Disclosures

- No disclosures.
Injury Prevention

- **Injuries** are the **leading cause of death and disability** for those between the ages of 1 and 24 years in the US.

- These injuries are often important in public health efforts, as they represent a critical loss to a population that could have contributed to society for decades.
Paradigm Shifts in Injury Prevention

- **Poison Prevention Packaging Act of 1970**
  - This law required the use of *child resistant packaging* for both prescription and over-the-counter (OTC) drugs, household chemicals, and other hazardous materials that could be considered dangerous for children.
  - In the decade that followed this legislation, it was estimated that nearly 200,000 unintentional ingestions in children were prevented.
Cars, Guns and Drugs

2014 leading causes of injury deaths for children and young adults 1-24 years.

<table>
<thead>
<tr>
<th>Age Groups (years)</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>RANK</td>
<td>&lt;1</td>
<td>1-4</td>
<td>5-9</td>
</tr>
<tr>
<td>1</td>
<td>Unintentional Suffocation (991)</td>
<td>Unintentional Drowning (388)</td>
<td>Motor Vehicle Crashes (345)</td>
</tr>
<tr>
<td>2</td>
<td>Homicide Unspecified (119)</td>
<td>Motor Vehicle Crashes (293)</td>
<td>Unintentional Drowning (125)</td>
</tr>
<tr>
<td>3</td>
<td>Homicide Unspecified, classifiable (83)</td>
<td>Homicide Unspecified (149)</td>
<td>Unintentional Fire/Burn (68)</td>
</tr>
</tbody>
</table>

Cars, guns and drugs disproportionately cause the most injury deaths.
The Next Paradigm Shift in Injury Prevention

• Cars
  When child passenger and teen driving laws make parents do the *safest* thing, not just the *right* thing.

• Guns
  • When the CDC and the NIH treat guns just like rabies in terms of funding.

• Drugs
  • When Naloxone is used like an Epi-pen but doesn’t cost as much as an Epi-pen.
• Car seats reduce the risk of death in MVCs by as much as
  – 71% for infants
  – 54% for toddlers 1-4 years old (Sauber-Schatz FK et al 2014).
• The use of booster seats reduces the risk of injury by 45% compared to seat belt use alone for children 4-7 years old in MVCs (Durbin DR et al 2003).
• When parents know their state law, they are more likely to use a car seat for their child. (Bae et al 2014).
Cars

• The laws don’t keep up with best safety practices for child passengers.

• 2011 the AAP recommended that children younger than 2 years old ride rear facing in the rear seat of a vehicle to reduce the risk of head and neck injuries in MVCs (Durbin DR et al 2011).
  – Only CA, OK, PA, NJ have child passenger safety legislation that incorporates this best practice.

• States with laws that increase the required age for booster seat use to 8 years old saw a 17% decrease in death and serious injuries in MVCs (CDC 2014).

• CT Legislative Proposal to increase age of rear facing .......
Cars

- The laws don’t keep up with best safety practices for teen drivers.

- Graduated Drivers Licensing (GDL) laws place restrictions on novice drivers under the age of 18, and gradually eliminate restrictions depending on the length of time one has held a license or learner’s permit.

- The most effective GDL laws eliminate multiple risk factors for MVCs by teen drivers by having:
  - A minimum permit age of 16 years old.
  - A minimum intermediate license age of 17 years old.
  - A night driving restriction starting at 8 pm AND a ban on any teen passengers during the intermediate stage.
• States with the most stringent GDL laws have reductions of 38% for Fatal MVCs and 40% for Nonfatal MVCs by teen drivers (Baker S et al 2007).

• A study by the Insurance Institute for Highway Safety estimated that if all 50 states enacted the most stringent GDL laws, 500 more lives a year would be saved in MVCs by teen drivers. (IIHS 2012).

• Child passenger and teen driving laws make parents do the safest thing, not just the right thing.
In the US, firearm research does not have much federal funding.

Dickey Amendment:
- Arkansas Representative Jay Dickey inserted language into a 1996 federal spending bill that prevented the CDC from funding firearm safety research.

Over 40 years, the NIH made 486 research awards to study cholera, rabies, polio, and diphtheria.
- During that period, 2,000 people died from those diseases.

Over the same time span, the NIH made three awards for firearms research.
- During that period, 4 million people suffered firearm injuries.
  - Boston Globe 2017
In 2002, Congress appropriated $1.5 million to begin development and implementation of a population based, active surveillance system by the CDC: the **National Violent Death Reporting System (NVDRS)**.

