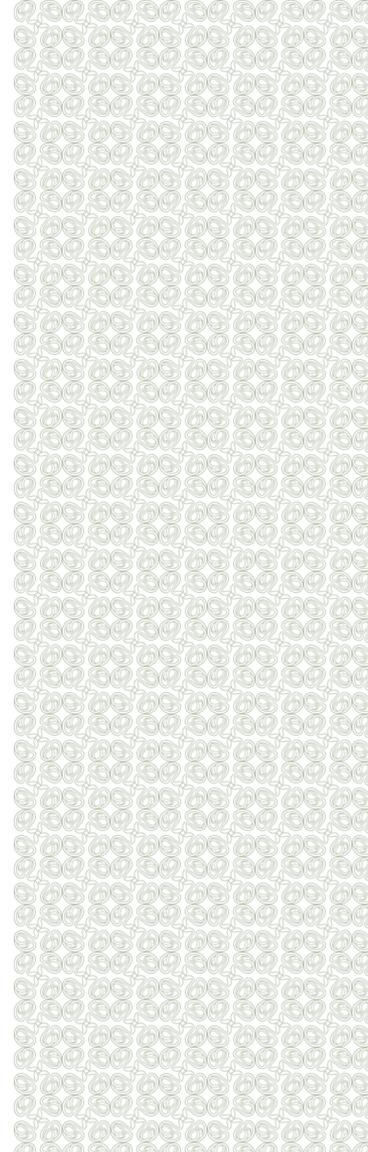


Priorities for a Public Health Research Agenda to Reduce the Threat of Firearm-Related Violence

4 June 2013

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COMMITTEE PROCESS

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Abbreviated Statement of Task

The committee will develop a proposed public health research agenda to improve knowledge of the causes of gun violence, the interventions that prevent gun violence, and strategies to minimize the public health burden of gun violence.

The proposed agenda should identify the most critical research questions that can be answered in the short-term (particularly within a three year time frame) and should focus on the following categories:

- Characteristics of Gun Violence
- Interventions and Strategies
- Gun Safety Technology
- Video Games and Other Media
- Risk and Protective Factors

The areas of public health surveillance and behavioral/mental health should not be a focus of the committee's work. Additionally, questions related to clinical practice and treatment should not be a focus.

Committee Membership

Alan Leshner (Chair), American Association for the Advancement of Science

Louis Arcangeli, Georgia State University

Alfred Blumstein, The Heinz College at Carnegie Mellon University

C. Hendricks Brown, University of Miami School of Medicine

Donald Carlucci, Picatinny Arsenal

Rhonda Cornum, TechWerks

Stephen Hargarten, Medical College of Wisconsin

Paul Halverson, Indiana University-Purdue University Indianapolis

Ronald Kessler, Harvard Medical School

Gary Kleck, Florida State University

John Rich, Drexel University School of Public Health

Jeffrey Runge, Biologue, Inc.

Susan Sorenson, University of Pennsylvania

David Vlahov, University of California, San Francisco, School of Nursing

Project Timeline



BACKGROUND

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Burden of Firearm Violence

- U.S. has highest rate of firearm-related deaths among industrialized countries, despite violent crime rate decline
- In 2010, more than 105,000 people injured or killed in U.S. due to firearm-related incident
 - Twice as many nonfatal firearm-related injuries as deaths
 - Mass shootings account for only a fraction of firearm-related deaths
- Between 2000 and 2010, firearm-related suicides significantly outnumbered homicides for all age groups

2013 Gun Violence Prevention Executive Orders

- In January 2013, President Obama issued 23 executive orders related to firearm violence, directing federal agencies to improve knowledge of:
 - Causes of firearm violence
 - Interventions that might prevent it
 - Strategies to minimize its public health burden
- CDC ordered to resume support of firearm-related violence research
- CDC and the CDC Foundation asked the IOM and NRC to convene a committee to develop a potential research agenda
 - Focused on the public health aspects of firearm-related violence



