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What Is the Institutional Duty of Trauma Systems to Respond to Gun Violence?

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Abstract

In the past, trauma centers have almost exclusively focused on caring for patients who suffer from physical trauma resulting from violence. However, as clinicians' perspectives on violence shift, violence prevention and intervention have been increasingly recognized as integral aspects of trauma care. Hospital-based violence intervention programs are an emerging strategy for ending the cycle of violence by focusing efforts in the trauma center context. These programs, with their multipronged, community-based approach, have shown great potential in reducing trauma recidivism by leveraging the acute experience of violence as an opportunity to introduce services and assess risk of re-injury. In this article, we explore the evolving role of trauma centers and consider their institutional duty to address violence broadly, including prevention.

A Missed Opportunity?

A 19-year-old woman is rushed to the trauma bay after sustaining a gunshot wound to the thigh. She is clinically stable. Neurovascular examination of the affected extremity is within normal limits. X-rays rule out a fracture. As part of her evaluation, a brief social history is obtained—she is asked about alcohol and drug use, her marital and employment status. However, no one on the trauma team asks about the circumstances of her injury or whether she feels safe returning home. A nurse instructs her regarding basic wound care, and she is discharged with a plan to follow up in the trauma surgery clinic. The encounter lasts 45 minutes. Within an hour, the same patient re-presents to the trauma bay in cardiac arrest after sustaining a gunshot wound to the head.

Most trauma centers do not possess the resources, workforce, or systematic approach necessary to address the social underpinnings of violence. In many cases, a decision to either screen for risk of violence or offer social support or referral to resources that could provide support is not standardized and is left to the discretion of treating clinicians. In this article, we explore the institutional duty of trauma systems to respond to the social causes of violence and how clinicians' conceptions of this duty might be influenced by attitudes on violence. Additionally, we discuss the use of hospital-based violence intervention (HBVI) programs as a preventive strategy designed to break the cycle of violence and reduce trauma recidivism, which is associated with an increased risk of long-term mortality in the trauma population [1]. Although several small studies suggest that HBVI programs successfully reduce trauma recidivism, scholars argue that obtaining high-quality evidence of their effectiveness will be challenging, if not impossible, given difficulties related to studying the trauma population [2]. Rather than waiting for sufficient evidence regarding their effectiveness, we argue for implementation of HBVI programs within trauma centers.

Violence and the Burden of Disease

Violence is defined by the World Health Organization [3] as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" [4]. Violence can be self-directed (i.e., self-injury), interpersonal (i.e., abuse), or collective (i.e., war). Interpersonal violence, or "violence between individuals," includes family and intimate partner violence and community violence [5]. Hereafter, our use of the term "violence" refers to interpersonal violence.

In 2015, the age-adjusted rates of nonfatal violent injury and violent death were 694 and 19 per 100 000, respectively [6]. In 2012, firearm violence was a leading cause of death for teenagers and young Americans [7], and certain groups were disproportionately affected, with firearm homicide being the leading cause of death for black men between 15 and 34 years of age [7]. The physical, mental, sexual, and reproductive health consequences of experiencing violence often manifest as chronic conditions, resulting in considerable health burdens, costs, and lost productivity [8]. In 2010, the monetary cost of firearm injuries, a calculation that included "medical and mental health care costs, criminal justice costs, wage losses, and the value of pain, suffering and lost quality of life," was estimated to be $174.1 billion [9]. Additionally, the nonmonetary costs of violent injury—physical and emotional pain, disability, lost productivity, grief, fear, and demoralization—can affect the lives of all touched by violence.

For those who experience a violent injury, encounters with trauma systems are often a harbinger of serious recurrent injury or mortality. Trauma recidivism, or the "incidence of new, recurrent injuries requiring patient evaluation and treatment," has been observed to be as high as 44 percent in some urban settings [10]. For trauma recidivists injured through gun violence, subsequent injuries tend to be increasingly severe [11]. Compared to their nonrecidivist counterparts, trauma recidivists have higher rates of mortality from penetrating trauma, estimated to be as high as 20 percent at five years [1].

