SafERteens: An Evidence Based Youth Violence Prevention Program

Safety Score: Screening Firearm Risk

A Multi Level Youth Violence Intervention

Facts: Firearm-safety Among Children & Teens Consortium (FACTS)

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Director, University of Michigan Injury Prevention Center
Principle Investigator, FACTS Consortium
Professor, Emergency Medicine
Professor, Health Behavior & Health Education,
U-M Medical School, U-M School of Public Health
Health Care and Emergency Medicine are a Window to Community
In 2009 this was what was said....

- “Many of the patients at highest risk for youth violence utilize the ED as their primary or sole access point to the health care system”
- 97% of injured patients in EDs are treated and released
  - After a firearm-related injury 52%**
  - Older adolescents are overrepresented in ED visits relative to their population proportion - drop out of primary care
- youths will not interface with resources on the inpatient trauma unit
- “although some EDs attempt violence prevention, many still provide no evaluation of risk for future violent injury”

**Carter, Cook, Macy, Stanley Chamberlain, Fein, Alpern, Cunningham, Pediatric Emergency Care Applied Research Network (PECARN). AEM 2017
Screen and Intervention Violence Prevention
Youth 14-18 seeking ED care

R01 #014889 NIAAA/ NIH
Decreased Severe Peer Aggression at 3 and 12 months

Baseline 3 mo 6 mo 12 mo

% Reporting

Therapist
Computer
Control

**=P<.01

Cunningham & Walton. 2012 Pediatric
Walton & Cunningham. 2010 JAMA. NIAAA R01 AA014889

**=P<.01
### Reductions in Dating Victimization

<table>
<thead>
<tr>
<th>Type of Dating Violence Victimization</th>
<th># of Episodes in Past Year</th>
<th>Intervention Group</th>
<th>Time Frame</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>&gt;4</td>
<td>Computer Group</td>
<td>3,6</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>Moderate</td>
<td>&gt;8</td>
<td>Therapist Group</td>
<td>3,6</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>Severe</td>
<td>&gt;8</td>
<td>Therapist Group</td>
<td>3</td>
<td>p &lt; .05</td>
</tr>
</tbody>
</table>

Cunningham & Walton Acad Emerg Med 06/2013.
Cost Analysis

• Over 5 years-if implemented
• >4000 violent events/consequences would be prevented
• Multi-way sensitivity costs analysis
  ▪ $4-$55 per event/prevented

Even our worst case estimates of $55 are trivial. Consider an average ED visit costs $1349, a Tetanus shot costs $129, and a saline IV infusion for an hour costs $417.

What did we learn from SafERteens that can inform Firearm Interventions from Health care settings?

- Even Brief Interventions during a acute care visit can decrease violence events
  - Prevention in the ED can impact the health of the community beyond acute care.
- Computers may help standardize counseling delivery in hectic settings.
  - Replicated study with universal delivery approach
    - Again demonstrated decreased frequency of violent aggression (peer and partner) \( p < .05 \)

*University of Michigan Injury Prevention CDC grant# R49-CE-002099 (Cunningham)*
SafERteens 2.0

SafERteens 2.0 is a translation of an evidence-based brief intervention to prevent youth violence into routine Emergency Department clinical practice. This 30 minute single therapy session also addresses alcohol and drug use in relation to violence and occurs one-on-one with the teen during the Emergency Department visit... Read More >
ED-Based Behavioral Intervention for Substance Use and FIREARM Behaviors

- Pairs Multi-session Remote Behavioral Therapy with a Smartphone-based APP
- 1 ED session + 5 post-ED sessions
- MI+CBT+CM
- Smartphone APP
  - Daily surveys
  - Positive Tailored MI+CBT Messaging
  - GPS tracking-high-risk location alerts
  - One-touch Social Support
  - Personalized Feedback
  - Strengths-based CM Resources

NIDA K (CARTER) F03434
Violent Reinjury and Mortality Among Youth with Assault-Related Injury: A 2-Year Prospective Cohort

- Assaulted youth ~2X risk for a repeat violent injury
  - 37% vs 22%
  - Two-year mortality was 0.8%
  
- 59% of the Assault youth reported experiencing firearm violence over 2 years
  - 8% sustained a fatal/nonfatal firearm injury.
  - 77% of those w firearm violence noted was not limited to a single episode.

