Firearm Injury Prevention:
A How-To Guide for ED Providers in Clinical & Research Settings

Megan Ranney, MD, MPH
Patrick Carter, MD
Emmy Betz, MD, MPH
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Jeremy Ackerman, MD, PhD

MS4 Students: Henry Schwimmer, William Dewispelaere
Workshop Overview

Introductions

Didactics (8a-10:30)
- Overview
- Youth Violence, FACTS consortium
- Suicide Prevention, Lethal Means Counseling
- Patient Discussion, Curriculum Building
- Firearm Cultural Competency, Range Session Overview

Breakout Sessions (10:30-11:30)
- Research/Funding
- Clinical, Patient Discussions
- Education, Curriculum Building

Debrief, Q&A (11:30-12p)
*Afternoon Range Session (1:30-6:30p)
WORKSHOP ACKNOWLEDGEMENT

AFFIRM Team:
Nikita Joshi
Regina Royan

Will Dewispelaere
MS4

Henry Schwimmer
MS4
You?
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Preventing Firearm Injury: “Yes, We Can”

Megan Ranney, MD, MPH
Associate Professor of Emergency Medicine
Alpert Medical School, Brown University
@meganranney
Acknowledgements

• Dr. Marian (Emmy) Betz and Dr. Garen Wintemute
Numbers

Epidemiology of firearm deaths in the United States
Firearm ownership varies by state

Gun deaths affect us all – in different ways

Firearm death rates (2008-2016)

Average:
~10/100,000

2016:
36,252 deaths
84,997 injuries

WISQARS, www.cdc.gov/injury/wisqars
Who dies from firearms in the US? (2017)

WISQARS, www.cdc.gov/injury/wisqars
Who dies from firearms in the US? (2017)
Who dies from firearms in the US? (2017)

2017: 86% males

WISQARS, www.cdc.gov/injury/wisqars
Who dies from firearms in the US? (2017)
Who dies from firearms in the US? (Males, 2017)
Who dies from firearms in the US? (Males, 2017)

WISQARS, www.cdc.gov/injury/wisqars
Who dies from firearms in the US? (Males, 2017)

2017: 62% NH Whites
27% NH Blacks
Why are they dying?

2017: 39,773 deaths

@meganranney
WISQARS, www.cdc.gov/injury/wisqars
2017: 39,773 deaths
1.2% “accidental”

Why are they dying?

Peter Andrew/www.wired.com

@meghanranney
WISQARS, www.cdc.gov/injury/wisqars
Why are they dying?

2017: 39,773 deaths
1.2% “accidental”
~0.3% mass shooting


@meganranney
Why are they dying?

2017: 39,773 deaths

- 1.2% “accidental”
- ~0.3% mass shooting
- 38% homicide & legal intervention

@meganranney
WISQARS, www.cdc.gov/injury/wisqars
Why are they dying?

2017: 39,773 deaths
- 1.2% “accidental”
- ~0.3% mass shooting
- 38% homicide & legal intervention
- 60% suicide

Peter Andrew/www.wired.com

WISQARS, www.cdc.gov/injury/wisqars
Gun violence involving children (0-17) in the first 50 days of 2018 in the US

*excluding suicides

- Red: daily deaths
- Blue: daily injuries
- Pink: cumulative deaths
- Light blue: cumulative injuries
- Green: school shootings

Marjory Stoneman Douglas High School
Why are they dying?

2016: 38,658 deaths

- 59% suicide
- 39% homicide & legal intervention
- 1.5% “accidental”
- 0.3% mass shooting

Peter Andrew/www.wired.com

WISQARS, www.cdc.gov/injury/wisqars
Framework for action

The public health model of the 3 E’s
Types of interventions

- Education
- Enforcement & Enactment
- Engineering
Evidence-based public health

1. Surveillance
   • What is scope of the problem?
Evidence-based public health

1. Surveillance
   • What is scope of the problem?

2. Identify risk & protective factors
   • What are the causes?
Evidence-based public health

1. Surveillance
   • What is scope of the problem?

2. Identify risk & protective factors
   • What are the causes?

3. Develop and evaluate interventions
   • What works and for whom?
Evidence-based public health

1. Surveillance
   • What is scope of the problem?

2. Identify risk & protective factors
   • What are the causes?

3. Develop and evaluate interventions
   • What works and for whom?

4. Implementation
   • Scale up effective interventions
Death rates in the United States
Death rates in the United States

Death rates in the United States have shown a significant decrease over the years, with a notable increase in the 1960s due to car crashes. Since then, there has been a steady decline until the late 2000s, with a slight increase in recent years. The data is sourced from Wintemute. Annu Rev Pub Health 2015;36:5-19.
Death rates in the United States

![Graph showing death rates in the United States with two lines: one for car crashes and one for HIV/AIDS. The graph includes data from 1950 to 2010.](image)

We are already involved...