Incorporating Violence Prevention into Trauma Care

In the US, the notion of an "ideal trauma system" was conceived in 1976 with the publication of *Optimal Hospital Resources for Care of the Injured Patient* by the American College of Surgeons Committee on Trauma (ACS-COT) [12]. Recognizing the potential for variability in trauma care across the nation, ACS-COT developed treatment guidelines, which now serve as the framework for verification of individual trauma centers [12]. In the most recent edition of the guidelines, optimal trauma care is described as "prevention, access, prehospital care and transportation, acute hospital care, rehabilitation, and research activities" [13]. The decision to include prevention as part of this definition reflects the authors' belief that injury prevention is the "most logical approach to reducing death and disability" [14]. Injury prevention is integral to reducing death and disability resulting from injuries, regardless of cause or intent.

While effective in reducing deaths and physical disability, medical treatment offered by trauma centers to persons who have sustained a violent injury is no panacea for the far-reaching effects of violent injuries. Providing these services is resource intensive and the services might not be available to all in need [15]. Even under ideal circumstances, trauma care cannot eliminate the far-reaching health consequences of violence experienced by patients, their families, and their communities. Given these limitations, prevention of violent injuries is a more effective means of reducing the burden of disease than offering care after an injury has occurred.

Trauma surgeons have been strong advocates for injury prevention. They played a key role in the public health response to reduce motor vehicle injuries, which is now recognized as one of the ten greatest public health achievements of the twentieth century [8]. Those engaged in advocacy also worked to change the way motor vehicle injuries were perceived. Motor vehicle "accidents" came to be known as motor vehicle "collisions," reflecting a departure from the notion that these events and the injuries they produce are unpredictable [16, 17]. Indeed, injury prevention experts note that a key aspect of promoting prevention strategies is altering the communication frame to raise awareness and change misperceptions [7]. By changing the nomenclature from accident, which implies unavoidability, to collision, with its implications for prevention, the injury prevention community embarked on a series of interventions that have markedly reduced disability and mortality resulting from motor vehicle injuries [16, 17]. In contrast to these broad efforts aimed at motor vehicle safety, violence prevention strategies remain underutilized, which might reflect attitudes regarding responsibility for violent injury.

Compared to evolving frameworks for understanding the nature of unintentional blunt injuries, perceptions of violent injuries have been much slower to change. Violence and its effects have long been viewed as consequences of moral failures [18, 19]. Similarly, in the past, people suffering from infectious diseases were subject to stigma, blame, and punishment [18, 19]. Unsurprisingly, the criminal justice system, which—unlike health care systems—emphasizes punishment and removal from society rather than individuals' well-being and benefits to larger populations, has been our society's primary response to violence [7, 18]. However, there is a growing literature that supports the belief that violence is complex and intersectional, the result of a host of risk factors including repeated exposure of individuals and families to trauma, adverse childhood experiences, lack of investment in certain communities, and lack of assets or economic opportunities [20-22]. Paul Farmer et al., citing the work of Johan Galtung, describe how "social structures—economic, political, legal, religious, and cultural—that stop individuals, groups, and societies from reaching their full potential" contribute to violence [23]. Violence has some features of a disease; it has the potential to spread, it clusters in certain environments, and it can be prevented [18, 20]. In his book, *Private Guns, Public Health*, David Hemenway notes that violence is amenable to a public health approach, which "emphasizes prevention rather than fault-finding, blame, or revenge" [24].

Hospital-Based Violence Intervention Reduces Recidivism

Influenced by the lessons learned from injury prevention of motor vehicle collisions and recent research, trauma care has begun to expand beyond tending only to the physical wounds caused by violence to addressing the conditions that engender violence in communities [18, 25]. Leaders within trauma surgery have called for standardized violence prevention initiatives, particularly in areas with a high prevalence of violence and trauma recidivism [26-28].

HBVI programs have emerged as a promising method of breaking the cycle of violence [26]. These programs are structured to address what we now understand to be proximate causes of violence, with an emphasis on the social determinants of health. HBVI programs leverage access to trauma care at the time of injury, which, for many, might represent their only access point to the health care system. Programs incorporate three components: addressing risks associated with violent injury, introducing services at the time of acute injury and hospital care, and providing culturally competent case management [26]. Participants are offered an extended period of case management services, including career counseling and access to community resources such as housing or legal advocacy [26].

