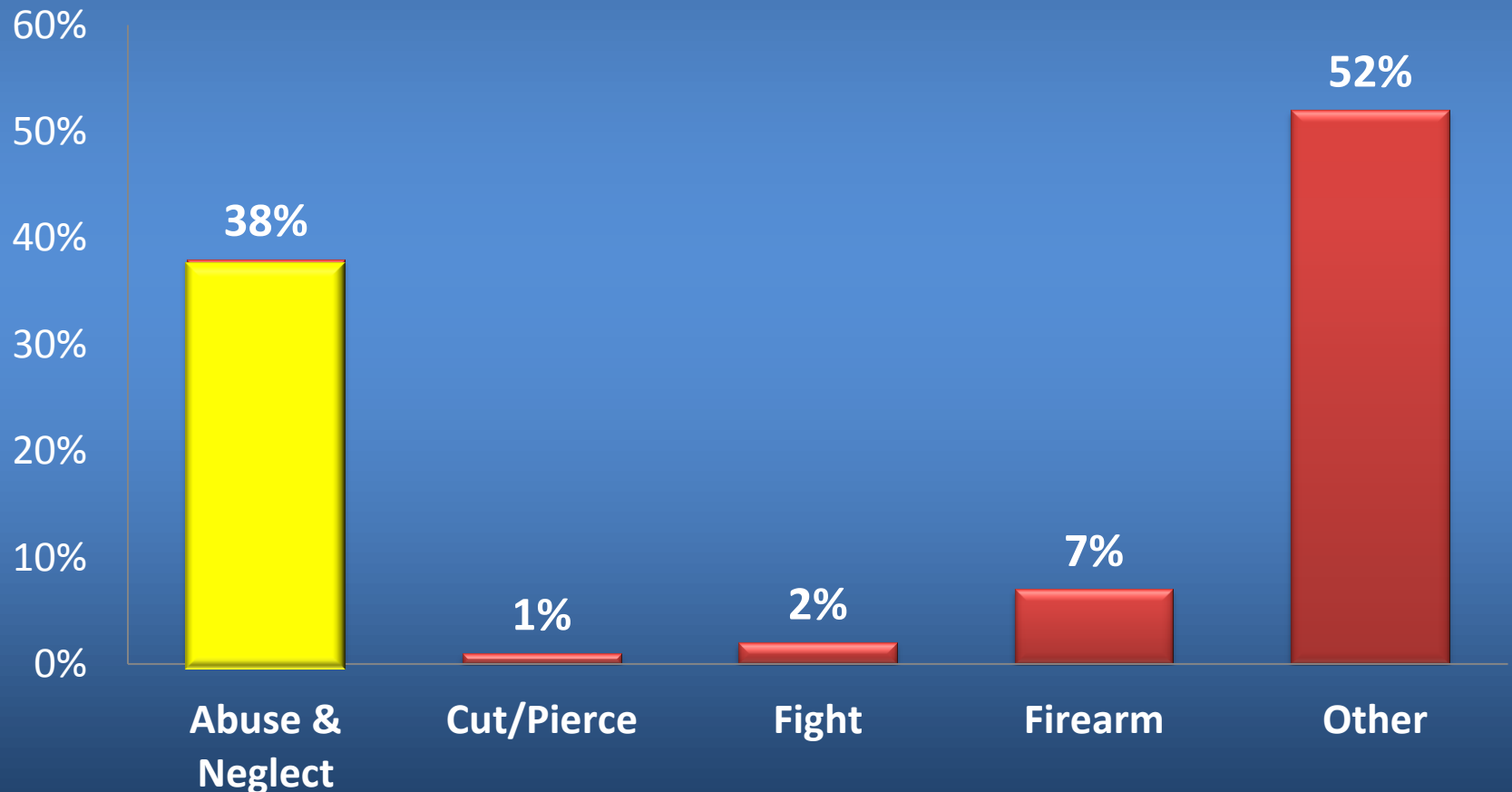
Injury Fatalities

Infants <1
(Los Angeles County, 2003-2012)



