Violence, Trauma, and Trauma Surgery

Ethical Issues, Interventions, and Innovations

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Preface

On the South Side of Chicago, the absence of adult trauma services had been a highly controversial issue for decades. After The University of Chicago and the Michael Reese Hospital closed their adult trauma centers in the early 1990s, for the next 27 years there was no adult level 1 trauma center on the South Side, an area with a population of approximately 600,000. Over time, community activists advocated strongly for an adult trauma center, and after years of planning, The University of Chicago Medicine launched its new trauma center on the South Side in May 2018. In anticipation of the opening of the trauma center, in 2017 we (Drs. Rogers and Siegler) organized a lecture series on ethics, violence, trauma, and trauma surgery. This book brings together papers based on the lectures from this yearlong series.

In 1948, the World Health Organization (WHO) defined health as a "complete state of physical, mental, and social well-being, and not merely the absence of disease or infirmity" (World Health Organization, 1948). Such an all-encompassing definition of health means that none of us is truly healthy; however, all of us aspire to achieve health in the face of the challenges of balancing physical, mental, and social well-being. When one considers the WHO's definition of violence, we all must pause: the WHO defines violence 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, mal-development, or deprivation" (World Health Organization, 1996). Given this encompassing definition of violence, health is virtually impossible in the presence of violence. In this book, we examine the intersection of ethics, violence, trauma, and surgery. Various authors from a wide range of disciplines argue that intentional violence toward another person is complex. Causes of violence include poverty and lack of economic opportunity, and violence often occurs in impoverished and underserved communities. Many of the authors in this book use Chicago as a framework for their discussion, but there are similarities in most urban settings throughout the United States.

In Chicago, the impact of social determinants of health is most striking with regard to life expectancy. In the economically vibrant inner loop of Chicago, the

average life expectancy is 85 years of age (Krug, Dahlberg, Mercy, Zwi, & Lozano, 1996); in Washington Park on the South Side, a mere 7 miles away, the average life expectancy is 69 years of age. The distance between these two neighborhoods is covered in 10 minutes by train. The causes of this difference in life expectancy relate to race, class, resources, health insurance status, and geography. The impact of geography on health can be evaluated by various markers. For example, communities on the South and West Sides of Chicago have higher rates of homes with elevated lead levels, higher rates of unemployment, lower rates of high school graduation, and higher rates of asthma-related emergency department visits.

Correlating with higher rates of premature death, violence is also higher on the South Side of Chicago. Violence is complex and intersectional. When we focus on traumatic events, we focus on the immediate events, such as prehospital care and care in the emergency department, resuscitation bays, and operating rooms. Adverse childhood exposures to trauma increase one's likelihood of being a victim of trauma or a perpetrator of violence. The structure of our society also affects the likelihood of violence. Structural violence refers to ways in which our social arrangements—governments, economies, religions—put individuals and populations in harm's way (Galtung, 1969). Environmental factors, such as segregation, educational disparities, and lack of economic opportunities, may drive violent acts. The impact of racism and discrimination on individuals' lives affects their sense of self and social connections.

Instead of simply focusing on the traumatic violent event, we need to think simultaneously about how to approach violence and trauma. A traumatic violent incident may lead a person to develop posttraumatic stress disorder or retaliate against the person who harmed them. We need to approach trauma not as episodic events but from a public health perspective, incorporating prevention and recovery. The public health approach examines protective and risk factors. Protective factors may include social structures, such as family and church. Risk factors include poverty and unemployment. Victims of violence are a unique population of people whose risk for reinjury can be potentially lowered. Strong, Greene, and Smith (2017) examined long-term mortality over a 10-year period in patients who were hospitalized at a busy level 1 trauma center with gunshot wounds. The group found a higher survival rate in patients who were shot once and only once over that follow-up period than in those who were shot more than once. That survival difference is an opportunity for secondary prevention.

Trauma centers can do more than "just" provide trauma care. Hospital-based violence intervention programs can create "wraparound" services for victims of violence (Purtle et al., 2013). Intervention programs incorporate secondary prevention and recovery.

We have divided this book into three parts: Part I covers ethical issues related to violence; Part II, ethical issues in trauma and trauma surgery; and Part III, a variety of additional ethical concerns. Below we offer brief summaries of the chapters in each part to allow you to identify those most relevant to your interests and to give you an overview of the scope and depth of the book's content.

Part I. Ethical Issues Related to Violence

We open this book with six chapters that examine ethical issues related to violence. Each of these chapters discusses a different but intersecting aspect of how violence challenges ethical standards in medicine and health.