• Patient care
• Hospital/clinic safety
• Legal questions
..and are a piece of the solution
Someone should tell self-important anti-gun doctors to stay in their lane. Half of the articles in Annals of Internal Medicine are pushing for gun control. Most upsetting, however, the medical community seems to have consulted NO ONE but themselves.

@NRA, I'm a surgeon and a gun owner. Finding a sensible solution is #mylane. mylanelookslikethis #ThisISOurLane

Because we are better together- this is OUR lane. This is everyone's lane.

Police Emergency Open Day
Dr. Tamara O’Neal grew up in the small town of La Porte, Indiana. She came from humble beginnings and was the first in her family to become a physician. She wanted nothing more than to be an Emergency Physician and give back to her community. After graduating from University of Illinois Chicago (UIC) Emergency Medicine residency, she stayed on to work with residents at one of the teaching hospitals in the Southside of Chicago Mercy Hospital. Dr. O’Neal was full of grit.

AFFIRM DONATION FOR DR. O’NEAL MEMORIAL FUND

Donation Amount:

$100

Donate Now!
Day Overview

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Firearms, Violence, and the Emergency Department

Developing the Science of Interpersonal Violence Prevention

Patrick M. Carter, M.D.
Assistant Director, UM Injury Prevention Center
Leadership team, Firearm Safety among Children and Teens (FACTS) Consortium
Assistant Professor, Department of Emergency Medicine, School of Medicine
Assistant Professor, Department of Health Behavior & Health Education, School of Public Health
University of Michigan
Violence....by the numbers

In 2017,

39,773 people died from firearm injuries

>500,000 non-fatal assault injuries requiring ED medical treatment

2nd Leading cause of death among Youth/EAs

59% of firearm deaths among youth/EAs due to homicide

~$229 billion ANNUAL COST TO U.S. ECONOMY

Firearms responsible for 1 in every 5 deaths among youth

Leading cause of death among African-American youth (8X)

U.S. youth homicide rates higher than next 23 developed nations (22.5X)

88% of homicides due to firearms
85% firearm homicides due to handguns
80% firearms among youth = illegal

ED underutilized setting for primary and secondary violence prevention

Sources: WISQARS 2019; Miller 2015; Grinshteyn & Hemenway 2015; Carter 2013
EDs Provide Access to At-Risk Youth

- ED visit provides a “teachable moment”
- School-based prevention programs miss an at-risk population as attendance may be sporadic
- Inpatient hospital-based programs miss a large portion of youth who are treated and released
  - 90.0% of all youth are discharged from ED
  - 84.0% of assault-injured youth
  - 51.7% of firearm injuries
- Most inner city youth lack a primary care physician
  - Emerging adults not yet connected to adult care
Violence as a Recurrent Disease

Assault-injury types
20% Firearm (ISS=7.2)
15% Cut/Pierced (ISS=2.2)
64% Struck by/Against (ISS=2.0)

• 57% drug use disorder
• 22.3% alcohol use disorder
• 20% used alcohol/drugs before fight
• 25% indicated intention to retaliate
• 23% report having firearms
  • 80% illegally acquired
• Elevated rates of ED visits for assault and mental health

36.7% repeat violent injury
65% higher risk than non-AI

59.0% firearm violence
40% higher risk than non-AI

47.2% arrest/CJ involvement
30% higher risk than non-AI

Carter 2013; Cunningham 2014; Carter 2015; Carter 2018

• Drug and/or Alcohol Use Disorders
• PTSD
• Retaliatory Attitudes
• Firearm Possession
**SaFETY Score - Risk of Future Firearm Violence**

**S (Serious Fighting)**
In the past 6 months, including today, how often did you get into a serious physical fight?

**F (Friend Weapon Carrying)**
How many of your friends have carried a knife, razor, or gun?

**E (Community Environment)**
In the past 6 months, how often have you heard guns being shot in your neighborhood?

**T (Firearm Threats)**
How often, in the past 6 months, including today, has someone pulled a gun on you?

Goldstick, Carter, Walton, Dahlberg, Sumner, Zimmerman, Cunningham
Annals of Internal Medicine 2017
R01 # 024646 NIDA/NIH (Cunningham)
SaFETy Risk Gradient

Goldstick, Carter, Walton, Dahlberg, Sumner, Zimmerman, Cunningham
Annals of Internal Medicine 2017
R01 # 024646 NIDA/NIH (Cunningham)
Types of Prevention

Primary Prevention

Secondary Prevention

Tertiary Prevention

50% of violently-injured youth are seen within the preceding 12-months

79% for medical reasons
Selective/Indicated Brief Intervention (BI) for Alcohol & Violence

3-Arm Randomized Control Trial

Screening Criteria: 14-18 y/o youth seeking ED-care for any reason who screen positive for past 3-month history of alcohol use and peer violence (i.e., fighting)