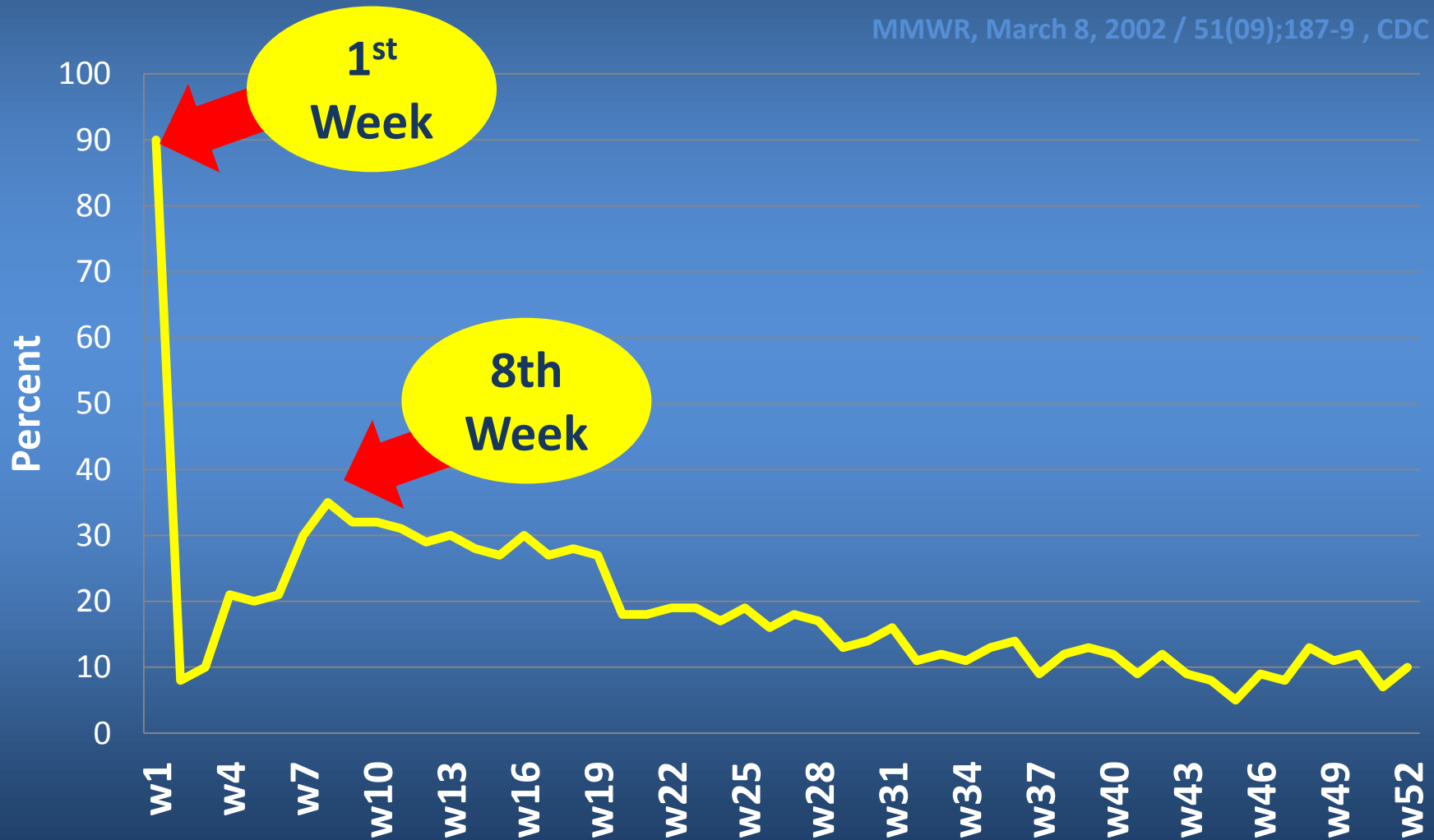
Assault/Homicides by Cause

Infants, <1
(Los Angeles County, 2003-2012)



Percent of Infant Homicides by Week of Age at Death

MMWR, March 8, 2002 / 51(09);187-9 , CDC



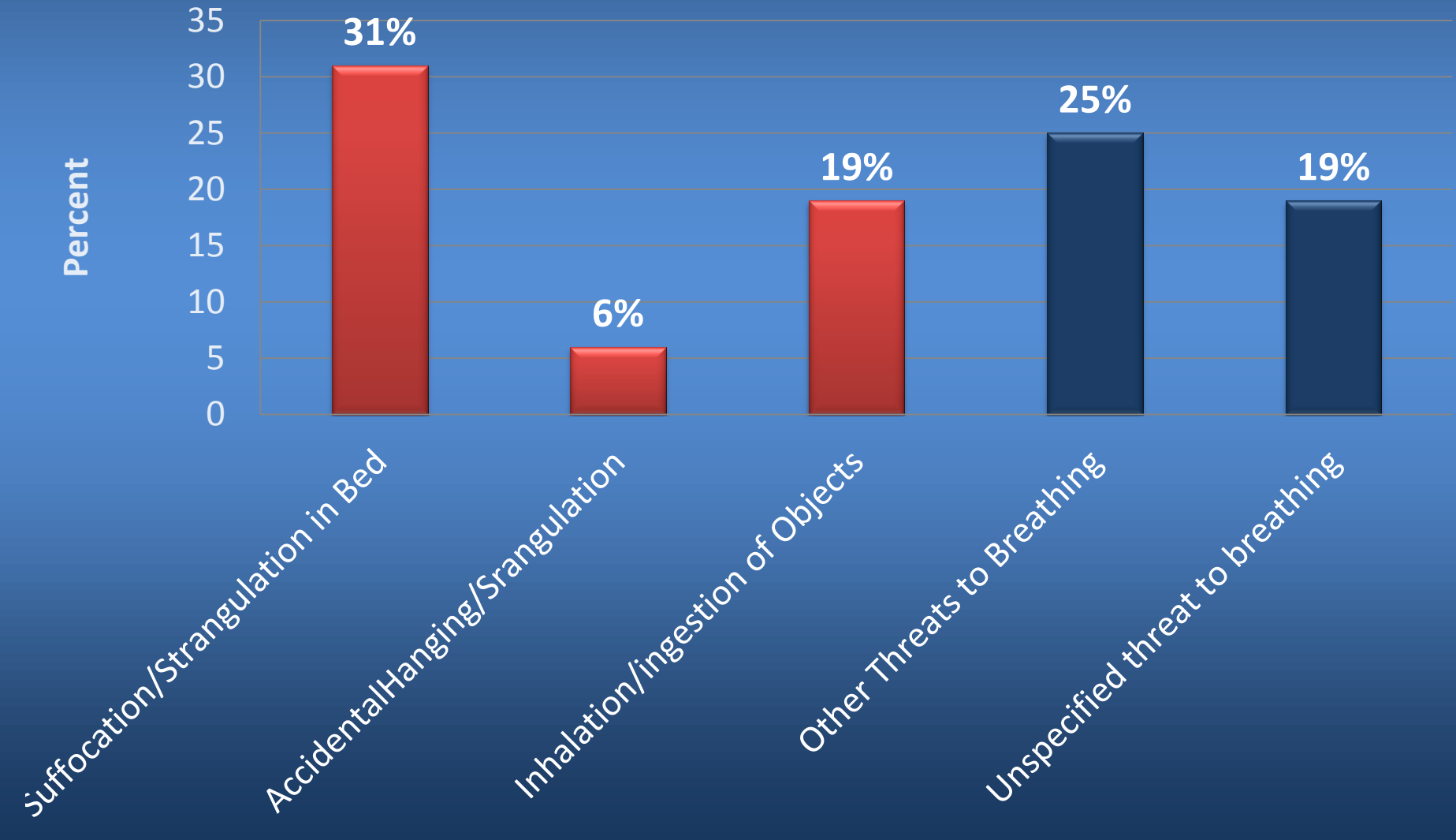
Assault/Homicides Among Infants

- Highest risk during 1st week of life:
 - First day of life – greatest risk
 - (82% of infant homicides first day of life)
- During first week of life, 89% of infant homicide perpetrators
 - Female
 - Usually the mother
 - More likely to be adolescents
 - History of mental illness
 - Intimate Partner Violence (IPV)
- Second highest risk:
 - 8th week of life
 - Often due to a caregiver's reaction to an infant's persistent crying (Infant crying duration peaks at six to eight weeks of age)
 - Perpetrator:
 - Father/Boyfriend (history of IPV)

**89% infants killed
on 1st day of life-
not born in a
hospital**

Suffocation Fatality by Cause

Infants, <1
(Los Angeles County, 2003-2012)



Risks of Infant Suffocation

Sleeping Risks

➤ Sleeping

- RISK: 50% of cases co-sleeping:
 - Adult not used to bed-sharing with infant
 - Adult not experienced in protecting the baby from hazards such as roll-overs
 - Overtired or intoxicated
- RISK: Infant sleeping on sofas, chair, regular beds or other soft surfaces



➤ Bed/Crib

- RISK: Use of pillows, blankets and stuffed animals in crib

Risks of Infant Suffocation

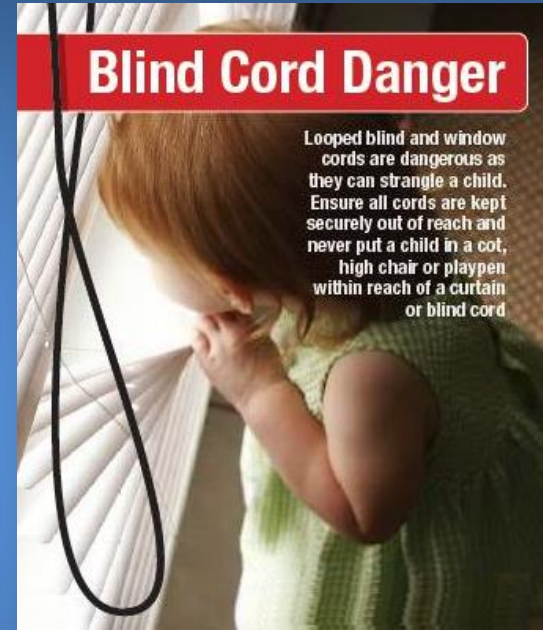
Strangulation Risks

➤ Hanging/Strangulation

- Common items that strangle children include clothing drawstrings, ribbons, necklaces, pacifier strings and window blind and drapery cords.