Firearm Violence as a Public Health Issue

- Public health approach involves three elements:
 - Prevention
 - Scientific methodology to identify risks and patterns
 - Multidisciplinary collaboration to address the problem
- Public health approach used to address firearm violence because:
 - Is complex and frequent
 - Is associated with high morbidity and mortality
 - Has major impact on health and safety of U.S. residents



RESEARCH PRIORITIES

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Over-arching Issue: Research Design and Data

- High quality, usable, credible, accessible data are critical
 - Both for advancement of research and development of sound policies
- Now are lacking data about gun possession, distribution, ownership, acquisition, and storage
 - No single database captures number, locations, and types of firearms and firearm owners in U.S.
- Existing data are weak
 - Difficult to answer questions about occurrence and risk factors or to evaluate programs



Characteristics of Firearm Violence – Background

- Exact number and location of guns and gun types is unknown
- Because gun type and intended use vary, so do manifestations of firearm violence
- Disparities exist across socioeconomic and ethnic groups in overall injury and mortality rates and within each form of violence
 - Affects success of any prevention strategy
- Resources focused on 3 specific populations should yield actionable information over short term:
 - General population
 - General youth population
 - Offender population

Characteristics of Firearm Violence – Research Priorities

- **Characterize the scope of and motivations for gun acquisition, ownership, and use, and how are they distributed across subpopulations.**
- **Characterize differences in nonfatal and fatal gun use across the U.S.**

Risk and Protective Factors – Background

- Risk posed by firearms affected by several factors
- Society-level factors:
 - Cultural norms of violence as acceptable conflict resolution strategy
 - Attitudes regarding suicide as inevitable vs. preventable
 - Policies that maintain high levels of economic or social inequality among societal groups
- Community level factors:
 - High rates of poverty, illicit drug trafficking, substance use
- Situational factors:
 - Presence of drugs or alcohol
 - Criminals engaging in violence to acquire money or goods
- Individual factors:
 - Impulsivity, low educational attainment, substance use, prior history of aggression and abuse
 - Suicide often associated with mental and physical health problems, financial strain, veteran status, relationship problems

Risk and Protective Factors – Research Priorities

- **Identify factors associated with juveniles and youths having access to, possessing, and carrying guns.**
- **Evaluate the potential health risks and benefits (e.g., suicide rates, personal protection) of having a firearm in the home under a variety of circumstances (including storage practices) and settings.**
- **Improve understanding of risk factors that influence the probability of firearm violence in specific high-risk physical locations.**



Firearm Violence Prevention and Other Interventions- Background

- Successful intervention must involve health and public safety organizations, educators, and community groups
- As part of public health approach, interventions may target:
 - The firearm or its possessor – the “agent”
 - The victim(s) of violence – the “host”
 - The social, physical, or virtual environments that may shape firearm policies, norms, and behaviors – the “environment”
- Findings mixed on effectiveness of interventions aimed to prevent firearm violence

Firearm Violence Prevention and Other Interventions- Research Priorities

- **Improve understanding of whether interventions intended to diminish the illegal carrying of firearms reduce firearm violence.**
- **Improve understanding of whether reducing criminal access to legally purchased guns reduces firearm violence.**
- **Improve understanding of the effectiveness of actions directed at preventing access to firearms by violence-prone individuals.**
- **Determine the degree to which various childhood education or prevention programs reduce firearm violence in childhood and later in life.**
- **Do programs to alter physical environments in high-crime areas result in a decrease in firearm violence?**

Impact of Gun Safety Technology – Background

- Making products safer is often more effective at reducing injury and death than trying to change personal behavior
- Firearm technologies can reduce public health burden
- Firearm technologies:
 - Passive technologies confer safety benefit without requiring specific action by user
 - Active technologies require specific action by user to enable technology
- Development and application of passive and active technologies has been intermittent and fragmented

Impact of Gun Safety Technology – Research Priorities

- **Identify the effects of different technological approaches to reduce firearm-related injury and death.**
- **Examine past consumer experiences with accepting safety technologies to inform the development and uptake of new gun safety technologies.**
- **Explore individual state and international policy approaches to gun safety technology for applicability to the United States as a whole.**