The first chapter is by a team from San Francisco, Rochelle Dicker and Catherine Julliard. It discusses the important issue of Wraparound Programs, i.e., hospital programs designed to reduce violence and recidivism among those who are victims of violence. The authors write that violence is the second most common cause of death in youths aged 15–24 years. They further note that many of the risk factors for further violence relate to social determinants of health. These risk factors include male gender, unstable family structure, housing instability, low socio-economic and educational status, unemployment, previous incarceration, and substance abuse. Further, those who were previously injured by violence are more than twice as likely to die from violence if reinjured (Griffin et al., 2014). The principal approach to this crisis is addressed in hospital-based violence intervention programs. These approaches are discussed in detail in this chapter and include educating victims in the hospital setting after their injury, reducing risk by having case managers intervene in the victims' needs, and addressing victims' mental health issues. This approach has been endorsed by the American College of Surgeons Committee on Trauma (Cribari, Smith, & Rotondo, 2014) and has expanded from its original site in San Francisco to many other cities in the United States.

The second chapter, authored by Pastor Chris Harris, Sr., is entitled "(TURN) The Urban Resilience Network." Pastor Harris developed a program called "Praying around the Schools," which entails students, church members, and others praying for an hour at different schools. Pastor Harris also established a local, Bronzeville, nonprofit arm for his church, "Bright Star Community Outreach" (BSCO). BSCO now serves more than 5000 people in the community and partners with more than 50 organizations to help Bronzeville reduce violence. In his chapter, Pastor Harris also discusses the specific phases of the TURN program.

The third chapter, by Jon Lowenstein and Marisa Dharmawardene, is called "A Violet Thread: How Violence Cuts Across the Generations on Chicago's South Side" and provides moving photographs and first-person oral histories from African American residents of Chicago's South Side. These photographs and histories describe the impact of violence on South Side community members and the intersection of violence with other social determinants of health. The chapter also highlights how community residents remain resilient in the face of continuing local violence while retaining allegiance to their South Side community.

The fourth chapter, by Tonie Sadler and Harold Pollack, entitled "Engaging People in Behavioral Crisis," explores the challenges faced by those who respond first to behavioral crises. The nature and origin of such behavioral crises vary widely and are related to mental illness, alcohol intoxication, and intellectual and developmental disabilities, to name a few. The authors describe how crisis intervention teams can effectively and safely serve individuals who face such crises. They then

discuss their work in Chicago and describe the organizational and policy obstacles that limit the effectiveness of crises intervention teams.

In the fifth chapter, authors Gary Slutkin and Charles Ransford examine the topic of violence as a contagious disease. They suggest that violence is a health issue that is the expected result of exposure, contagion, and trauma and propose an approach to reduce violence, "The Cure Violence Health Model." This approach uses epidemic control methods to detect and disrupt violent events, to change behavior among the highest risk persons and groups, and eventually to shift both group and community mores. By 2018, this model had been adopted by 100 communities in 16 countries, and the results have been promising. Among the communities that have used the model, the authors name Chicago, New York City, Baltimore, Honduras, Trinidad, and Mexico.

The final chapter in Part I, written by Sara Scarlett and Elizabeth B. Dreesen, is entitled "Workplace Violence in Trauma Care." The authors, both practicing surgeons, examine the impact of violence on US health care workers, especially those who work in trauma surgery. They discuss some of the ethical issues associated with workplace violence in trauma surgery and offer new approaches by which trauma surgeons can respond constructively to the problems of violence in their care setting.

Part II. Ethical Issues Related to Trauma and Trauma Surgery

Part II of the book includes nine chapters that address various aspects of ethical issues related to trauma and trauma surgery.

Chapter 7 by Marie Crandall is entitled "Geographic Information System in Trauma Research." The study of geographic information systems identifies areas at high risk for different forms of trauma, including pedestrian injuries, burns, falls, and penetrating trauma. This chapter specifically examines mortality from gunshot wounds in Chicago and the location and evolution of trauma care systems in Chicago.

The subsequent chapter by Anne C. Mosenthal and Franchesca J. Hwang is entitled "Palliative Care in Trauma: Violence and the Ethics of Care." This innovative chapter explores the ethics of palliative care for those injured by violence and argues that death and disability from violent injury are major public health problems that disproportionately affect young, previously healthy individuals. Little attention has been paid to providing this young population with palliative and end-of-life care. Questions about how and when to provide such care raise deep ethical issues.

Chapter 9, by Jeffrey J. Skubic and Zara Cooper, entitled "Geriatric Trauma Care," discusses the issue of geriatric trauma care. As the US geriatric population has been growing, there has been an increase in injuries such as traumatic brain injuries, falls resulting in hip and rib fractures, and motor vehicle accidents. This creative chapter examines ethical issues related to providing trauma care for injured

older patients, a group that has been shown to have higher in-hospital mortality after trauma than younger patients. Even when elderly trauma victims survive, many experience functional declines that have a negative impact on both their ability to live independently and their quality of life.

Chapter 10, by Kimberly Joseph and Carol Reese, is entitled "Primum Non Nocere: When Is It Our Moral Duty to Do More for Our Trauma Patients in Need?" The authors emphasize that patients who have been violently injured require more positive support from caregivers than merely "doing no harm." Rather, our moral responsibilities should include efforts to care, to cure, to reduce pain and suffering, and to heal.