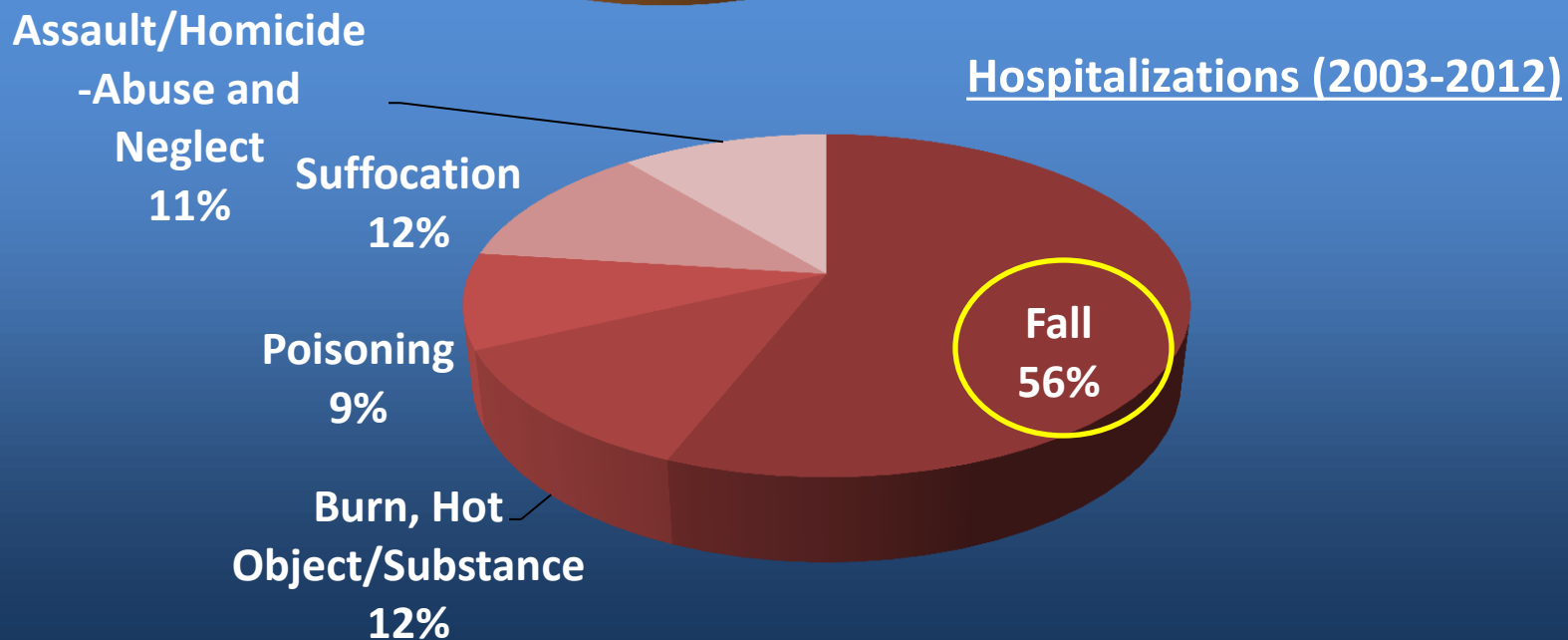
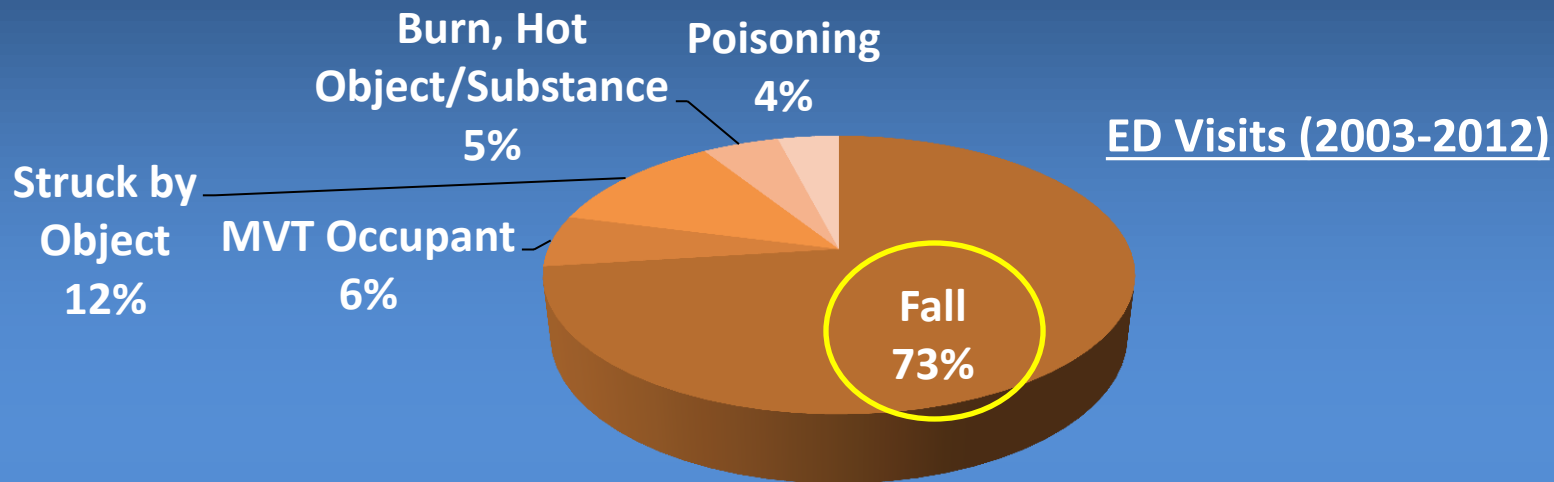
➤ Ingestion small objects

- Nonfood choking hazards tend to be round in nature, such as coins, small balls and/or objects that conform to the airway, like balloons.