Video Games and Other Media – Background

- Majority of research on effects of violence in the media focused on violence in television and movies
- Recent research expanded to include music, video games, social media, Internet
- In more than 50 years of media research, none focused on firearm violence as specific outcome of violence in media
- Direct relationship between violence in media and real-life firearm violence not established



Video Games and Other Media – Research Priority

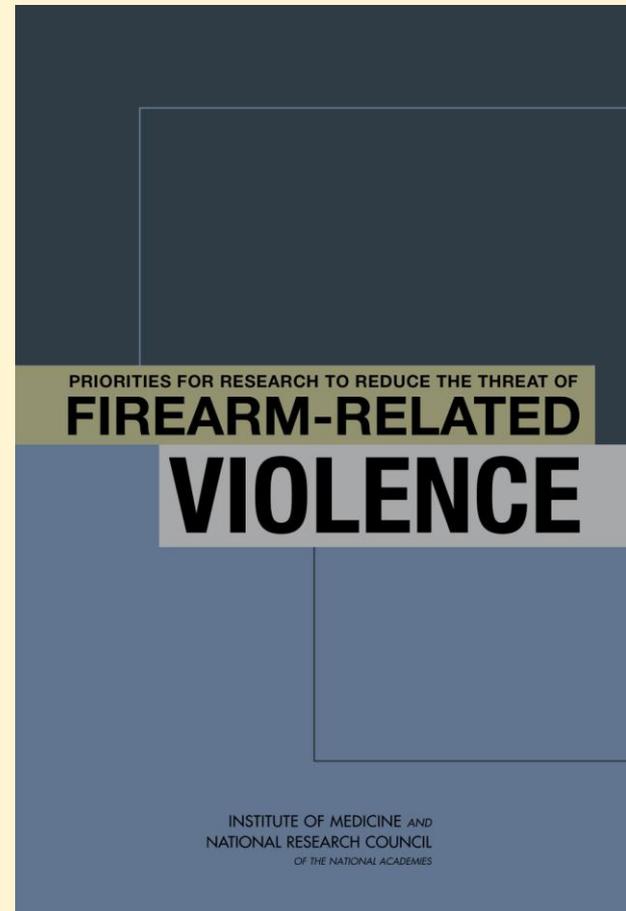
- **Examine the relationship between exposure to media violence and real-life violence.**



To Obtain Additional Information

- **Study Website:**
<http://www.iom.edu/firearmsresearch>
 - Download the report
 - Download public meeting agenda and presentations
- **Contact Information:**

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DETAILED RESEARCH PRIORITIES

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Characteristics of Firearm Violence – Research Priorities

- **Characterize the scope of and motivations for gun acquisition, ownership, and use, and how are they distributed across subpopulations.**
 - Examples of information that could be examined:
 - Collect data about gun ownership, acquisition, and use for various groups with the U.S. general population. Focus on those at greatest risk of causing injury. Focus on those at greatest risk of injury – urban and rural youth, racial/ethnic minority populations, and those living in concentrated poverty.
 - Collect data about the sources (for example, gifts, purchases), means (for example, theft, trafficking), and legality of possession by various groups, particularly including offenders.

Characteristics of Firearm Violence – Research Priorities (contd.)

- **Characterize differences in nonfatal and fatal gun use across the U.S.**
 - Examples of topics that could be examined:
 - What are the characteristics of non-self-inflicted fatal and nonfatal gun injury?
 - What attributes of guns, ammunition, gun users, and other circumstances affect whether a gunshot injury will be fatal or nonfatal?
 - What characteristics differentiate mass shootings that were prevented from those that were carried out?
 - What role do firearms play in illicit drug markets?
 - What are the characteristics of self-inflicted fatal and nonfatal gun injury?
 - What factors (e.g., storage practices, time of acquisition) affect the decision to use a firearm to inflict self-harm?
 - To what degree can or would prospective suicidal users of firearms substitute other methods of suicide?
 - What factors drive trends in firearm-related violence within subpopulations?
 - What factors could bring about a decrease in unintentional firearm-related deaths?