Chapter 11 is entitled "Girls and Trauma: Performing Socio-Surgery Through a Gender-Responsive Lens." In this chapter, Sherida V. Morrison and T-awannda Piper present data highlighting that adolescent girls are more prone to trauma than boys and that the impact of trauma on adolescent girls is both physiological and psychological. The authors propose a gender-responsive approach that involves specialized practitioners and will reduce the lasting effects of trauma and, in the process, "redirect the course" of traumatized adolescent girls.

Chapter 12, written by the Chicago critical care doctor Cory Franklin, is entitled "An Internist's View of Trauma Units: From Ancient Warfare to Modern Assistive Technology." Franklin traces the evolution of the trauma unit, including the history of the first comprehensive civilian trauma unit in the United States, a unit that was started at the Cook County Hospital in Chicago. Trauma units were developed initially to improve battlefield medical care during warfare. Today's civilian trauma units use a multifaceted team approach that includes surgical and medical specialists, nurses, and therapists, all of whom work together. A comprehensive approach to trauma, from the initial point of triage and resuscitation to the later process of caring for the patient's long-term needs, including the problem of posttraumatic stress disorder, makes the trauma unit a vital community resource.

Chapter 13 is by Danby Kang and Mamta Swaroop and is entitled "Empowerment: The Ethical Dilemma." The key to developing successful trauma systems in low- and middle-income countries is empowering a community within the country. Efforts should be directed at educational and policy developments that help to mobilize resources from the public and private sectors.

Chapter 14, by S. Morad Hameed, Keanna Knebel, and Selwyn O. Rogers, is entitled "The Future of Injury Control Is Precise: Ethical Issues in Violence, Trauma, and Trauma Surgery." During the past five decades, successful trauma systems have decreased trauma mortality. The central question addressed in this chapter is whether the "precision medicine movement" will further improve trauma systems or whether, by individualizing care, it will divert support from population-based approaches to health, as currently exemplified by trauma systems. Regarding this question, the authors conclude that by balancing ethical considerations with the capabilities of "precision medicine" trauma, surgeons have the opportunity to lead a new movement called "precision injury control," which will integrate trauma systems and precision medicine.

Chapter 15, by Maya A. Babu, is entitled "Ethical Issues in Neurotrauma." Babu notes that neurotraumatic injuries involve the brain, spinal cord, and peripheral nerves. She emphasizes that treating a patient with a traumatic brain injury raises many ethical issues, including informed consent, goals of care, and discussions of end-of-life measures with the patient or the patient's surrogate. The chapter also discusses ethical issues related to innovative treatments, such as deep-brain stimulation and other new invasive approaches.

Part III. Additional Concerns Relating to Violence and Trauma

The chapters in the final section of the book describe a series of issues relating to violence and trauma, including surgical procedures, psychological distress, and geographic disparities in access to trauma care.

Chapter 16, by Colin Murphy, John Holcomb, and John R. Hess, is entitled "The Evolution of Transfusion Therapy in Trauma." Transfusion has been a critical factor in the development of trauma care since the first blood bank was established 100 years ago. Bleeding is the most common cause of early trauma death, and rapid access to a full range of blood products saves lives. The initial treatment of massive hemorrhage with blood products tries simultaneously to replace lost blood volume, increase oxygen carrying capacity and establish hemostatic activity.

Chapter 17, by Matthew J. Bradley and Thomas M. Scalea, is called "Diagnosis and Management of Penetrating Thoracic Vascular Injury." Although penetrating vascular injuries account for only a small portion of a thoracic surgeon's training, such injuries are challenging and can be lethal. It is therefore imperative that the trauma surgeon knows how to diagnose and treat them. The hemodynamically compromised and hypertensive patient requires emergency exploration.

Chapter 18, "Healing Hurt People – Chicago: Supporting Trauma Recovery in Patients Injured by Violence," is authored by Bradley C. Stolbach and Carol Reese. Trauma centers that care for patients with gunshot wounds and often violent injuries have both an opportunity and an ethical obligation to intervene in the cycle of violence in which many patients are caught. "Healing Hurt People" is a hospital-based violence intervention model that aims to address unresolved psychological trauma as a key driver of risk for violent injury. The measure works to interrupt the cycle of violence by addressing and working to heal trauma victims.

Chapter 19, by Nidhi Rhea Udyavar, Ali Salim, and Adil H. Haider, is entitled "Clinician Unconscious Bias and Its Impact on Trauma Patients." This chapter describes how the unique features of trauma care, such as the diverse patient population and the difficulty of caring for acutely and critically ill patients, can predispose to the formation of unconscious biases. It proposes education strategies to reduce surgeons' unconscious biases and thus better enable them to care for injured patients from all racial/ethnic and social backgrounds.

Chapter 20, by L.D. Britt, is entitled "The Establishment and Education of Acute Care Surgery." Acute care surgery embodies three specialty components: trauma

surgery, emergency general surgery, and surgical critical care. In each of these, early diagnosis and intervention is the cornerstone of optimal management. Establishing acute care surgery as a defined specialty is necessary to achieve optimal care and inclusion for injured and critically ill surgical patients.