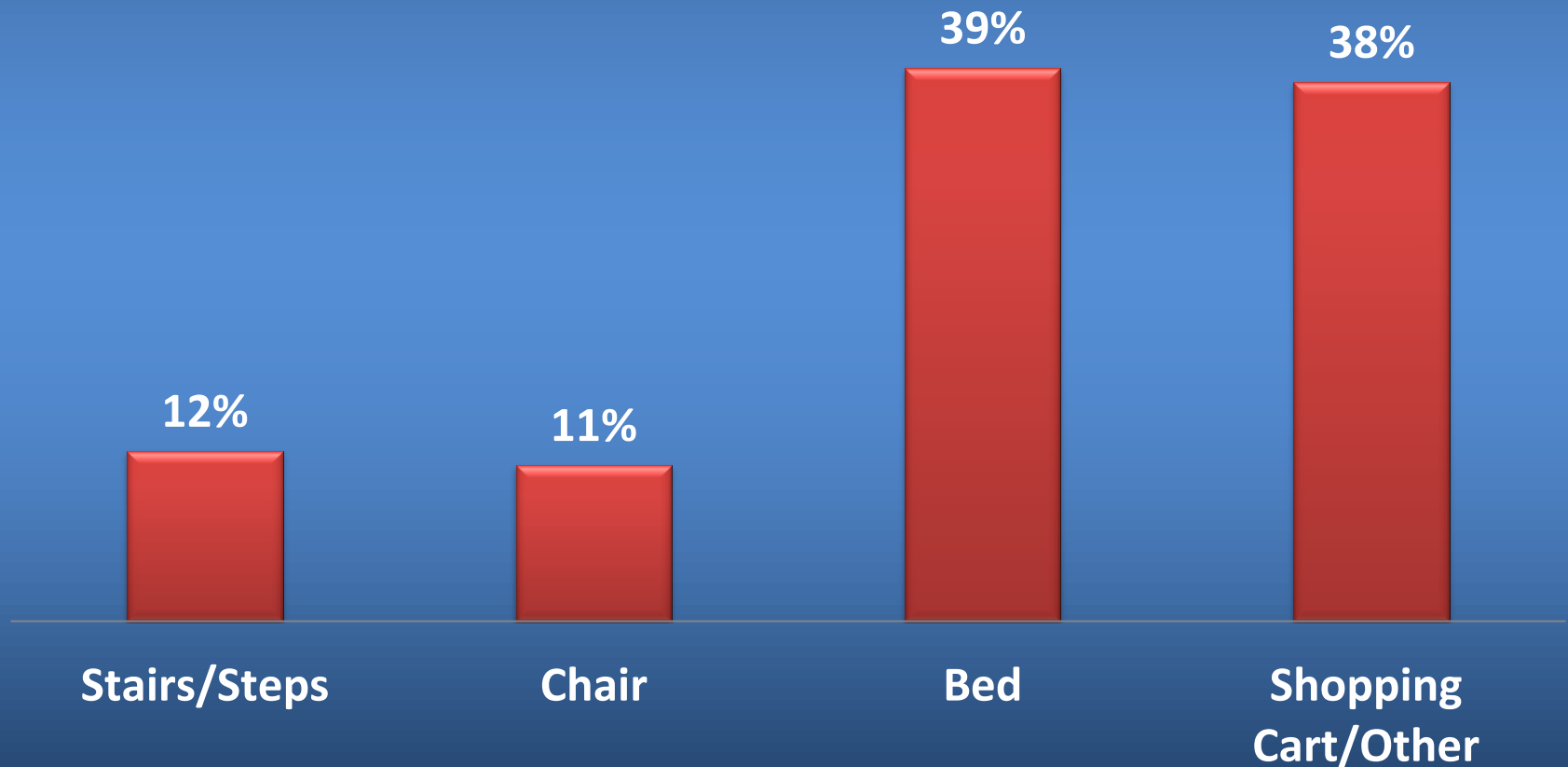
Injury Hospitalizations & ED Visits

Infants <1 (Los Angeles County,



Where are infants falling from?

(Los Angeles County, 2003-2012)



Infant Fall Risks

- RISK: Bed
 - Infant sleeping in inappropriate bed
 - Changing infant on bed
- RISK: Shopping carts/other unstable surface
 - Placing baby carrier on shopping cart, table, etc.
- RISK: Chair
 - Placing baby carrier on chair
 - Changing infant on chair
- RISK: Steps/Stairs
 - Easy access