Parallel Delivery Modes
- Therapist-delivered BI (TBI)
- Computer-delivered BI (CBI)

Control Group: EUC = Resource Brochure
Brief Intervention (BI)

~30 min counseling session

Theoretical Framework

- **WHY:** Motivational Interviewing (MI)
  - Non-judgmental & Non-confrontational
  - Discrepancy between current behaviors and future goals
    - Resolve ambivalence
    - Enhance intrinsic motivation
    - Increase self-efficacy for change

- **HOW:** Planning Phase
  - Cognitive Behavioral Skills
SafERteens BI

Computer or Therapist Delivered
Severe Peer Aggression

TBI vs. Control, p<.01 at 3M, 12M, NNT=8

Peer Victimization

Cunningham et al., 2012; Walton et al., 2010

* = P < .05
Alcohol Consequences

## Dating Violence Outcomes

<table>
<thead>
<tr>
<th>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>
Cost Analysis

- Over 5 years if implemented:
  - 4,208 violent events/consequences prevented
- Multi-way sensitivity costs analysis
  - $4-$55 per event/consequence averted

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

3Agency for Healthcare Research and Quality 2010

Website Homepage

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 >

www.saferteens.org
Project IntERact

- 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
How many drinks with alcohol did you have YESTERDAY? Please use the picture below to figure out how many drinks of alcohol you had.

Enter a Number

BEER
12 oz. = 1 DRINK
22/24 oz. = 2 DRINKS
40 oz. = 3 DRINKS

WINE
5 oz. glass = 1 DRINK
bottle = 6 DRINKS

LICOR

What was the main reason that you DID NOT carry a gun YESTERDAY?

- To keep out of trouble with my family
- To be a good role model to others
- My friends were carrying a gun
- Was somewhere I can’t carry
- To stay on track with my goals
- It wasn’t worth the risks
- Didn’t carry because I was drunk/high
- To respect family/friend’s wishes
- No one messed with me or my friends/family

HOPE BOX
Your Strengths
Let these images remind you of your strengths and the things you are good at.

FUNNY

INDEPENDENT

BEING HEALTHY AND FIT

GETTING A JOB

Remember – these are your goals! Let these images remind you of who you want to be and where you want to go.
Project IntERact

You're a really good role model for the people who look up to you. By not carrying a gun this week, you are showing them there are better ways to stay safe, solve problems, and keep themselves from getting sucked into a life of violence. That's awesome!

Who is someone in your neighborhood who has been able to earn respect and keep themselves safe without carrying a gun?

Who has been able to make their way out of a mess and achieve their goals?

When you're having a bad day, and looking for advice, maybe try reaching out to them for support on how to handle the situation without a gun.

Here is a link to some community resources in your area that could also help:

Go to Resources

Stay away from people or places where fights might happen or people might bring guns.

Think through what might happen to you or others you care about before you decide to carry a gun.

Avoid carrying your gun when you are planning to drink or use weed.

Lock the gun up. Keep everyone safe.

Upset, stressed, or angry? Try not carrying the gun with you for a few days, so things don't get out of control.

Find other ways to keep yourself safe - self-defense classes - form a community watch program.

Is the gun more trouble than it's worth? Consider getting rid of it. Drop it off at a police station.

1: See the Warning Signs
   - "Is my heart racing?"
   - "Are my fists clenched?"

2: Think Before Speaking
   - "Will I regret saying this?"
   - "Is it worth it?"

3: Think about the Consequences
   - "Could I get hurt?"
   - "Could I hurt someone else?"

4: Distract Yourself
   - Watch a movie
   - Exercise
   - Listen to music

5: Take a Step Back
   - Take a break from the conversation
   - Think about something else

6: Calm Down
   - Count back from 10
   - Take deep breaths
   - Focus on something good in your life

7: Talk to Someone You Trust
   - "Who can I talk to?"
   - "When can I talk to them?"
Mark the place where you got in a fight

Map Alert

When you're at a trouble spot, having supportive people to talk to can be helpful. What about reaching out to Kathleen to talk and get some extra support right now?

Call

Text

Map Alert

Cash house

Looks like you may have entered into an area that you told us was a trouble spot for you. Try taking a few moments to remind yourself of your goals and think about 3 ways you can keep yourself safe and out of trouble while you are in this area.
Types of Prevention

- Primary Prevention
- Secondary Prevention
- Tertiary Prevention
Violence Prevention Programs

- NIH State of Science Conference on Youth Violence (2004)
  - Hospital ED’s and Primary Care are key settings for violence prevention
- Hospital Programs have common elements
  - Built on a care management model linking youth to local available community services (e.g., substance use, housing, job/employment)
  - Credible Messengers
  - Immediate post-injury period (3-6 months)
  - Examples: Youth Alive (Oakland, CA); Within Our Reach (Chicago, IL)
- Weaknesses of current programs
  - No focus on substance use or firearm specific outcomes
  - RCT evaluations have been limited
    - Small sample sizes, low follow-up rates
    - Low rates of participant engagement in programs
    - Retrospective study designs

