Comments for the NASEM Ad Hoc Committee on Behavioral Health
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Thank you for inviting me to provide thoughts about the intersection between firearm violence and behavioral health with a focus on primary prevention of behavioral health disorders.

To contextualize my comments, it is important to say I am not a behavioral health provider. I am a critical care and trauma resuscitation nurse by clinical background. I am a nurse scientist with a focus on preventing injury and violence and improving recovery.

Today I will:

- Give you a snapshot of the disparate impact of firearm violence.
- Examine the intersection between firearm violence & behavioral health disorders.
- Provide key points for the committee to consider.

The Snapshot

The majority of homicides (79%) and suicides (53%) in the United States involved a firearm in 2020.[1]

In 2021 there were over 48,000 deaths by firearm in the U.S. Provisional 2022 data show a slight but not significant decrease (by about 700).

Firearm violence is not equally distributed – by gender, race/ethnicity, age, socioeconomic class and geography.

For example

- Black boys and men aged 15-34 are 2% of the population but account for 36% of all firearm homicides.

- Older white men have the highest rate of firearm suicide, but the rate for American Indian and Alaskan Native young males is on a trajectory to overtake older white men.

- In Philadelphia, the epicenters of firearm violence are concentrated in communities with generational poverty and limited resources – the very same neighborhoods that were redlined in the 1930's. This did not happen by chance but by policy.[2]

- This is true across multiple communities where interpersonal firearm violence deaths are repeatedly shown to be associated with economic deprivation and poverty.[3,4]

- Since 2019, more children and adolescents between the ages of 1 and 19 years die from injuries due to firearms than any other cause.[5]

We use mortality data to describe firearm violence because they are the most solid. But it is important to think of firearm violence as a triangle. Deaths are the top part of the triangle, people shot are in the middle section, and individuals, families & communities exposed to firearm violence form the largest base of the pyramid.

Focus

Less than 4 percent of all violent acts in the US are committed by people with a mental illness.[6] Mental illness is associated with firearm suicide and lethal means protection is well known within the behavioral health community.

Today, I will focus on the relationship between interpersonal firearm violence and behavioral disorders from the perspective of firearm violence as the exposure and behavioral disorders as the outcome.

The question is not whether there is an intersection, but how, where and for whom this intersection is impactful.

I have organized my comments by telling you my take-home point and then providing the supporting evidence and then moving onto the next take-home point.

Point 1 – Survivors of interpersonal firearm violence experience significant consequences on mental health.

I conducted a prospective cohort study of 623 seriously injured black men funded by NINR. 55% were violently injured and 45% met criteria for a post-injury mental health disorder (depression and/or PTSD). The salient contributors were violent injury, childhood adversity, pre-injury health, and limited psychological and emotional resources.[7]

In the GSW subset of this cohort, we found that retained bullets ($b = 3.52$; $p = 0.017$) were associated with more severe depressive symptoms.[8]

One 18-year-old GSW survivor said "I can't do nothing. I feel like I'm helpless. I feel like, damn, then I had thoughts. I wasn't thinking about suicide. I was thinking about 'yeah I want to live' and sometimes I was like 'nah.' It's just crazy. Like sometimes I don't."[9]

Castillo-Angeles surveyed injured patients across 3 trauma centers 6 and 12 months after injury. Violent mechanism of injury was significantly associated with PTSD (odds ratio, 2.57; 95% confidence interval, 1.59–4.17; $p < 0.001$).[10]

In a systematic review, Montgomerie et al. report on the extensive psychological toll of firearm violence. Elevated rates of diagnosable PTSD were found in survivors of various types of firearm violence, including witnessing mass shootings and survivors of firearm violence.[11]

Point 2 – Indirect exposures to firearm violence are associated with behavioral health disorders.

In lay language, you do not have to be shot to be injured by firearm violence.

Exposure to homicide victims

Magee et al, linked Medicaid claims data of secondary homicide victims (family members of homicide victims) to examine mental health concerns. Youth family members were nearly two times more likely to receive a new mental health diagnosis in the year after losing a loved one compared to those that did not lose a family member to homicide. [12]

Reingold et al. used a nationally representative sample of adolescents (N = 3,614) between the ages of 12 and 17. Those who reported losing a loved one to homicide were significantly more likely to report depression, drug use, and alcohol abuse than adolescents without this exposure after controlling for demographic factors and other violence exposure.[13]

These two studies looked at all homicides – not just firearm homicide, but remember over 80% of homicides in the U.S. are committed with a gun.

Exposure to Firearm Fatality - Specifically

Smith et al. examined mental health outcomes of 1615 adult community residents from Baltimore, New York, Philadelphia, and Washington, D.C, who participated in the online Survey of Police-Public Encounters. 24% reported exposure to a gun violence fatality. Respondents who endorsed exposure to gun violence fatality had 2 times the odds of reporting suicidal ideation and 2.5 times the odds of psychotic-like symptoms than those not exposed.[14]

Firearm Violence Exposure & Suicide Risk

Semenza et al. used a nationally representative sample of 3015 adults identifying as Black or AA.
Exposures were Ever being shot, being threatened with a gun, knowing someone who has been shot, and witnessing or hearing about a shooting.
Outcomes Exposure to 3 or more forms of gun violence was associated with a substantially increased likelihood of reporting lifetime suicidal ideation, suicide attempt preparation, and attempting suicide.[15]

Point 3: A prevention infrastructure should be maximally accessible to minoritized youth, families and communities at risk for firearm violence to prevent future behavioral health disorders.