Cunningham, Carter; Ranney, Walton et al JAMA Pediatrics 2015
Carter Walton, Cunningham et al Pediatrics 2015

R01 # 024646 NIDA/NIH (Cunningham)
### SaFETy Score-Risk of Future Firearm Injury

<table>
<thead>
<tr>
<th>S (Serious Fighting)</th>
<th>In the past 6 months, including today, how often did you get into a serious physical fight?</th>
</tr>
</thead>
<tbody>
<tr>
<td>F (Friend Weapon Carrying)</td>
<td>How many of your friends have carried a knife, razor, or gun?</td>
</tr>
<tr>
<td>E (Community Environment)</td>
<td>In the past 6 months, how often have you heard guns being shot?</td>
</tr>
<tr>
<td>T (Firearm Threats)</td>
<td>How often, in the past 6 months, including today, has someone pulled a gun on you?</td>
</tr>
</tbody>
</table>

Goldstick, Carter, Walton, Dahlberg, Sumner, Zimmerman, Cunningham

Annals of Internal Medicine 2017

R01 # 024646 NIDA/NIH (Cunningham)
SaFETY Risk Gradient

- Risk gradient apparent at cut points of 0, 1-2, 3-5, 6-8, 9-10
- Similar pattern in both training and validation sets

Goldstick, Carter, Walton, Dahlberg, Sumner, Zimmerman, Cunningham Annals of Internal Medicine 2017
R01 # 024646 NIDA/NIH (Cunningham)
SETTINGS FOR YOUTH INJURY PREVENTION/INTERVENTION

- Health Care
- Schools
- Other Community
- Neighborhoods
Multi-faceted youth violence prevention program testing six interventions focused at multiple ecological levels in an intervention neighborhood as compared to a comparison neighborhood.

- Community Policing
- Clean & Green Initiatives
- Father & Sons
- Targeted Outreach Mentoring
- SafERteens/ Sync (ED-based BI)
- Youth Empowerment Solutions (YES)

YVPC Director PI Zimmerman/ Co-Director Cunningham. Grant # U01 CE001957: CDC
Decrease in Youth (10-24 y/o) assault offenses (p<0.05) in intervention neighborhood vs comparison neighborhood

Violent injury presentations to the Level-1 ED (p<0.001) in intervention neighborhood vs comparison neighborhood

Heinze, Reischl Cunningham, Zimmerman; Prevention Science 2016.
Not an accident......Research driven solutions

1965: “Unsafe at any speed”
1966: National Highway Safety Act
1970: NHTSA Established
1978: First Car Seat Law (Tenn.)
1979: First Crash Tests
1980: MADD Established
1984: First Seatbelt Law
1988: Drinking age 21 in 50 states
1989: Driver Airbags Introduced
1993: Side Impact Regulations
2007: Electronic Stability Control
## A Lost Generation of Research

2010-2016 data on cursory review of NIH reporter

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th># deaths over 10 years (age 1-19)</th>
<th># Research awards over past 10 years (All ages)</th>
<th>US dollars of Public funding for research (All ages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVC</td>
<td>44,821</td>
<td>2902</td>
<td>$1,084,364,160</td>
</tr>
<tr>
<td>Firearm</td>
<td>27,830</td>
<td>9</td>
<td>$2,393,083</td>
</tr>
<tr>
<td>Malignant Neoplasms</td>
<td>18,792</td>
<td>2,939</td>
<td>$1,558,955,478</td>
</tr>
<tr>
<td>Drowning</td>
<td>9,766</td>
<td>101</td>
<td>$27,556,259</td>
</tr>
<tr>
<td>Congenital abnormalities</td>
<td>10,199</td>
<td>15,616</td>
<td>$6,344,957,752</td>
</tr>
<tr>
<td>Meningitis</td>
<td>585</td>
<td>75</td>
<td>$34,063,406</td>
</tr>
<tr>
<td>Polio</td>
<td>0</td>
<td>456</td>
<td>$464,966,937</td>
</tr>
</tbody>
</table>
In 2014

- Fewer than 12 active experienced U.S. investigators with careers focused primarily on firearm injury; only two of them physicians

- In 2016 Firearms=16% of the deaths among children (1-17)
  - Responsible for more deaths than any other mechanism other than cars in 1-17 yr olds
  - In 2009 there were total 33 publications.

Wintemute GJ. JAMA Internal Medicine. 2013
Branas Wiebe Schwab Richmond Injury Prevention. 2005
• Funded 9/2017 by NICHD-most substantial NIH investment in firearm research in over 20 years
• 25 content experts across disciplines
  ▪ Mixture of junior and senior with explicit intent to grow field

#1: define a *pediatric-specific* firearm injury research agenda

#2: core studies to provide preliminary data that informs large-scale studies and fills early data needs

#3: Establishing web-based searchable data archive for childhood firearm injury

#4: Build a cadre of national research scholars that will serve as an emerging pipeline for future research
## STAKEHOLDER ADVISORY COMMITTEE