DeVos 1996; Cooper 2006; Zun 2003; Zun 2006; Becker 2004; Cheng 2008; Cheng 2006; Cheng 2008; Dicker 2005
## Violence Prevention Programs

<table>
<thead>
<tr>
<th>Study</th>
<th>Study overview and effect size</th>
<th>Risk of bias</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboutanos et al.⁶</td>
<td>Randomized clinical trial; Group I received psychoeducational intervention and Group II psychoeducational intervention plus wraparound services, compared to historical trauma registry data; no interventional effect on recidivism.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Becker (2004)¹²</td>
<td>Retrospective case–control study; Crisis intervention specialists with upbringings similar to the patients met with enrollees and their families, followed by assistance with engaging community resources, home visits and housing; the intervention had no reported effect on intentional violent injury and/or death recidivism.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Chong et al.¹⁶</td>
<td>Cost-effectiveness analysis. Markov model estimating a US$750,000–1 million annual savings by decreasing recidivism from 4% to 2.5% for participants in HVIP.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Cooper (2006)¹⁴</td>
<td>Randomized clinical trial; additional psychosocial services provided for the intervention group; reported 5% intentional violent injury and/or death recidivism rate.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Gomez (2012)¹²</td>
<td>Prospective observational study; tailored service plans and referred community services; violent injury recidivism rate reduced from 8.7% to 2.9%; due to only having access to the abstract reviews authors not privy to any statistical significance reporting.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Shibru (2007)¹⁸</td>
<td>Retrospective cohort study; peer interventionists for hospitalized violently injured patients, no set curriculum of intervention; no reduction in intentional violent injury and/or death recidivism.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Smith (2013)²⁴</td>
<td>Retrospective observational study; reduction rate in intentional violent injury recidivism.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Zun (2006)³⁰</td>
<td>Randomized clinical trial; the intervention group provided assessment and 6-month case management in contrast to the control group receiving a resource list; at 6 months violence victimization rates were 6.5% for the intervention group and 7.4% for the control; rates based on self-reports.</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Zun (2004)³¹</td>
<td>Randomized clinical trial; the intervention group received case management and community-based resources and the control group received a brochure describing available resources, measured outcome at 6 and 12 months was attitude toward violence; no demonstrated effect.</td>
<td>H</td>
<td>L</td>
<td>VL</td>
</tr>
</tbody>
</table>

H, high; HVIPs, Hospital-based violence intervention programs; L, low; VL, very low.

Affinati et al. 2016
Have we put the cart before the horse...
Individual Level Interventions

Lessons Learned:
• Enhance protective factors
  • Encourage participation in positive peer groups
  • Involvement in safe activities
  • Provide supportive adult relationships
  • Enhance social, cognitive and emotional skills
• Provide counseling for alcohol & drug use
• Treatment for co-existing mental health conditions
• Provide active linkage to available community services
• Less emphasis on ‘scare tactics’
  • Tours of trauma bay and morgue have proven to be ineffective
More Work to be done…..

- Theoretically-guided intervention
- Rigorously tested in large-scale RCT
- Identify what is optimal configuration and/or dose of the intervention

What does the optimal post-assault violence intervention look like?
R01 RCT Trial of Remote Therapy Intervention

**Standardized Remote Therapy Intervention (RTI)**

1 ED Session Remote Therapy
8 Post-ED Remote Therapy Sessions
MI+CBT+CM

**Adaptive (AI) Remote Therapy Intervention (RTI)**

1 ED Session Remote Therapy
Post-ED Intervention Intensity – RL Treatment algorithm
(Full RTI; Tailored TM; Nothing)

Weekly Decision based on weekly assessments
AI-RTI Condition

"Reward" Function

DAILY TM ASSESSMENT (10-item) Violence Score + Resource Utilization (Therapist Time)

"State" Data
- Retaliation
- Behavioral Intention
- Treatment Response
- Assessment Adherence

(mediators of intervention effects on outcome)

"Action" Choices
- Full RTI Session
- Tailored TM
- Nothing

REINFORCEMENT LEARNING

Input Raw Data

Environment

Reward

Best Action

Selection of Algorithm

Agent

Output

"Action" Choices

Full RTI Session
Tailored TM
Nothing
AIM#1
Refine RTI
S-RTI
AI-RTI

AIM#2
3-arm RCT

AIM#3
Adaptability of RL Algorithm

To compare resource costs/event averted for the active conditions
Overview of the FACTS Consortium and the Development of A Research Agenda for the Field
FACTS Consortium

- 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 to grow field

- **Aim #1**: define a *pediatric-specific* firearm injury research agenda
- **Aim #2**: core studies to provide preliminary data that informs large-scale studies and fills early data needs
- **Aim #3**: Establishing web-based searchable data archive for childhood firearm injury
- **Aim #4**: Build a cadre of national research scholars that will serve as an emerging pipeline for future research.
### Stakeholder Panel