At present, 42 states contribute data about the circumstances of violent deaths, including those involving firearms.
Guns

- Before the NVDRS, data on unintentional firearm deaths involving children and adolescents was not widely available.
- Hemenway *et al.* 2010
  - The majority of unintentional fatalities from firearms involving children and adolescents were “other-inflicted,” rather than “self-inflicted”.
  - In “other-inflicted” unintentional shooting deaths, the shooters were:
    - Overwhelmingly young (81% under age 25)
    - Primarily friends (43%) or family (47%)
    - Brothers were the most common family shooter.
  - The younger the victim, the more likely it was “other inflicted”.

Yale SCHOOL OF MEDICINE
Other data sets that are a product of a public-private partnership are helpful to understand firearm injuries.

Leventhal *et al.* 2014 performed a secondary analysis of the 2009 Kids’ Inpatient Database.

- 7391 children and adolescents (20/day) were hospitalized for firearm injuries in 2009.
- 6.1% of these children and adolescents died.
- Males accounted for a vast majority of firearm injuries requiring hospitalization (89%).
  - Rates of hospitalizations were highest in 15- to 19-year-olds and in African-American males.
Guns

- While we know more about who is the **shooter in firearm deaths** and who is the **victim in firearm injuries**, there are still significant gaps in our ability to prevent firearm injuries and deaths.
  - We need to know more about **why** the shooting happened.
  - We need to know more about **how** the gun was procured.
  - We need to know more about **what** are the long term effects of firearm injuries.
  - If we know more about why, what and how, we can develop effective prevention strategies to reduce firearm injuries and deaths.
Drugs

- Opioids are an emerging source of poisonings in the US.

- In 2012, an estimated 169,000 individuals 12 years and older used heroin for the first time (SAMHSA 2016).
  - Of these, 13% (21,000) were adolescents 12-18 years old.

- In 2014, 15 million people aged 12 or older misused prescription drugs. (NSDUH 2016)
  - Opioids were misused more than any other prescription drug.
  - Only ethanol and marijuana were misused more than opioids.

- Adult opioid prescriptions are most often associated with opioid exposures and poisonings in children and adolescents (Burghardt LC et al 2013).
Drugs

- At present, there are several multidisciplinary approaches to reduce opioid-related overdoses and deaths.
  - Programs that reduce the risk of misuse through safe storage and disposal of prescription drugs
  - Physician education on evidence-based prescription practices of opioid analgesics
  - Legislation restricting provider’s practices regarding opioid prescription, such as the number of pills dispensed

- These laws do not immediately address toxic exposures to opioids already in circulation within a community.
Drugs

- The use of Naloxone will immediately address toxic exposures to opioids already in circulation in a community.

- 2014: Opioids: 3,798 deaths in adolescents and young adults 15–24 y old.

- Any household with adult opioid prescriptions or with a person with substance use disorder should have Naloxone and a safety plan for its use.
Drugs

**Good Samaritan Laws**
Are intended to encourage bystanders to call 911 for help by providing limited criminal immunity.

**Third Party Prescription Laws**
Permits prescribers to prescribe naloxone to people with whom they do not have a prescriber–patient relationship.

**Enhanced Pharmacy Access Laws**
A pharmacist can dispense naloxone to any individual who meets criteria specified in a standing protocol.
The cost of Naloxone is likely the biggest obstacle to its widespread adoption for use in overdoses in the community. (Gupta RS et al 2016)

| Auto-injector, two-pack of single-use prefilled auto-injectors (Evzio) | Kaleo (approved 2014) | $690.00 (2014) | $4,500.00 |
| Nasal spray, two-pack of single-use intranasal devices (Narcan) | Adapt (approved 2015) | $150.00 (2015) | $150.00 |

* Price information was obtained from Medi-Span Price Rx (Wolters Kluwer Clinical Drug Information).

To reduce the price of Naloxone the FDA could:
- Offer incentives to companies to obtain approval to market generic versions of naloxone.
- Make naloxone available as an over-the-counter medication.

When Naloxone is used like an Epi-pen but doesn’t cost as much as an Epi-pen.
The next paradigm shift to engage policymakers in Injury Prevention:

- **Cars**
  - When child passenger and teen driving laws make parents do the *safest* thing, not just the *right* thing.
  - Strengthen laws that require the use of seatbelt and child restraints.

- **Guns**
  - Enhance laws that pertain to access and proper storage of firearms

- **Drugs**
  - Increase availability of Naloxone to community, families, first responders. Decrease cost.
  - Enhancing laws to decrease access to drugs.
Questions?

"I thought I felt a paradigm shift, but it was just my undershorts riding up."