Risk and Protective Factors— Research Priorities

- **Identify factors associated with juveniles and youths having access to, possessing, and carrying guns.**
 - Examples of topics that could be examined:
 - Which individual and/or situational factors influence the illegal acquisition, carrying, and use of guns by juveniles?
 - What types of weapons do youths obtain and carry?
 - How do youths acquire these weapons, e.g., through legal or illegal means?
 - What are key community-level risk and protective factors (such as the role of social norms), and how are these risk and protective factors affected by the social environment and neighborhood/community context?
 - What are key differences between urban and rural youth with regard to risk and protective factors for firearm-related violence?

Risk and Protective Factors – Research Priorities (contd.)

- **Evaluate the potential health risks and benefits (e.g., suicide rates, personal protection) of having a firearm in the home under a variety of circumstances (including storage practices) and settings.**
- Examples of topics that could be examined:
 - What are the associated probabilities of thwarting a crime versus committing suicide or sustaining an injury while in possession of a firearm?
 - What factors affect this risk/benefit relationship of gun ownership and storage techniques?
 - What is the impact of gun storage methods on the incidence of gun violence – unintentional and intentional – involving both youths and adults?
 - What is the impact of gun storage techniques on rates of suicide and unintentional injury?

Risk and Protective Factors – Research Priorities (contd.)

- **Improve understanding of risk factors that influence the probability of firearm violence in specific high-risk physical locations.**
 - Examples of topics that could be examined:
 - What are the characteristics of high- and low-risk physical locations?
 - Are the locations stable or do they change?
 - What factors in the physical and social environment characterize neighborhoods or sub-neighborhoods with higher or lower levels of gun violence?
 - Which characteristics strengthen the resilience of specific community locations?
 - What is the effect of stress and trauma on community violence, especially firearm-related violence?
 - What is the effect of concentrated disadvantage on community violence, especially firearm-related violence?

Firearm Violence Prevention and Other Interventions – Research Priorities

- **Improve understanding of whether interventions intended to diminish the illegal carrying of firearms reduce firearm violence.**
 - Examples of research questions that could be examined:
 - What is the degree to which background checks at the point of sale are effective in deterring acquisition of firearms by those who are legally disqualified from owning one?
 - What is the public health impact of removing firearms from persons who develop a disqualifying characteristic, e.g., mental illness, with potential for violence?
 - Do programs that focus on changing norms in a community decrease illegal gun carrying?



Firearm Violence Prevention and Other Interventions – Research Priorities (contd.)

- **Improve understanding of whether reducing criminal access to legally purchased guns reduces firearm violence.**
 - Examples of topics that could be examined:
 - Are there methods to enhance the reporting of stolen guns in order to reduce illegal access?
 - To what degree would mandatory reporting of transfer of private ownership of guns be effective in reducing illegal access?
 - To what extent do focused interventions (e.g., “server training,” straw-purchase strings) targeted at high-risk retailers found to be disproportionately associated with gun crimes reduce illegal access?
 - How do firearms move from federal firearms-licensed dealers to high-risk/criminal possessors? How can we develop detailed analyses of this illegal area of firearm distribution?

Firearm Violence Prevention and Other Interventions – Research Priorities (contd.)

- **Improve understanding of the effectiveness of actions directed at prevention access to firearms by violence-prone individuals.**
 - Examples of topics that could be examined:
 - What would be the effects of altering environmental alcohol availability, such as reducing the number of off-premise alcohol outlets, on firearm violence?
 - How effective are policies and enforcement of laws preventing gun sales to people with specific psychiatric diagnoses?
 - To what extent does enforcement of laws requiring removal of firearms from the homes of people with a history of intimate partner violence reduce homicide and injury?

Firearm Violence Prevention and Other Interventions – Research Priorities (contd.)