<table>
<thead>
<tr>
<th>Gun Owners</th>
<th>Religious</th>
<th>Military</th>
<th>Schools/Education</th>
<th>Law Enforcement</th>
<th>Public Health/Medical</th>
</tr>
</thead>
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<tr>
<td><strong>James R. Anderson</strong>, BG Veteran MI National Guard</td>
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<tr>
<td><strong>James Berlin</strong>, Police Chief, City of Roseville, MI, Firearm Safety Trainer</td>
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<td><strong>Tom O'Connor</strong>, Gun Owners for Responsible Ownership, OR</td>
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<td><strong>Geraldine Hills</strong>, Arizonans for Gun Safety</td>
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<td><strong>Chris Harris</strong>, Pastor, Bright Star Community Outreach, IL</td>
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<td><strong>Joneigh Khaldun</strong>, Public Health Commissioner Detroit</td>
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<td><strong>Adelyn Allchin &amp; Vicka Chaplin</strong>, Educational Fund to Stop Gun Violence</td>
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<td><strong>Joe Erardi</strong> Executive Board, AASA (School Superintendent Assoc.), Former Superintendent, Newtown, CT</td>
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<tr>
<td><strong>Ben Hoffman</strong>, AAP Violence Prevention Group</td>
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<tr>
<td><strong>Rochelle Dicker</strong>, Trauma Surgeon, LA County Dept of Health</td>
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<tr>
<td><strong>LokMan Sung</strong>, Medical examiner, Detroit</td>
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<tr>
<td><strong>Dorman, Greg</strong> Supervising Attorney, Gang &amp; Gun Prosecution Section LA</td>
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</tbody>
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Process: Nominal Group Technique

- Literature Review
- Stakeholder Input
- Initial Idea Generation
- Structured Round Robin
- Preliminary Agenda Review
- Clarification Phase – Qualtrics Survey
- Consensus (<50%; >70%; 50-70%)
- Review of Agenda Items
- Final Voting
- Stakeholder/Expert Review
- Final Agenda
FACTS

National Adolescent/Parent Dyad Survey (Gallup Organization)
Agent-based Modeling Simulation Study for Violence (Flint, MI)
Primary Prevention Counseling for Safe Storage (Focus Groups, UP, MI)
Implementation study using Firearm Safety Check Intervention in Primary Care
PECARN Data Collection Improvement on Non-Fatal Injuries
Observational Study of Social Media Responses after Mass Shootings
Evaluation of Extreme Risk Protection Orders (in Oregon)
State laws (Restrictiveness/Permissiveness) and their association with K-12 school shootings
Dose-Response Analysis and Firearm-specific Outcomes for the Busy Streets Intervention
www.childfirearmsafety.org
Data Repository

**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

DATA → KNOWLEDGE → ACTION
Creating Research Resources
Next Steps

- Next steps in CAPACITY BUILDING for firearm research that will reduce firearm injury and mortality
  - Core Research projects- projects start 2019
  - Continued Pipeline Expansion
    - Internships and post doctoral slots available
    - 1 new post-doc starting this spring
  - Data Repository – send your data
  - MOOC - Massive Online Open Course
    - Provide firearm research curriculum open access
Day Overview

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*Afternoon Range Session (1:30-6:30p)
Safe Storage Counseling

• 75-90% parents report being receptive to discussing the risks of firearms during pediatric visits

• Anticipatory guidance/behavioral counseling on firearm safety can be effective increasing safe storage practices
  • MI framework (2X as likely to use firearm cable lock)
  • Simple public health messages/handouts either not effective or less effective

• 64% of adults made safe firearm storage changes after counseling by their family physician
  • 12% got rid of their firearm(s) altogether
Guns & suicide

Only 10% of people with suicidal thoughts/actions die

But 90% of people who use a gun for suicide die

CDC WISQARS; MeansMatter.org
Suicide methods in the US

Fatal suicides

Nonfatal suicide attempts

CDC WISQARS; MeansMatter.org
Guns & suicide

Only 10% of people with suicidal thoughts/actions die

But 90% of people who use a gun for suicide die

And there is often a short time from final decision to attempt

CDC WISQARS; MeansMatter.org
Where there are more guns, there are more suicides

• States with more firearms have higher suicide rates
  • Differences in state suicide rates better explained by levels of household gun ownership than by mental health problems, suicidal ideation, or suicide attempts

Betz ME et al. Suicide Life Threat Behav. 2011;41:384-91
Where there are more guns, there are more suicides

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• Gun in the home $\rightarrow$ >3x risk of completed suicide

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Where there are more guns, there are more suicides