Chapter 21, written by Mary K. Bryant, Sara Scarlet, and Elizabeth B. Dreesen, is entitled "Trauma Care for Justice-Involved Persons." The United States has a larger incarcerated population than any other country in the world. In recent years, investigations have explained the health needs of this population. While there is a paucity of data about the surgical and trauma needs among the incarcerated, it is generally agreed that the prevalence of traumatic injury is high and, further, that experiencing trauma may increase the lifetime risk of incarceration.

Conclusion

Drawing from a diverse collection of authors, this book examines the intersection of ethics, violence, trauma, and trauma surgery from various perspectives. The past five decades have witnessed an increase of trauma systems. Despite advances in trauma care and injury prevention, however, injuries still claim the lives of 5.1 million people each year (Norton & Kobusingye, 2013), destroy human potential more than any other health issue and negatively impact the physical and psychological well-being of individuals and communities. Disparities in injury risk and access to high-quality trauma care have persisted everywhere and are rooted in structural violence and discrimination in the face of the trauma system's ideal that every critically injured patient has the right to the best care, regardless of socioeconomic status.

Geographic disparities in trauma care have been well documented, with up to 46.7 million Americans living in so-called trauma deserts, where the nearest level I or II trauma center is over an hour away (Branas et al., 2005). This burden falls overwhelmingly on rural communities (Hsia R & Shen Y-C, 2011; Hsia RY-J & Shen Y-C, 2011; Gomez et al. 2010), but disparities also exist in urban communities: poor, uninsured minorities are more likely to live in trauma deserts and experience trauma center closures in their communities (Crandall et al. 2013; Hsia R & Shen Y-C, 2011; Hsia RY-J & Shen Y-C, 2011; Hsia, Srebotnjak, Kanzaria, McCulloch, & Auerbach, 2012; Shen, Hsia, & Kuzma, 2009; Wandling, Behrens, Hsia, & Crandall, 2016). Thus, the inequitable distribution of trauma centers, whether intentional or not, structurally disadvantages certain groups of people and puts them at greater risk of harm. The persistent burden of injury irrevocably harms families, communities, and nations. The University of Chicago Medical Center on the South Side of Chicago is the latest trauma center to meet the needs of a relative trauma desert, and we are happy to celebrate this milestone by bringing you our distinguished panel of authors' perspectives on these complex and destabilizing issues.

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References

Branas, C. C., Mackenzie, E. J., Williams, J. C., Schwab, C. W., Teter, H. M., Flanigan, M. C., et al. (2005). Access to trauma centers in the United States. *JAMA, 293*(21), 2626–2633.

Crandall, M., Sharp, D., Unger, E., Straus, D., Brasel, K., Hsia, R., et al. (2013). Trauma deserts: Distance from a trauma center, transport times, and mortality from gunshot wounds in Chicago. *Am J Public Health, 103*, 1103–1109.

Cribari, C., Smith, R. S., & Rotondo, M. F. (Eds.). (2014). *Resources for optimal care of the injured patient*. Chicago: ACS Committee on Trauma.

Galtung, J. (1969). Violence, peace, and peace research. *J Peace Res, 6*, 167–191.

Gomez, D., Berube, M., Xiong, W., Ahmed, N., Haas, B., Schuurman, N., et al. (2010). Identifying targets for potential interventions to reduce rural trauma deaths: A population-based analysis. *J Trauma, 69*, 633–639.

Griffin, R. L., Davis, G. G., Levitan, E. B., MacLennan, P. A., Redden, D. T., & McGwin Jr., G. (2014). The effect of previous traumatic injury on homicide risk. *J Forensic Sci, 59*(4), 986–990. https://doi.org/10.1111/1556-4029

Hsia, R., & Shen, Y.-C. (2011a). Possible geographical barriers to trauma center access for vulnerable patients in the United States: An analysis of urban and rural communities. *Arch Surg, 146*(1), 46–52. https://doi.org/10.1001/archsurg.2010.299

Hsia, R. Y., Srebotnjak, T., Kanzaria, H. K., McCulloch, C., & Auerbach, A. D. (2012). System-level health disparities in California emergency departments: Minorities and Medicaid patients are at higher risk of losing their emergency departments. *Ann Emerg Med, 59*, 358–365.

Hsia, R. Y.-J., & Shen, Y.-C. (2011b). Rising closures of hospital trauma centers disproportionately burden vulnerable populations. *Health Aff, 30*, 1912–1920. https://doi.org/10.1377/hlthaff.2011.0510

Krug, E. G., Dahlberg, L. L., Mercy, J. A., Zwi, A. B., & Lozano, R. (Eds.). (1996). *WHO Global Consultation on violence and health. Violence: A public health priority*. Geneva: World Health Organization. Available at https://www.who.int/violence_injury_prevention/violence/world_report/en/introduction.pdf. Accessed on 7 July 2019.