- **Determine the degree to which various childhood education or prevention programs reduce firearm violence in childhood and later in life.**
 - Examples of topics that could be examined:
 - Are school-, family-, and community-based risk-reduction and health-promotion programs effective in reducing firearm violence?
 - Are gun safety programs effective in reducing unintentional injury to children from firearms?
 - Are school personnel (e.g., nurses, resource officers, teachers) effective at detecting students at risk of causing firearm violence?

Firearm Violence Prevention and Other Interventions – Research Priorities (contd.)

- **Do programs to alter physical environments in high-crime areas result in a decrease in firearm violence?**
 - Examples of topics that could be examined:
 - Is there a correlation between alcohol sales for off-premise consumption and firearm violence in high-risk neighborhoods? Do laws and enforcement regarding sales of alcohol affect gun violence?
 - What are the effects on firearm violence of community engagement programs to improve the physical environment? Is there a reduction in firearm violence among youth living in neighborhoods where community policing is practiced?
 - For community programs that are considered to have sufficient effectiveness in reducing gun violence, what are the factors that affect adoption, fidelity vs. adaptation, and sustainability or scale-up of programs so that they have a public health impact?

Impact of Gun Safety Technology – Research Priorities

- **Identify the effects of different technological approaches to reduce firearm-related injury and death.**
 - Examples of topics that could be examined:
 - What is the projected impact of passive technologies on reduction of firearm violence, and which of the technologies will have the greatest impact on one or more of the types of harm from firearm violence (for example, homicide, suicide, and unintentional injury)?
 - Are these feasible mechanisms child-proof and what is the projected impact of these technologies?
 - How would potential technologies impact professional sectors (for example, police and private security) in performing their duties effectively?
 - How compliant would firearm owners be with safety technologies, or would owners disable technologies to assure their ability to use their firearms in an emergency?

Impact of Gun Safety Technology – Research Priorities (contd.)

- **Examine past consumer experiences with accepting safety technologies to inform the development and uptake of new gun safety technologies.**
 - Examples of topics that could be examined:
 - Are there lessons from the adoption of other public health interventions involving passive technology improvements that could facilitate the acceptance and dissemination of passive gun safety technologies? Would consumer engagement accelerate acceptance and dissemination of gun safety technologies?
 - What are the key factors that led to eventual population-level acceptance of various public safety technologies? Were these factors different for passive versus active technology changes? Were these factors different when active and passive technologies were combined?
 - In previous product safety efforts, how long did it take for the safety feature to become reliable and how did that timeframe impact consumer acceptance? Would this experience of timing and acceptance impact projections of gun safety technology implementation?
 - To what extent did additional costs associated with safety features influence consumer acceptance and adoption?

Impact of Gun Safety Technology – Research Priorities (contd.)

- **Explore individual state and international policy approaches to gun safety technology for applicability to the U.S. as a whole.**
 - Examples of topics that could be examined:
 - What can be learned from various state or international policy approaches to implementing passive and active gun technology changes, and what has been the impact of these changes on firearm violence?
 - What can be learned about the effects of these changes on the types of firearm-related injuries and deaths?
 - What was the impact of these approaches on consumer adoption and acceptance?
 - What have been the adoption rates and effectiveness of active protection technologies among law enforcement users?

Video Games and Other Media – Research Priority

- **Examine the relationship between exposure to media violence and real-life violence.**
 - Examples of topics that could be examined:
 - Synthesize evidence from existing studies and relevant databases that would reveal long-term associations between violent media exposure in childhood and subsequent adolescent or adult firearm-related violence. Studies should focus on evidence regarding the consistency and strength of these associations and the sensitivity of effect-size estimates.
 - Is there a relationship between long-term exposure to media violence and subsequent firearm-related violence? To what degree do violence-prone individuals disproportionately expose themselves to media violence?
 - If such a relationship exists, is it causal and who is most susceptible?
 - If a plausible case can be made that the relationship is causal, what kinds of people are most susceptible to the effects of media violence?
 - If the relationship is causal, which dimensions of media exposure are driving the relationship (e.g., competitiveness, violence, particular violence subtypes or contexts)?
 - Are the magnitude and consistency of the plausibly causal relationship sufficient to suggest a public health research agenda on interventions related to media violence?