- States with more firearms have higher suicide rates
  - Differences in state suicide rates better explained by levels of household gun ownership than by mental health problems, suicidal ideation, or suicide attempts
- Gun in the home $\rightarrow$ >3x risk of completed suicide
- Adults in households with firearms are not more depressed or suicidal...yet far more likely to die by suicide

Betz ME et al. Suicide Life Threat Behav. 2011;41:384-91
Message: Reduce access for those at risk

Not about confiscation of firearms!

store firearms outside of the home (gun shop, trusted individual, law enforcement) 
or
lock up at home

Suicide Prevention Partnerships with Gun Owner Groups

New Hampshire Firearm Safety Coalition

Suicide Prevention Partnerships with Gun Owner Groups

New Hampshire Firearm Safety Coalition
FIREARMS AND SUICIDE PREVENTION

PROPERLY STORING YOUR FIREARM CAN HELP PREVENT SUICIDE

A few moments to retrieve and unlock a secured firearm can interrupt the impulse and open the door for help.

Store firearms unloaded with a gunlock in a secured cabinet, safe or case.

Closets, drawers and shoeboxes are not safe locations!

Keep ammunition in a separate secured storage location.

DID YOU KNOW?

Firearms are the most common method of suicide in the U.S.

The majority of suicides and attempts occur within an hour of crisis.

Studies have shown that when a highly lethal method of suicide is less accessible, the likelihood of an immediate attempt decreases.

Help is always available through your local Navy chaplain, Fleet and Family Support Center or the Military Crisis Line at 1-800-273-TALK (Press 1).
Guns should be stored and locked.

https://www.youtube.com/watch?v=-fGHTvTsApG

https://vimeo.com/175761640

Utah Firearm Suicide Prevention Training Video (5 min)-HD

https://vimeo.com/175761640

UT Suicide Prevention- Gun Range -
https://vimeo.com/175761640
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Counseling done by a MINORITY of providers

Common Barriers:

- Legally allowed? → YES!¹
- Screen Everyone? → No²
- Knowledge gaps? → Today’s Discussion

Physicians Asking About...

Public — 2015 National Firearm Survey
“at least sometimes appropriate” to be asked about guns by doctors
- 2/3 non-gun owners
- 1/2 gun owners

Patients – Emory/Grady ED Firearm Survey
- Patient Specific
- Clinical Situation Preferences
SAFE FIRST PHASE 1

- ~200 branching logic questions
- 3 Instruments: Demographics, Perspectives, Access
- Self Administered using iPads @ Grady, EUHM, EUH
- Soon: Extension to Rural ED (West GA Medical Center)
Who are our patients?

568 patients surveyed (so far)

- 25.8% have access to at least 1 firearm
  - mean # of firearms = 4.6

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>% (95% CI) or M (IQR)</th>
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<tbody>
<tr>
<td>Female</td>
<td>54.0 (43.1 – 61.6)</td>
</tr>
<tr>
<td>Age</td>
<td>45 (31 – 56)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>23.19 (12.02 – 40.01)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>59.03 (45.46 – 71.35)</td>
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<tr>
<td>Hispanic</td>
<td>10.80 (6.20 – 18.0)</td>
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<tr>
<td>Multiracial</td>
<td>4.87 (3.13 – 7.50)</td>
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<tr>
<td>At least 1 child in home</td>
<td>34.1 (30.1 – 38.1)</td>
</tr>
<tr>
<td>Bachelor's degree or higher</td>
<td>21.48 (11.80 – 35.87)</td>
</tr>
<tr>
<td>Veteran</td>
<td>9.0 (5.40 – 14.60)</td>
</tr>
<tr>
<td>Identifies politically as</td>
<td></td>
</tr>
<tr>
<td>Liberal</td>
<td>17.78 (9.79 – 30.12)</td>
</tr>
<tr>
<td>Moderate</td>
<td>14.93 (10.67 – 20.50)</td>
</tr>
<tr>
<td>Conservative</td>
<td>16.0 (11.32 – 22.12)</td>
</tr>
</tbody>
</table>
It is okay for providers to ask about ACCESS to guns...

Prelim Data 4/16/19
N=419 total
105 Gun Owners
314 Non-Gun Owners
1. Acute Risk of Violence to Self or Others
2. Individual Risk Factors
3. Member of Demographic Group that is High Risk
• Violent victimization, perpetration
• Intimate Partner Violence
• ETOH/Drug Abuse
• Serious/Poorly Controlled Mental Health Issues
• Impaired Cognition/Judgment
3

CHILDREN & TEENS (UNINTENTIONAL)

MIDDLE AGED & ELDER MEN (SUICIDE)

TEEN/YOUNG MEN (HOMICIDE)
COUNSELING PATIENTS—A

Build Self Knowledge
Tailored Approach
Resources/programs, F/U plan
Patient Centered
Respectful
Dialogue WITH patient
Suicide Prevention (Emmy’s Slides):

“We’ve talked about other risks, including drugs and alcohol, and that you have thought about suicide in the past. I’m glad we are talking about this and I would like to ask you some additional questions that are important to understanding your risk, if that’s ok with you.”