Norton, R., & Kobusingye, O. (2013). Injuries. *N Engl J Med, 368*, 1723–1730. https://doi.org/10.1056/nejmra1109343

Purtle, J., Dicker, R., Cooper, C., Corbin, T., Greene, M. B., Marks, A., et al. (2013). Hospital-based violence intervention programs save lives and money. *J Trauma Acute Care Surg, 75*(2), 331–333. https://doi.org/10.1097/TA.0b013e318294f518

Shen, Y.-C., Hsia, R. Y., & Kuzma, K. (2009). Understanding the risk factors of trauma center closures: Do financial pressure and community characteristics matter? *Med Care, 47*, 968–978. https://doi.org/10.1097/MLR.0b013e31819c9415

Strong, B. L., Greene, C. R., & Smith, G. S. (2017). Trauma recidivism predicts long-term mortality: Missed opportunities for prevention (retrospective cohort study). *Ann Surgery, 265*(5), 847–853. https://doi.org/10.1097/SLA.0000000000001823

Virginia Commonwealth University. (2015). *Mapping life expectancy*. 16 Years in Chicago, Illinois. Available at https://societyhealth.vcu.edu/work/the-projects/mapschicago.html. Accessed on 7 July 2019.

Wandling, M., Behrens, J., Hsia, R., & Crandall, M. (2016). Geographic disparities in access to urban trauma care: Defining the problem and identifying a solution for gunshot wound victims in Chicago. *Am J Surg, 212*, 587–591.

WHO Global Consultation on Violence and Health. (1996). *Violence: A public health priority*. Geneva: World Health Organization. https://www.who.int/violence_injury_prevention/violence/world_report/en/introduction.pdf. Accessed on 7 July 2019.

World Health Organization. (1948). *Constitution of the World Health Organization*. Available at https://www.who.int/governance/eb/who_constitution_en.pdf. Accessed on 7 July 2019.

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Part I
Ethical Issues Related to Violence

Chapter 1
Hospital-Based Interventions to Reduce Violence and Recidivism: Wraparound Programs

Rochelle Dicker and Catherine Juillard

Public Health Approach to Injury and Violence

In the United States, homicide is the second most common cause of death among youth aged 15–24 years (Center for Disease Control, 2016). Among African American youth, homicide is the leading cause of death (Center for Disease Control, 2016). For every person killed, there are an estimated 42 nonfatal injuries, each of which carries an associated burden of disease in terms of disability, economic impact, health-care utilization, and long-term societal consequences for the communities most affected (Center for Disease Control, 2014).

Historically, injuries were seen as "accidents" that could not be predicted or effectively prevented. Over the last 100 years, however, a succession of conceptual revelations by vanguards such as Hugh DeHaven, John E. Gordon, and William Haddon has resulted in a fundamental shift in how we view violent injuries (Dicker & Juillard, 2017). Violent injuries do not affect communities equally. Communities of color, particularly African American and Latino/Latina communities, are disproportionately affected, a disparity that is additionally compounded by geographic and economic inequality (Beard et al., 2017; Walker, McLone, Mason, & Sheehan, 2016; Wintemute, 2015). In studying any disease, recognition of increased risk for certain populations provides an opportunity for identification of prevention targets and treatment efforts. Injury, and in particular violent injury, can be approached in a

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similar manner to any other public health problem by applying known frameworks that help identify these opportunities.

The public health framework for disease control focuses on monitoring a condition, identifying modifiable risk factors associated with developing that condition, developing interventions to mitigate those risk factors, and then evaluating the impact of these interventions after they are implemented. Gordon (1949) demonstrated that violence behaves like other diseases described by the epidemiologic framework of host, vector, and environment factors. Haddon (1980) built on this development by creating a matrix that allows us to objectively deconstruct an injury event and identify moments that provide opportunities for intervention (Table 1.1).

Table 1.1 Haddon's matrix applied to gun violence as a public health problem

	Human factors	Agent factors	Environmental factors
Pre-event	Mandated gun safety training	Gun storage education	"Common sense" handgun regulation
	Physician implementation of firearm safety questions	Fingerprint/other recognition so individual guns can only be operated by specific people	Targeted community-level poverty reduction strategies
	Identification of high-risk individuals		Address socioeconomic and other social determinants of health
	Individual risk reduction through improved employment, education retention, and housing		
	Mental health resource referrals		
Event	Community training on identification of high-risk scenarios and taking cover/sheltering to minimize exposure to injury	Reduce firearm lethality by limiting caliber, velocity, and range capabilities	Shot detectors to notify enforcement and health-care personnel of a potential gun violence victim
Post-event	"Stop the Bleed" campaigns or other layperson prehospital trauma training for high-risk communities	Limit gun capacity to re-fire rapidly	Locate ambulance deployment centers to facilitate rapid prehospital trauma response times
			Training of prehospital medical personnel to specifically treat gunshot wounds
			Trauma center proximity in high-risk areas

Environmental factors can include social, political, and cultural factors. Although some versions of Haddon's matrix include this as a fourth factor category, we have included it here under "Environmental Factors"

Another evolution of the Haddon's matrix includes a "fourth dimension" that evaluates value criteria (feasibility, cost, effectiveness, etc.) for each proposed intervention to aid decision-making

The use of such a matrix facilitates the breakdown of assumptions that may prevent us from identifying risk and protective factors that are potentially modifiable through a public health intervention.