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marc Zimmerman</td>
<td>Laney Rupp</td>
</tr>
<tr>
<td>James R. Anderson</td>
<td>BG Veteran MI National Guard</td>
</tr>
<tr>
<td>James Berlin</td>
<td>Police Chief, City of Roseville, MI, Firearm Safety Trainer</td>
</tr>
<tr>
<td>Tom O’Connor</td>
<td>Gun Owners for Responsible Ownership, OR</td>
</tr>
<tr>
<td>Geraldine Hills</td>
<td>Arizonans for Gun Safety</td>
</tr>
<tr>
<td>Chris Harris</td>
<td>Pastor, Bright Star Community Outreach, IL</td>
</tr>
<tr>
<td>Joneigh Khaldun</td>
<td>Public Health Commissioner Detroit</td>
</tr>
<tr>
<td>Adelyn Allchin &amp; Vicka Chaplin</td>
<td>Educational Fund to Stop Gun Violence</td>
</tr>
<tr>
<td>Joe Erardi</td>
<td>Executive Board, AASA (The School Superintendents Association), former Superintendent of Newtown, CT</td>
</tr>
<tr>
<td>Ben Hoffman</td>
<td>AAP Violence Prevention Group</td>
</tr>
<tr>
<td>Rochelle Dicker</td>
<td>Trauma Surgeon, LA County Dept of Health</td>
</tr>
<tr>
<td>LokMan Sung</td>
<td>Medical examiner, Detroit</td>
</tr>
<tr>
<td>Dormann, Greg</td>
<td>Supervising Attorney, Gang and Gun Prosecution Section, Los Angeles, CA</td>
</tr>
</tbody>
</table>
Pediatric Firearm Research Agenda

January-October 2018

- 25 content experts on FACTS consortium
- 12 stakeholder groups input
- Round of external input and validation
- Rigorous nominal group technique for consensus building
- ~25 priority areas identified for research study that are critical for the next five years to decrease burden of injury
- In process of preparation peer review for spring 2019 publication
NIH funds FACTS research consortium to Prevent Firearm Injury and Deaths among U.S Children and Teens

More than 30 researchers, practitioners, and firearm owners across the U.S will catalyze child firearm injury research through a 5 million dollar grant. Read more about our consortium's goals to fund novel pilot projects, train the next generation of firearm scholars, and define new directions for c...

Read more
DATA

ICPSR Website with searchable data
One stop FACTS info and resources
Leverage Relationships with PECARN and other large consortiums to enhance data collection/analysis/trials
PILOT PROJECTS

PIPELINE

Firearm Researchers

MD

MPH

BS

PhD

MPP

Approach to Firearm Safety Counseling
Next steps in CAPACITY BUILDING for firearm research that will reduce firearm injury and mortality

- Five Papers summarize state of the literature-
  - Journal of Behavioral Medicine
- Publish Peer-reviewed Agenda -Winter 2019
- National conferences on firearm violence among children and teens (fall 2019!)
- MOOC- Massive Online Open Course
  - Provide firearm research curriculum open access
What causes pediatric injury?

The most common causes of pediatric injury are 1,2,3:

- **Motor vehicle accidents**
  
  In children ages 5 to 19:
  
  - Injuries from motor vehicle accidents are the top cause of death from injury.
  - Every hour, almost 150 children visit emergency departments due to serious injuries from motor vehicle accidents.

- **Suffocation** (being unable to breathe)
  
  - Infants are most likely to suffocate while they sleep.
  - Toddlers are most at risk from suffocating by choking on food or other small objects.

- **Drowning**
  
  - Drowning is the most common cause of death from injury in children ages 1 to 4.
  - Three children die every day from drowning.

- **Poisoning**
  
  - Two children die every day from poisoning.
  - Each day, more than 300 children ages 0 to 19 in the United States go to emergency departments because of poisoning.
  - Common sources of poisoning include household chemicals, cleaners, and medicines.

- **Burns**
  
  - Two children die every day from being burned.
  - Each day, more than 300 children ages 0 to 19 arrive in emergency departments to be treated for burns.
  - Younger children are more likely to be burned by hot liquids or steam.
  - Older children are more likely to be burned from direct contact with fire.

- **Falls**
  
  - Falls are the most common cause of nonfatal injuries for children ages 0 to 19.
  - Each day, about 8,000 children visit emergency departments due to injuries from falls.

For more information on the causes of injuries in children, visit the Centers for Disease Control and Prevention’s Safe Child website.

Although the NICHD conducts and supports research on pediatric injury, its treatments, and its long-term outcomes, the Institute is not the primary federal source for this information. For more information on the causes of injuries in children, visit the Centers for Disease Control and Prevention’s Safe Child website.
## FACULTY & STAFF:

- Rebecca Cunningham
- Marc Zimmerman
- Patrick Carter
- David Hemenway
- Steve hargarten
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- Maureen Walton
- Frederick Rivara
- Cheryl King
- Quyen Ngo
- Eric Sigel
- Mark Ilgen
- Charlie Branas
- Justin Heinze
- Daniel Lee
- Jesenia Pizarro

## STAKEHOLDERS:

- Elizabeth Alpern
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- Monika Goyal
- Jason Goldstick
- Jukka Savolainen
- Lynn Massey
- Laney Rupp
- Jonathan Jay
- Carissa Schmidt
- Rebecca Karb
- Charlie Mouch
- Amanda Mauri
- Mikaela Wallin
- Stephen Oliphant
- Nicolas Stoyanoff

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**FACTS**

FIREARM SAFETY AMONG CHILDREN AND TEENS