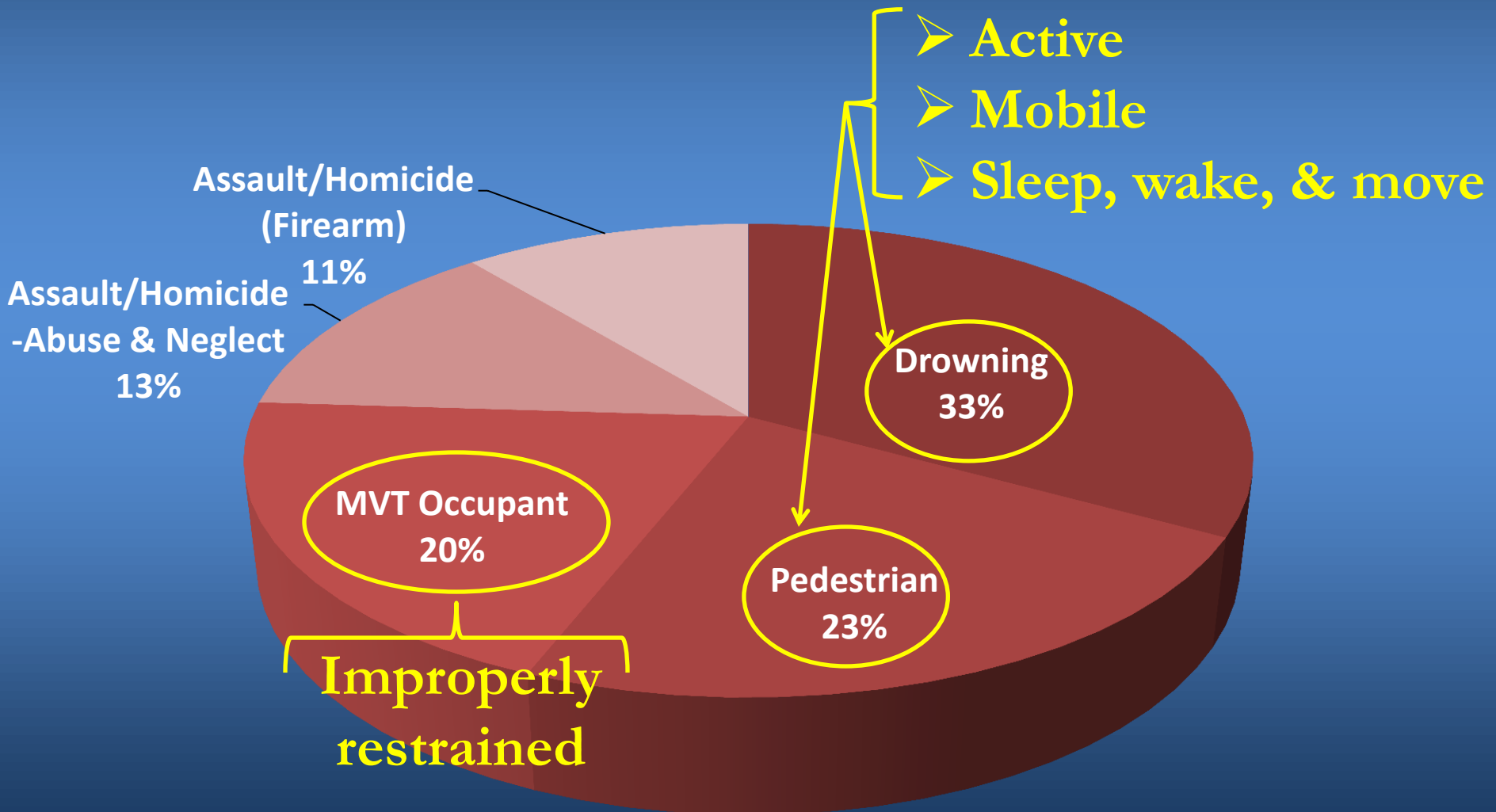


Injuries Among Ages 1-4

Injury Deaths

Ages 1-4

(Los Angeles County, 2003-2012)



Where are children ages 1-4 drowning?

(Los Angeles County, 2003-2012)

- Seasonal Risk:
 - Ages 9-12: April-August
 - Ages <5: All year



Pool Drowning Facts

Ages 1-4

- 88% occur in private swimming pools
 - Child Wading and inflatable pools have similar risks
- 90% of children who had drowned, had been supervised by an adult (ages 5-12)
- 70% of children ages 2-4 who had drowned:
 - Not expected to have been in the pool area, but elsewhere in the home, asleep, playing, etc.



Pool Drowning Risks

(Lack of layers of protection)

Ages 1-4

➤ RISK-Access:

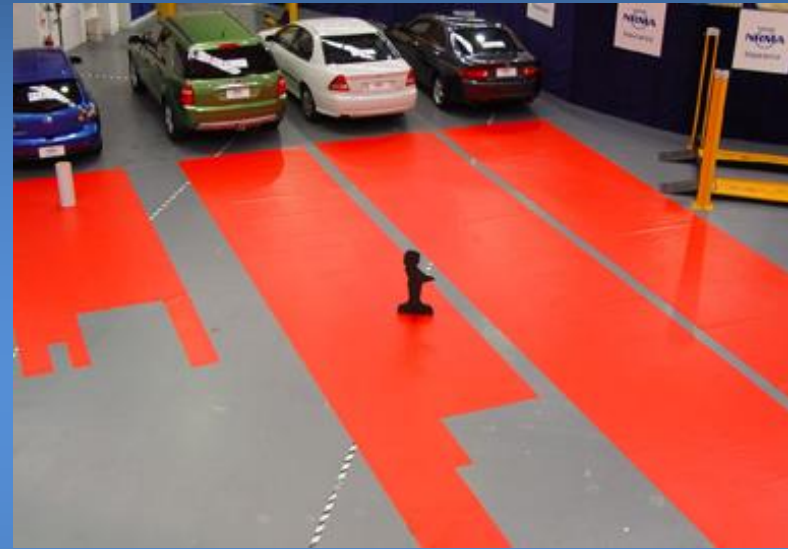
- Lack of perimeter “four-sided” 5 foot high, isolation fencing
- Lack of self closing, self latching gates
- Lack of locks & alarms on doors and windows-lead to pool area

➤ RISK-Toys, balls, etc. left on pool deck

- RISK-Lack of “active” supervision (National SAFE KIDS study):
 - 90% of children who had drowned, had been supervised by an adult (ages 5-12)

How are children ages 1-4 injured as a pedestrian?

- Back-overs from parent/caregiver vehicle
 - RISK: Driveway
 - Playing
 - Trying to get to car
 - RISK: Sidewalks-blind driveways
 - RISK: Sidewalks-Walking or running ahead of parent



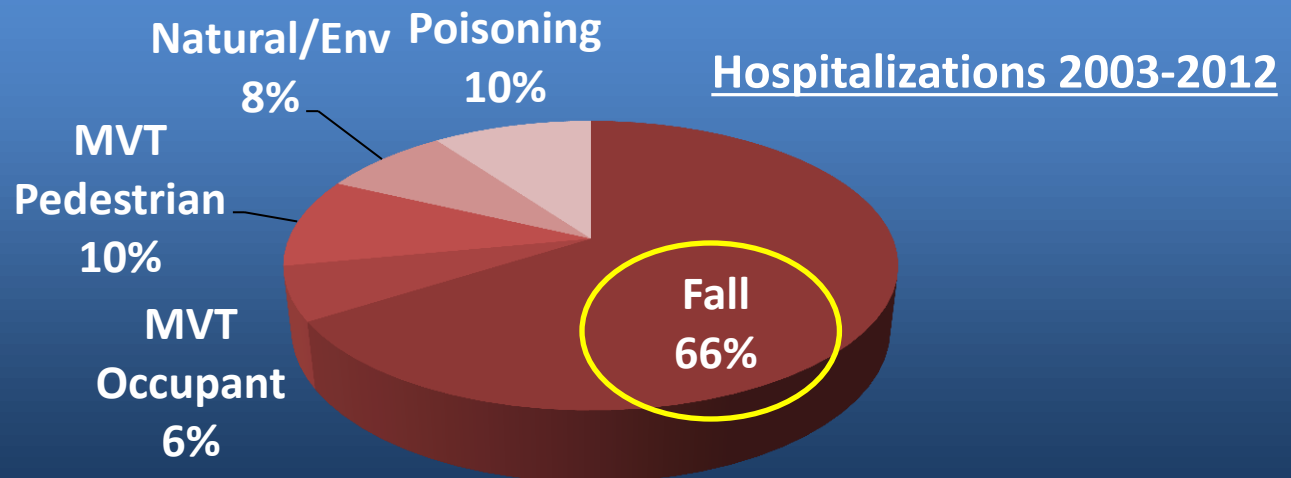
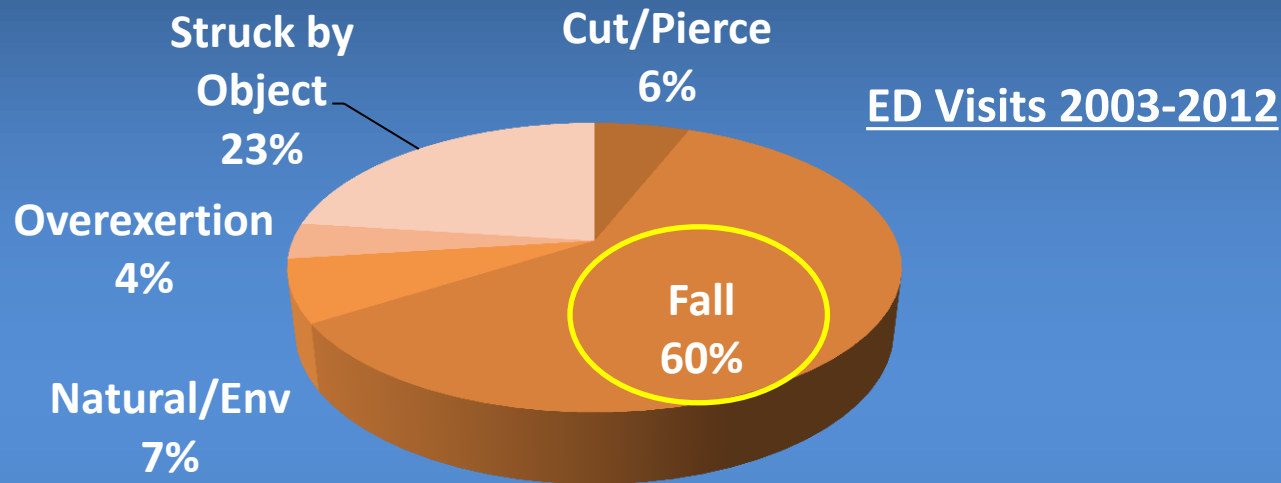
How are children ages 1-4 injured as a passenger?