A multitude of factors have been described that influence increased risk for violent injury. These factors include male gender, unstable family structure, housing instability, low socioeconomic and education status, unemployment, previous incarceration, and substance abuse (Richardson, St Vil, Sharpe, Wagner, & Cooper, 2016). One of the strongest predictors of future violent injury is previous violent injury (Cheng et al., 2003; McCoy, Como, Greene, Laskey, & Claridge, 2013). Additionally, those who have been injured previously are more than twice as likely to die from violence if reinjured (Griffin et al., 2014). Identification of a high-risk group with potentially modifiable risk factors provides a compelling argument for a public health approach to violent injury control. It is upon this premise that hospital-based violence intervention programs (HVIPs) were built. Because hospital trauma centers are the primary treatment destination for violently injured individuals, trauma centers have immediate access to one of the highest-risk groups for future injury, providing a golden opportunity for prevention and intervention efforts. Recognition of this opportunity has led to the creation over the last 15 years of numerous HVIPs, which now number over 30 nationally and are growing in number. These programs have demonstrated that successful application of injury prevention principles can stop the "revolving door" of violence and reduce the recurrence of violent injury in high-risk populations through risk factor modification.

Application of Injury Prevention Principles to Violence Prevention

There exists a framework by which we can envision the factors that affect health. The framework takes the shape of a pyramid, with the bottom of the pyramid representing the factors that have the greatest impact on health and the top those that have the least impact. At the very bottom of this pyramid, the foundation of health or, alternatively, the foundation of an unwell state is where we find socioeconomic factors. Communities that suffer from negative factors often are struggling with poverty, food deserts, lack of employment opportunities, poor education, substandard housing, neighborhoods that lack green space, poor air quality, health-care inequities, and limited transportation options. The communities most affected by these substandard conditions often experience poor health and chronic disease across the life span. Each generation develops chronic diseases in different age groups: high infant mortality, asthma, violence, obesity, poorly controlled diabetes, early pulmonary and cardiac disease, and late-presentation cancers. It is when we see communities in which each generation suffers in some way from health inequity that we should acknowledge that this amounts to an injustice in health and, relatedly, wealth. An unhealthy society is unable to maintain gainful employment or focus on educational studies. Failure to address this inequity is perhaps a profound example of structural racism.

In this framework of generational chronic disease, violence is at the core, with disproportionate suffering among young people who are just becoming economically independent. For individuals and the communities in which they reside, violence is recurrent and thereby can be considered as a chronic public health crisis.

The factors at the bottom of the pyramid, however, *can* be addressed and *are* modifiable. This premise serves as the underlying principle of hospital-based violence intervention programs (HVIPs). Individuals who are victims of interpersonal violence enter trauma centers with several modifiable risk factors that are associated with sustaining a violent injury. The hospital setting offers a "teachable moment" for these individuals because immediately after injury they are particularly and acutely keen to make changes to ensure their future safety. HVIPs seize this "teachable moment" by providing individuals with culturally competent Case Managers, who are poised to provide long-term case management and mentorship. In addition, Case Managers or Intervention Specialists assess needs and shepherd participants through risk reduction resources found through government bodies and partnering community-based organizations (CBOs). The hypothesis of this approach rests on the notion that reducing the risks associated with violent injury, in conjunction with providing intensive case management and addressing mental health issues, can reduce the risk of violent injury recidivism.

HVIPs also rely upon a trauma-informed care approach. This type of approach acknowledges that many victims of violent injury have been subjected to traumatizing events often for a lifetime, which can lead to complex posttraumatic stress disorder, anxiety, depression, substance abuse, and other serious mental health challenges. HVIPs often incorporate mental health care into their programs' core offerings or have close partnerships with mental health services, such as Trauma Recovery Centers. Addressing mental health issues is often fundamental for an individual to begin the path to risk reduction in other areas, such as employment.

This public health approach in HVIPs has been endorsed by the American College of Surgeons Committee on Trauma as a best practices model for violence prevention. Measures of success of violence prevention programs that lead to this endorsement frequently rest on the evaluation of a program's ability to recruit and sustain participants, catalogue risks associated with violent injury, address those risks, and ultimately reduce recidivism. A number of programs have demonstrated success, five of which used randomized controlled trials (RCTs) as their methodology. The two longest running RCTs demonstrated a clear reduction in either recidivism or overall hospital visits (Cooper, Eslinger, & Stolley, 2006).

Many programs have not used RCTs to evaluate success because a lack of equipoise perceived by both communities and occasionally by institutional review boards has prevented the use of randomization. The sentiment stems from the sense that providing these types of grassroots services will likely not cause harm and may indeed be helpful. Alternatively, not providing the option to participate in services has been perceived as a potential inequity. This held true for the San Francisco Wraparound Project. When the program was in its formative stages, community members involved in hiring the first Case Manager made a clear request to offer the brand-new services to all at-risk youth and young adults.