Pediatric Unintentional:

- “Do you ever ask other parents if there are guns in the home of the places your child plays?”
- “Would you mind if I share what other parents ask other families if there are firearms in the home?”

Intimate Partner Violence

- “Would it be ok if we talk about how to keep you and your kids safe?”
Thank you for sharing that with me, in order to better understand how to help, may I ask some of the reasons why you/your family own?...examples:

- Protection Against Strangers
- Collection/Hobby
- Sporting Use
- Family in Law Enforcement
- “It is my constitutional right to do so”
- Heirloom
Handgun Primary Reason For Ownership (n=56)

- Protect v Stranger
- Hunting
- Other
- Collection/Hobby
- Sporting
- Protect v Person I know
- Protect v Animals
Long Gun Primary Reason For Ownership (n=26)

- Hunting
- Protect vs Strangers
- Sporting
- Collection/Hobby
- Protect vs Strangers
- Other
Tailored Risk/Benefit

Unintentional Injury
Homicide
Suicide

Peace of Mind
Sporting/Hobby
Self Defense
- Firearms out of the house during high risk situation
- Firearms in house, but locked with at risk person(s) without access
- Firearms in house, unloaded stored with a locking device with ammo stored separately and locked

*Always: Mitigate High Risk Conditions and Behav
STORAGE OPTIONS—OUT OF THE

- Family, Friend or Neighbor (free)
- Gun shop ($)
- Shooting Range ($$)
- Commercial Storage Facilities ($$$)
- Pawn Shop ($$$)
- Police/Sheriff (free)

Betz, M. E., et al. "Lock to Live': Development to Enhance Lethal Means Counselling and Prevent Suicide."
STORAGE OPTIONS—IN HOME

- Disassemble (free)
- Locking Devices ($)
- Lock Box ($)
- Gun Safe ($$$)
- Combination methods/Other

Betz, M. E., et al. "'Lock to Live': Development of a Firearm Storage Decision Aid to Enhance Lethal Means Counselling and Prevent Suicide." *Inj Prev*
THE HESITANT PATIENT

SAFETY OF THE PATIENT & THEIR LOVED ONES

ANSWERS CONFIDENTIAL UNLESS IMMEDIATE MAINTAIN NON-JUDGMENTAL TONE
Other Resources—Patients

- National Suicide Prevention Lifeline: 1-800-273-8255 (Veterans Press 1)
- Trans suicide prevention lifeline: 877-565-8860
- Suicide prevention TTY Users: 1-800-799-4TTY(4889)
- Crisis Text Line: Text HOME to 741741
- IPV/Domestic Violence Hotline 1-800-799-7233, TTY users 1-800-787-3224
Online General Firearm Training:

- **CALM**—Counseling on Access to Lethal Means—https://www.sprc.org/resources-programs/calm-counseling-access-lethal-means
- **What You Can Do**—https://health.ucdavis.edu/vprp/WYCD.html

Firearm Specific Training:

- NRA pistol course ($ online), Quickshot Range $, Norcross Gun Range $$
- **Our Sessions!** (Next tentatively July)
Curriculum Building

EM, Family, IM, Psych, OB, Peds

- Lectures
- Follow up protocols
- Unified stakeholder approach

Hands on Training

- Range based session
- Cultural Competency
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“DON’T SAY STUPID STUFF”
Disclosures  (mostly not relevant)

Grant support provided by:
- Rooms-To-Go Foundation
- Georgia Tech/Emory Health Systems Institute
- AHA
- Georgia Research Alliance
- CDC
- NIH
- Georgia CTSA

Contract support:
- Georgia Institute of Technology Department of Biomedical Engineering via the WH Coulter Foundation, Fulton Country Police Department

Additional relationships:
- C.W. Bard, Inc – consultant
- Pediatric Medical Devices, Inc. – expert witness
- InnerOptic, Inc. – Founder, Scientific Advisory Board, stock holder, and intellectual property rights
- Lukari, Inc. – Founder and CEO
- Global Center for Medical Innovation (GCMI) – advisor
- Current Student Start-ups: ARMRSysystems, SonoFast, FlexSpark, UriFem, MedDrone – advisor

NRA Certified Instructor (Rifle) and NRA Certified Range Safety Officer
Police Cadet Fulton County Publica Safety Academy
My evolving view of firearms

Me, in 1991
Coach, NRA spokesman
New Boy Scout
Me, in 2015, 8 years attending at Grady
Curious Kid
“You don’t know what you don’t know”

Things you might want to know:

- Safe handling/storage techniques
- Types of firearms and ammunition
- Types of firearm safety “features”
- How hard is purchasing a firearm?
- How hard is it to get ammunition?
- Concealed carry?