An infrastructure for primary prevention of behavioral disorders related to firearm violence must be maximally accessible to those disproportionately affected by firearm violence.

An infrastructure needs to minimize barriers to care and to develop new generations of providers who look like the communities most in need.

What are barriers? Our work has shown multiple reasons:

Masculine identify, stigma, fear of judgment, fear of being put in a strait jacket. Participants said "they don't have compassion for people like me," and "they don't look like me." The saddest quote to me was "they will look at me like I am crazy or stupid, or that I just don't matter.".[9]

Why is not seeking help important?

Direct and indirect exposure often results in mental distress and especially Black men do not seek mental health services but instead may manage their symptoms through self-medication with illicit substances and alcohol.[16] This is not only a behavioral health issue, it can lead to a cascade of events increasing the likelihood of interaction with the criminal justice system rather than the health care system.[17]

<u>Point 4</u>: The induction period for firearm violence is not a split second (the finger on the trigger) but can be quite long which allows us to consider a prevention infrastructure that addresses joint risks for both firearm violence and behavioral health disorders.

I will give you two examples. Here we can see how primary prevention can target both firearm violence and behavioral health disorders jointly which would be efficient and effective.

<u>Adverse Childhood Experiences</u>
Hughes published a systematic review and meta-analysis examining ACEs and key health outcomes. Compared to no aces, people with 4 or more ACEs had 2-3 odds of heavy alcohol use, 3-6 odds for mental ill health and problematic alcohol use, and 7 or more odds of problematic drug use and interpersonal and self-directed violence.[18]

And if firearm violence occurs, as participants' cumulative ACE scores increase, their PTSD symptom severity scores worsen ($b = 0.16$; $p < 0.05$).[19]

<u>Neighborhood characteristics</u>
While ACEs focus on exposures within home/family environments, we must also consider socioecological exposures outside the home. Neighborhood characteristics exert substantial effects on physical and mental health, wellbeing, educational attainment, and safety.[20]

We conducted two-phase, mixed-methods study with a sample of predominately Black female-headed, housing-unstable families who were enrolled in a subsidized housing program designed to help them achieve self-sufficiency. All housing units were located in violent neighborhoods. At the request of, and in partnership with our community partner – ACHIEVEability, we found nearly half (49%) of parents reported moderate to severe symptoms of depression (CES-D). Children of parents with moderate-severe depressive symptoms had significantly higher reports of conduct problems, peer problems, poorer mental health and role problems (e.g., as a student). Parents further described high levels of stress resulting from competing priorities, financial instability, and concern for their children's well-being and safety in violent neighborhoods.[21]

Together these two examples suggest a primary prevention infrastructure should target multiple levels of the socioecological model.

<u>Point 5</u>: Prevention of behavioral disorders must be designed to address structural racism across the sectors of society.
In my study examining barriers to mental health services, one violently injured participant said: "Society. Because – those resources aren't normally available to us. When I say "us" ... I mean Black people. It's about what's expected and what is available as a resource.".[22]

Multiple sectors deal with firearm violence – not just health care, but the criminal justice and educational system (which often now have armed police in schools). We have found individuals conflate health care with the carceral state. This puts up barriers to prevention. In Phila, for example, police transport shot men to hospitals in the back seat of police cars. This can be further traumatizing and also provides police entrée into the clinical space – which can create distrust of both the clinical provider and the police. As one man who was shot taking his kids to school says. "All I see is a police car coming to

get me. And they ask you so many questions at the time. And it could have been my life because I'm trying to let him know that I couldn't talk. I'm getting ready to die ... Let me get to the hospital.".[23]

Final Thought: Infuse humanity and dignity throughout an integrated system that does not silo physical and behavioral health care.

How we treat individuals who have sustained a GSW throughout the continuum of care often lacks dignity, respect, and humanity. We interviewed 83 urban Black men as to why they chose to participate in our clinical research studies. The number one reason was for human connection. For example: "Because you ask me real questions that I never had asked before. So, I could tell you something. I never talked to nobody about my problems...like I wouldn't tell nobody none of this stuff here... I need to talk to someone and get it out. And that really helps it out. Thank you. Thank you."[24]

What emerged is clinical teams who were expert trauma care providers were often not effectively connecting with, trying to understand, and address needs beyond the physical firearm injury itself. We can and must do better.

The ideal infrastructure for preventing the emergence of behavioral health disorders would be to integrate health, behavioral health, and social care that is streamlined with formalized connections and communications across systems of care.[25] We are starting to see this with hospital based programs focused on GSW survivors – but they are nascent, typically not reimbursed by insurance, are often run off of 'soft' money, and need to be rigorously evaluated.

Thank you for the opportunity to share these thoughts and best of success to the work of this committee.

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