- Riding **improperly** restrained-greatest risk factor
- 90% of parents feel they have their child buckled properly-observational surveys show:
 - 85-95% children not buckled properly
 - 63% seat belt not anchored tightly
 - 33% harness straps not snug
 - 20% harness straps improperly routed
 - 11% forward-facing before age 2/weight maximum of infant seat
- Infants & toddlers who have died from being left alone in a car:
 - 52% forgotten by the caregiver
 - 30% child playing in unattended vehicle
 - 17% intentionally left child in vehicle, then forgot



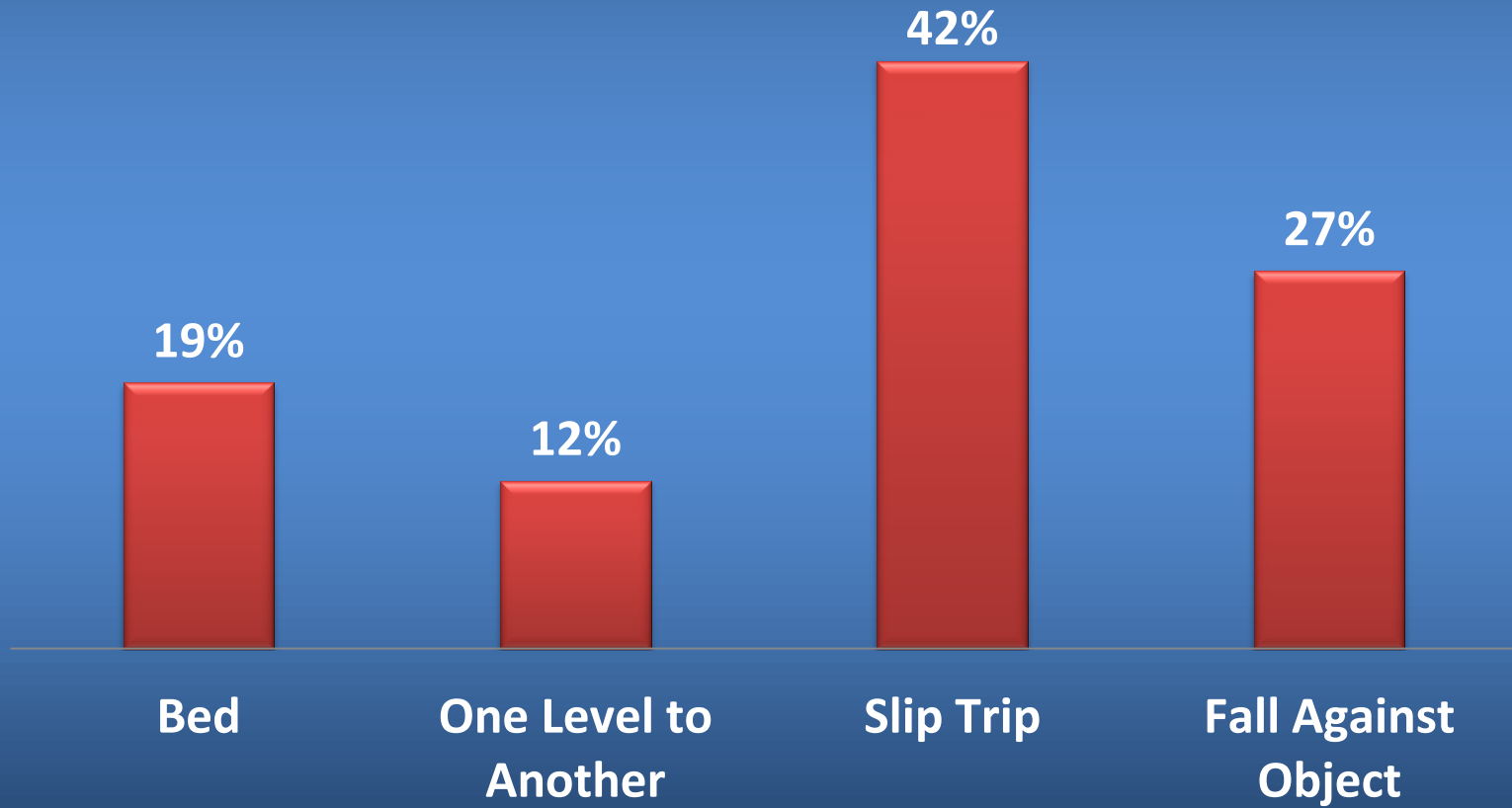
Injury Hospitalizations & ED Visits

Ages 1-4 (Los Angeles County)



Where do Children Ages 1-4 Fall From?

(Los Angeles County, 2003-2012)



Fall Risks for Ages 1-4

➤ Preschool aged children-greatest risk of fall-related injuries

PRIMARY RISKS:

- 1). Lack of supervision
- 2). Environmental

➤ 50% of falls among ages 0-14, occur among children 4 and younger

➤ 80% fall related injuries among children 4 and younger occur at:

➤ Home

➤ Mostly during noontime and early evening

Review

Leading Causes of Injury











Infants <1

DEATHS		HOSP. & ED VISITS	
CAUSE	RISK	CAUSE	RISK
<u>Assault/Homicide</u>	Abuse/Neglect	<u>Falls</u>	Bed
	IPV		Shopping Cart/Other
<u>Suffocation</u>	Bed		
	Object		

Review

Leading Causes of Injury

Ages 1-4

DEATHS		HOSP. & ED VISITS	
CAUSE	RISK	CAUSE	RISK
<u>Drowning</u>	 Pool	<u>Falls</u>	 Bed
			 Slip/Trip
			 Fall against
<u>MVT Occupant</u>	 Not buckled properly		
	 Incorrect seat		
	 Child alone in vehicle		
<u>Pedestrian</u>	 Back-overs		
	 Driveway		
	 Sidewalks		