Several non-randomized program evaluations have demonstrated a significant reduction in violent injury recidivism and a reduction of the risks associated with violence (Cheng et al., 2008; Cooper et al., 2006; Juillard et al., 2016). There have also been data to support the cost-effectiveness of these programs (Juillard et al., 2015). There is an ongoing study evaluating the intermediate outcomes of six HVIPs from different regions of the country. This observational study aims to compare risk reduction rates among US regions, genders, ethnicities, and age groups. In the future, programs will be evaluating important qualitative measures, such as clients' perceived value of the programs and improvement in resiliency after program participation.

The October 2017 *Bulletin* of the American College of Surgeons features "Violence intervention programs: A primer for developing a comprehensive program for trauma centers" (Dicker et al., 2017). The *Primer* describes a step-by-step approach to create and sustain an HVIP and addresses critical components, such as engagement in city, community, and hospital stakeholders; the importance of early evaluation; potential funding sources; and recruitment of Case Managers/Intervention Specialists. The Committee on Trauma's website highlights an expanded version of this *Primer* and provides a template PowerPoint presentation on important features in building a program that can be used with a broad audience of stakeholders.

The National Network of Hospital-Based Violence Intervention Programs (NNHVIP) represents over 30 programs that are similar in approach and mission in hospital-based violence intervention. NNHVIP offers consulting services to fledgling programs and provides opportunities for the member programs to grow through working group participation. NNHVIP also holds a national conference with Cure Violence. See "Future Directions" below for more information.

There are ethical considerations when starting and sustaining a violence intervention program. The first was touched on earlier in the discussion of inequalities and structural racism (see above section "Application of Injury Prevention Principles to Violence Prevention"). Even in some of the most "progressive" and sympathetic trauma centers, there exists an underlying current among many providers that violence is somehow inevitable and expected. This cultural moré requires considerable effort in educating people on the notion of modifiable risk factors and social determinants of health. It can take significant time to change perceptions, but providing examples of best practices can set a trauma center on the road to giving violence intervention a chance to break down these preexisting beliefs. It is imperative that these educational sessions be led by the communities most affected by violence. Audiences include health-care providers, hospital administrations, city officials, and students.

It is also important to begin to break down inherent mistrust toward the health-care system that may exist in the community. This mistrust is sometimes deeply rooted. Program officials should visit community centers and CBOs to express the premise of the program, i.e., risk reduction through culturally competent case management. Communities affected by violence must have a voice in the formation of these programs because they are the people ultimately affected by the outcomes. These community partnerships are vital to participants' success in HVIPs.

A lack of randomization as a result of the principle of equipoise has been discussed above. Inequity already runs deep in health care, affecting vulnerable populations. This inequity includes access to trauma care in some rural and urban areas. Quality aftercare, including acute rehabilitation, is also not readily available to our most vulnerable populations. HVIPs focus largely on the period of aftercare. In the absence of evidence that these programs cause harm, randomization will remain difficult to justify in many settings.

The backbone of HVIPs is long-term, culturally competent case management. The bond that forms between the participant and the Case Manager/Intervention Specialist is often a life-altering relationship for the participant. Privacy and confidentiality are at the heart of this trusted relationship and must be maintained. The National Institutes of Health offers a Certificate of Confidentiality that protects programs and the evaluation process from subpoena. Many programs take advantage of this very useful protection. Of course, providers are still bound as obligate reporters for homicidal or self-harm declarations.

Finally, programs are frequently and fortunately part of a larger effort toward violence prevention in a city or community. Law enforcement is often part of that comprehensive effort. Walking this line of having a relationship with law enforcement but maintaining client trust is challenging, but it is manageable through good communication about boundaries. HVIPs very commonly participate in these broader efforts but are still held to the principles of privacy and confidentiality and to the Health Insurance Portability and Accountability Act (HIPAA) of 1996 when engaging with law enforcement or other community groups. See "Navigating Community Relationships While Maintaining Trust" below for more information.

The basis for violence as a public health issue began to gain recognition after some early and groundbreaking work by Dr. Deborah Prothrow-Stith, who recognized several decades ago that violence, like other health issues, had modifiable risk factors. Subsequently, Surgeon General C. Everett Koop and the Department of Health and Human Services published "Youth Violence: A Report of the Surgeon General" in 2001 (United States, 2001). More than 30 years ago, there was evidence that a public health approach was more effective and safer than approaches in the same genre as a "Scared Straight" type of program. Data in the literature have continued to question the value of programs that use boot camp methodologies. There has been significant concern as to the potential harm that these programs can create by recreating the earlier trauma and triggering posttraumatic stress or other consequences (Purtle, Cheney, Wiebe, & Dicker, 2015).