These are all topics that are hard to really learn in a lecture.
Learn by doing – my version

- Care for victims of firearm injury (intentional and otherwise)
- Took a class
- Practiced, took an instructor class
- Got a concealed carry permit
- Purchased a firearm
- Purchased ammunition
- Spend time with a lot of firearm owners
- Go to the police academy
- Join a SWAT team
- Share my knowledge and experience
Engagement leads to opportunity

- Can we better understand our patients’ feelings on this topic and help them make safer decisions?
- Can we better identify patterns of injury (and prevent them) by understanding trends in firearms and ownership?
- Is there common ground between firearm enthusiasts and firearm safety advocates?
First Steps – know “The Rules”
Firearm Safety Rules

Per the NRA ("The Big 3"):  
1. **ALWAYS** keep the gun pointed in a safe direction.  
2. **ALWAYS** keep your finger off the trigger until ready to shoot.  
3. **ALWAYS** keep the gun unloaded until ready to use.
1. Know your target and what is beyond it.
2. Know how to use the gun safely.
3. Be sure your gun is safe to operate.
4. Use only the correct ammunition for your gun.
5. Wear eye and ear protection.
6. Never use alcohol or drugs before or while shooting.
7. Store guns so they are inaccessible to unauthorized persons.
8. Be aware that certain types of guns and shooting activities require additional safety precautions.
Even more rules...

Ten Commandments of Gun Safety
1. Treat every gun with the respect due a loaded gun.
2. Carry only empty guns, taken down or with the action open, into your car, camp and home.
3. Always be sure that the barrel and action are clear of obstructions.
4. Always carry your gun so that you can control the direction of the muzzle.
5. Be sure of your target before you pull the trigger.
6. Never point a gun at anything you do not want to shoot.
7. Never leave your gun unattended unless you unload it first.
8. Never climb a tree or a fence with a loaded gun.
9. Never shoot at a flat, hard surface or the surface of water.
10. Do not mix gunpowder and alcohol.

Jeff Cooper's Four Rules:
1. All guns are always loaded.
2. Never let the muzzle cover anything you are not willing to destroy.
3. Keep your finger off the trigger until your sights are on the target.
4. Be sure of your target and what is beyond it.

Project Appleseed rules:
1. Always keep the muzzle in a safe direction.
2. Do not load until given the load command.
3. Keep your finger off the trigger until the sights are on the target.
4. Make sure those around you follow the safety rules.

The Canadian Firearms Program Four Firearm ACTS:
1. Assume every firearm is loaded.
2. Control the muzzle direction at all times.
3. Trigger finger off trigger and out of trigger guard.
4. See that the firearm is unloaded.

The United States Marine Corps weapons safety rules:
1. Treat every weapon as if it were loaded
2. Never point the weapon at anything you do not intend to shoot
3. Keep your finger straight and off the trigger until you’re ready to fire
4. Keep the weapon on safe until you intend to fire
When the rules become a teachable moment?
Why people shoot themselves in the left leg with Glocks

Glock is the most popular handgun brand in the US
https://youtu.be/AcSxvFqKPPk
Learning and Teaching more
Hands on/Range training

- Training should be intended to enhance basic familiarity, not to training shooting skills
  - Emphasis is on safety and firearm principles, not skills
  - Interested learners can be helped to find other training opportunities to develop specific skills
  - Development of shooting skills, including safe handling skills takes hours of teaching and practice
  - Teaching specific skills may put off some learners
Hands on training

- Appropriate numbers of instructors for activities is critical for perceived safety and actual safety.
- Following safety guidelines, no live ammunition should be permitted anywhere that learners are handling firearms without 1:1 supervision – every effort should be made to provide 1:1 supervision.
Key topics - classroom

- Safety principles
- Types of firearms
  - Pistols v. rifles v. shotguns
  - Action types – semi-automatic, bolt, revolver etc
  - Demonstration of cycling without ammo or with inert ammo
- Types of ammunition
  - Dummy ammunition
- Concept of field stripping
- Holsters and carry methods
- Safer storage – lock types
Key topics – on the range

- Range safety briefing
  - Review safety rules, instructor expectations
  - Eye/ear protection/handwashing
- Demo firing (~4 firearms)
  - Rifle/shotgun
  - Semi automatic handgun
  - Revolver
- Ballistics gels
  - Enhance understanding of wounds
  - Clarifies differences between weapon/ammo types
Our range day (Emory)

- In collaboration with Fulton County Police Department
- Faculty driven/instruction (me)
- Faculty/PD supplied
  - Firearms
  - Ammo
  - Locks
  - Ballistics Gel
  - $10 per person
- Controversial
Our range day (today)

- Contracted through local business (SR3)
  - Contact identified through local police
  - Per person cost ~ $150
- Instruction by contracted instructors
- Making use of local facilities
- No/limited instruction provided by me
- All supplies/rentals arranged and covered by contracted company
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**VANS LEAVE 12:30P Hotel