Protective Factors

- Assault/Homicide
- Suffocation
- Falls
- Drowning
- MVT Occupant
- Pedestrian

Protective Factors

Assault/Homicide

- Promote/encourage delivery in hospital
- Prenatal care classes
- Parenting classes
- Intimate Partner Abuse (IPV) intervention
- Teen pregnancy wellness programs
- Risk assessment screening
 - IPV
 - Sexual abuse/assault
 - Mental illness



Protective Factors

Suffocation

➤ **Suffocation:**

- Actively supervise the baby at all times
- Remove pillows, blankets and stuff animals from the baby's sleeping area
- Do not allow babies to sleep on sofas, chairs, regular beds, or soft surfaces



➤ **Strangulation:**

- Keep cords and strings out of your child's reach
- Remove hood and neck drawstrings from your baby's clothing
- Do not allow babies to wear hanging jewelry, purses, scarves or loose clothing
- Make sure all crib-railing slats are secure and not more than 2 and 3/8 inches apart (the size of a soda can)

➤ **Choking:**

- Supervise your baby when eating or playing
- Do not give your baby small, hard or round foods, such as hot dogs, hard candy, cheese sticks/chunks, nuts, grapes or popcorn
- Use a small parts tester or the size toilet paper roll. Anything that will fit into these are a choking hazard for your baby
- Learn infant CPR

Protective Factors

Falls

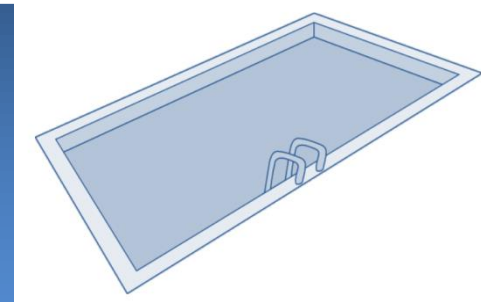
- Use of appropriate changing tables
- Use of age-appropriate beds/rails
- Use of safety gates leading to different levels/stairs
- Avoid asphalt, concrete, grass or soil surfaces under playground equipment-use of mulch, rubber, etc.
- Supervision (home & playground)



Protective Factors

Drowning

- “Active” Supervision (Lifeguard)
- Perimeter Fencing
- Self-closing/Self-latching gates (open outward)
- Locks and Alarms on all windows/doors (leading to pool area)
- Swim lessons & learn CPR
- Lifesaving equipment in pool area
- Wading/Inflatable pools:
 - Smaller: Empty/turn over after use
 - Larger: Require fencing/Electrical requirements



Protective Factors

MVT-Occupant



- When used properly child passenger safety restraint systems can reduce the risk of fatal injury by:
 - 70% for infants
 - 55% for toddlers, and
 - 59% children in booster seats
- More than 80% of the children 4 years and younger, who were killed in car crashes in California since 1990, would have survived if buckled properly
- Read instructions of car safety seat and the vehicle owner's manual to install car seat properly-then go to www.safercar.gov or call 1-866-732-8243
- Never leave a child alone in a motor vehicle

Protective Factors

Pedestrian

- Protective factors:
 - Walk around vehicle before backing
 - Use of sensors
 - Practice safe play areas for children (not on driveway)
 - Never allow young children to walk or run ahead or lag behind the adult on a sidewalk





Recent “Risk” Topics

- Lithium Batteries
- Magnets
- Furniture & TV Monitors

Lithium Battery Risk

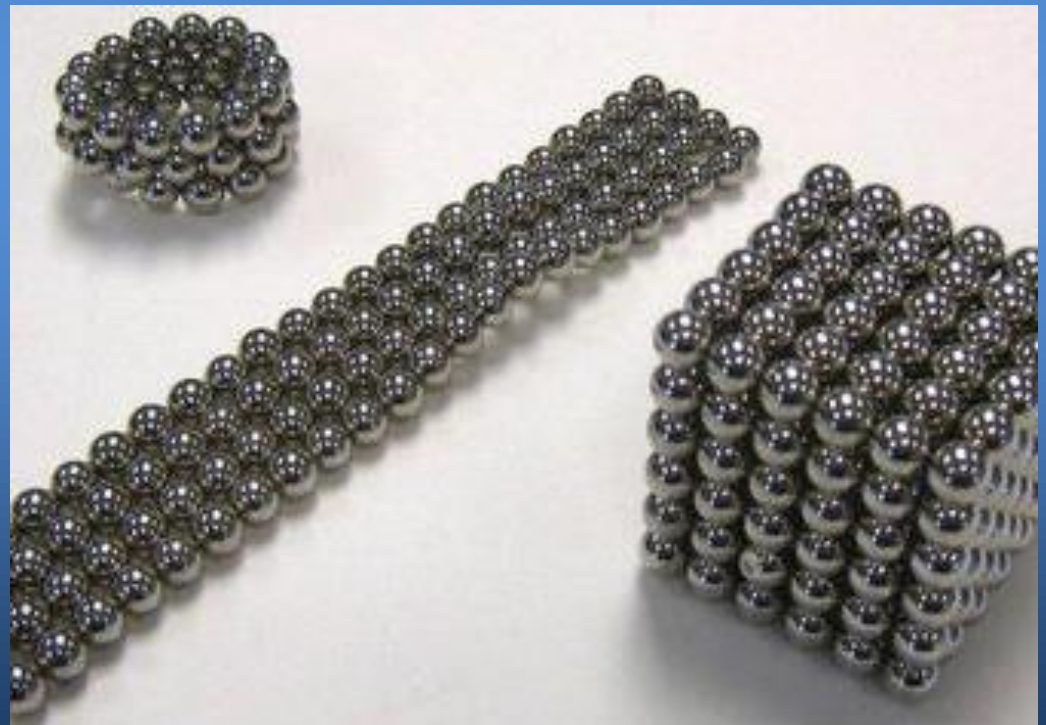
- Coin-sized lithium batteries used in:
 - Car key remote controls
 - Bathroom scales
 - Flameless candles
 - Greeting cards
 - Children's talking books



- In 2010: 3,400 cases of swallowing
- When swallowed:
 - Stuck in throat
 - Saliva activates electrical current
 - Causing chemical reaction & burning the esophagus