HBVI programs have been implemented with success; however, these data are limited to single-institution studies [2], which have shown dramatic reductions in trauma recidivism, health care expenses, and mortality of participants [29, 30]. Aside from a handful of urban trauma centers [2], most have yet to adopt HBVI programs, citing a need for stronger evidence of their benefits and cost effectiveness. Unfortunately, an evidenced-based review of the literature failed to show significant benefits of these programs, citing high risk of bias, low quality of evidence, and heterogeneity among programs studied [2]. The authors also offer a number of more specific criticisms of these studies. They suggest that current measures of programmatic success do not fully account for indicators of value such as the patient's experience [2]. Notably, the population most affected by interpersonal violence presents unique challenges for collecting accurate longitudinal data, as loss to follow up is common given participants' high mortality, limited access to health care, and intersections with the criminal justice system [2]. Moreover, some institutional review boards have prohibited randomized controlled trials to test the effectiveness of HBVI programs on ethical grounds [2]. Finally, current policy bars federal funds from being awarded to researchers investigating gun violence [31], which is the most common cause of death due to violence [7]. This policy might influence investigators' decision to study HBVI [2].

Surgeons' Moral Responsibility

As put forth by the ACS-COT guidelines, trauma surgeons have a professional responsibility to work to prevent injuries, including those that result from violence. We trauma surgeons recognize the limitations of epidemiologic research in this area and our incomplete understanding of cause-effect relationships. However, we cannot let these lacunae prevent us from acting. It is critical that we weigh harms related to action (i.e., establishing a HBVI program) and those related to inaction (i.e., not responding to violence beyond providing acute care for injuries). The potential harm of offering case management services and community resources—such as when providing these services monopolizes a clinician's time without much benefit—are minimal compared with benefits suggested by the literature [32]. In contrast, the continued likelihood of violence-related harms in the absence of an HBVI program or other community responses is considerable. HBVI programs represent the best course of action, despite our lack of supportive data.

Pogge [33] argues that in addition to conducting a benefit-burden analysis, our moral responsibility to act also includes our taking responsibility for the outcome in question: "We ought to ensure that any institutional order we help impose avoids causing medical conditions and prioritises the mitigation of any medical conditions it does cause" [34]. When guided by this approach, individuals and institutions share a greater moral responsibility to address harms for which they have causal responsibility [33]. Just as economic, political, legal, religious, and cultural structures can perpetuate structural violence, so, too, can health systems by failing to offer available resources to members of certain patient populations when they initially present. Many of the techniques and resources utilized by HBVI programs are already utilized by health care systems, although they are not systematically allocated to victims of violence. Examples include rape crises counselors for patients who have experienced a sexual assault and dedicated case management teams to reduce readmission for patients with chronic illnesses such as heart failure. The limited application of these potentially helpful resources to specific groups, such as those with violent injuries, can be considered structural violence. If structural causes of violence are not adequately addressed when caring for victims of violent injury, clinicians effectively perpetuate the cycle of violence.

Although choosing to implement a program without clearly demonstrable benefits poses formidable challenges, implementing HBVI would not be the first time trauma centers have implemented promising programs that are not evidence based. Universal screening and brief intervention (SBI) for alcohol use disorder have been required by ACS-COT since 2007 to be verified as a level I trauma center [8, 35]. Interestingly, the effectiveness of SBI had not been systematically documented prior to institution of this requirement [35]. In this instance, implementation did not depend solely on evidence but instead relied on plausible benefits and attempts to minimize the harms of alcoholism to individuals and society.

Violence Prevention is a Necessary Element of Trauma Care

Trauma centers are a nexus of health systems and communities. For many people, the emergency department is the sole access point to health care. Thus, these centers are uniquely positioned to offer preventive strategies to persons suffering from violence. Those who operate trauma systems and work within them have a professional and moral responsibility to offer violence prevention. HBVI programs represent an encouraging strategy for breaking the cycle of violence and reducing trauma recidivism. For institutions that choose to adopt HBVI programs, robust outcomes data should be collected and shared to facilitate dissemination of effective strategies and allow trauma systems to iteratively learn from each other. We cannot continue to sit idly by as violence destroys the lives of millions of Americans. The time has come to act.

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