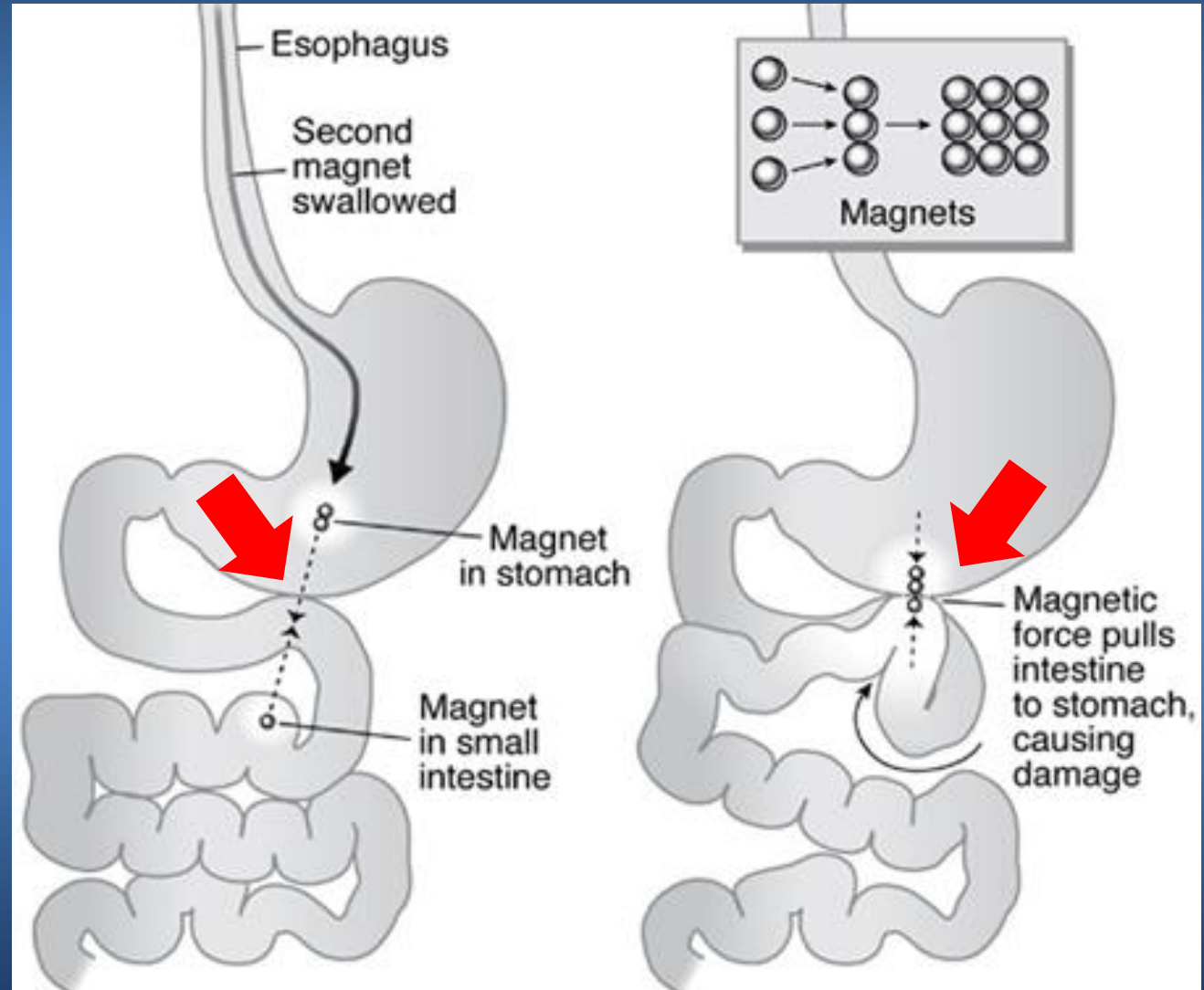
Magnet Risks

- Powerful small magnets
- Popular among older children and teens
- Since 2003-hazardous to infants & toddlers when ingested



Recent Magnet Risks-older children & teens

- More recently among older children & teens
- Used as temporary tongue & lips rings
- Upon accidental swallowing:
 - Similar ingestion risks as with younger children
 - Bowel perforation to requiring appendectomy



Recent TV & Furniture Tip-Overs



- Every 3 weeks a child is killed from a TV tip-over



- Every day 35 children are injured from top heavy furniture (U.S.)



Preventive Activities & Resources

- Web links (downloadable/printable)
 - Home Safety
 - Car Safety
 - Baby Safety
 - TV & Furniture



Car Safety



Baby Safety



A Parents Guide to Safe Sleeping AAP (handout)

<http://www.healthychildcare.org/pdf/SIDSparentsafesleep.pdf>

California SIDS Program (Booklets/Handouts various languages)

<http://www.californiasids.com/Universal/MainPage.cfm?p=4491>

Babies Sleeping Safe (handouts)

<http://www.californiasids.com/UploadedFiles/Forms/BSipSafeEnglish.pdf>

<http://www.californiasids.com/UploadedFiles/Forms/BSipSafeSpanish.pdf>

What does a safe sleeping environment look like? NIH (handout)

http://www.nichd.nih.gov/publications/pubs/upload/Safe_Sleep_2009_Eng.pdf

The Battery Controlled-Lithium battery hazard to infant/toddlers (handout)

<http://www.ph.lacounty.gov/tpg/Safe%20Kids%20LA/The%20Battery%20Controlled/The%20Battery%20Controlled%20Fact%20Sheet.pdf>

The Happiest Baby (Book, DVD by purchase online)

<http://www.happiestbaby.com/>



TV & Furniture Tip-Over Resources



In the United States between the years 2000 and 2013, every 3 weeks a child was killed from a TV tip-over and every day 35 children were injured from tip-over of top-heavy furniture. While young children are at most risk, 70% of those injured are 5 years or younger.

Safe Kids USA has the following helpful resources on TV and furniture tip-overs to increase awareness and reduce risk exposure:

- ☐ Downloadable materials: Tip Sheet TV and Furniture Tip-Overs
 - ✓ (English) <http://www.safekids.org/assets/docs/safety-basics/safety-tips-by-risk-area/tip-over-safety-tip-sheet.pdf>
 - ✓ (Spanish) <http://www.safekids.org/assets/docs/safety-basics/safety-tips-by-risk-area/tip-over-safety-tip-sheet-spanish.pdf>
- ☐ Video: TV Tip-Overs: What Every Parent Needs to Know
<http://www.youtube.com/watch?v=XyCHsr9NKqY&feature=youtu.be>
- ☐ Info-graphic
<http://www.safekids.org/assets/docs/safety-basics/safety-tips-by-risk-area/tip-overs-infographic.pdf>

Additional references & resources:

- ☐ Safe Kids USA
<http://www.safekids.org/safety-basics/safety-spotlight/TV-and-furniture-tip-overs/>
- ☐ U.S. Consumer Product Safety Commission (CPSC)
<http://www.cpsc.gov/PageFiles/135118/tipover2012.pdf>



Summary

- **Childhood injuries-leading cause of death & hospitalization**
- **Infants <1:**
 - Assault/Homicide-abuse/neglect, Intimate Partner Violence
 - Suffocation-soft bedding, co-sleeping, small objects
 - Falls-bed, shopping carts
- **Ages 1-4:**
 - Drowning-pools
 - Pedestrian-backovers
 - MVT Occupant-Not buckled properly & left alone in vehicle
 - Falls-Bed, slip/trips
- **Injuries can be prevention-protective factors & education**
- **Resources for prevention**

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