Navigating Community Relationships While Maintaining Trust

One of the fundamental characteristics of any successful HVIP is the strength of its connection to community stakeholders. Partners may include CBOs, institutional partners in the health care and education sectors, and governmental partners. Because working with HVIP clients commonly involves overlap with the criminal

justice system, cultivating a strong relationship with this governmental entity is critical for client advocacy. At the same time, this relationship must be carefully navigated to protect client information and community trust. Managing a solid relationship with key personnel from the criminal justice system while maintaining the trust of clients and the communities served by the HVIP can not only represent an ethical challenge but also put frontline workers at risk if not properly handled.

One essential component of establishing boundaries is creating a memorandum of understanding (MOU) with criminal justice groups that delineates the limits of communication. As hospital-based frontline workers, HVIP Case Managers and Intervention Specialists are often responsible for adhering to patient privacy standards defined by HIPAA. As such, partners (including criminal justice partners) need to understand and agree to work with HVIPs under the condition that personal, identifying, and sensitive client data may not be shared by HVIP workers with any agent in the criminal justice system. This condition should be explicitly stated in the MOU and agreed to by all involved parties. If the client and Case Manager feel that information may potentially benefit the client in terms of court advocacy, sentencing, or other criminal justice-related activities, many HVIPs have an optional written release of information that allows specific information to be shared at the client's request. Again, this type of agreement needs to be at the client's request and under his or her ultimate control; for example, the client must be able to terminate the agreement at any time.

The potential consequences of mishandling these relationships can be severe. HVIPs are only as effective as the trust put in them by the communities they serve. Culturally competent case management requires a deep understanding of the community and reliable information given by the client to facilitate personalized and successful peer mentoring. If clients believe that their Case Manager or any member of the HVIP team may share sensitive information, not only will that ruin the client-Case Manager relationship, but years of established community trust could rapidly unravel, yielding the HVIP ineffective (at best) or a community anathema (at worst). Additionally, Case Managers or Intervention Specialists associated with any report (false or true) of sharing protected client information with the criminal justice system may find themselves at increased personal risk during their work in the community. Selecting Case Managers who already have political and social clout in their communities mitigates some of this risk, but privacy must still be protected.

Building Relationships Among Community-Based Organizations

One of the fundamental principles in applying the Wraparound model to violence intervention and prevention is that intensive, individualized case management connects clients to services that are embedded in their communities (Winters & Metz, 2009). Ideally, relationships should be initiated with CBOs even before the formation and launch of the HVIP. One successful approach has been to have the founding leadership of the HVIP reach out to CBOs through meetings, informational

interviews, and community gatherings to gather perceptions and opinions on the primary needs of violently injured people in marginalized populations. Developing these personal relationships prior to the formal launch of the HVIP allows CBOs to influence the HVIP's development from inception. Some HVIPs have even arranged for a CBO-led panel to interview candidates and participate in the selection of the first HVIP Case Managers. This approach ensures that the HVIP Case Managers are respected and accepted by a diverse stakeholder group, which will ultimately facilitate their ability to connect HVIP clients to services in an efficient and collaborative manner. This approach, if carefully done, can also increase the likelihood that the HVIP Case Managers are individuals who are not overly aligned with certain geographic parts of the city or certain communities within the same city. HVIP Case Managers need to have the ability to cross over certain community divisions that may historically exist and be able to access and support all populations who are at high risk for violent injury.

Once the HVIP is established, maintaining these carefully cultivated relationships with CBOs is essential. Connections should be reenforced and strengthened through regular meetings between HVIP Case Managers and leadership. As with any complex human system, misunderstandings and communication breakdowns can and will occur; having a system in place to mitigate or rapidly address any issues is crucial. As the HVIP grows and accumulates more staff, the number of relationships increases, simultaneously increasing the potential for miscommunication. One method of streamlining communication with community partners is to designate certain Case Managers as the "lead" with specific CBOs, thus allowing the channeling of information through a consistent person. This approach has been helpful in reducing duplicative or conflicting messages.

Future Directions

National Network for Hospital-Based Violence Intervention Programs

As HVIPs steadily increased in number over the past 10–15 years, some of the more mature programs recognized a need for increased collaboration and coordination, both to share best practices and to improve existing organizations, as well as to provide a guiding resource for nascent HVIPs. In 2009, the nine programs existing nationally that had been operational for more than 1 year convened to facilitate the development of a network, the National Network of Hospital-based Violence Intervention Programs (NNHVIP). This initial meeting allowed the most established programs in the country to codify the key components of an HVIP to support existing and emerging programs (Martin-Maller & Becker, 2009). Since its inception, the NNHVIP has held annual national meetings (The Healing Justice Alliance)

featuring presentations by Case Managers, program leadership, program evaluators, and keynote speakers and addresses by former and current clients. Additionally, the NNHVIP has several working groups to guide high-level advances in specific aspects of HVIPs, such as workforce development, policy, and research and evaluation. Current priorities include standardizing data collection practices to facilitate rigorous program evaluation, establishing credentials for violence intervention professionals, advocating for payment or reimbursement for HVIP case management services, and promoting trauma-informed mental health services for victims of violence.

NNHVIP has forged a relationship with the American College of Surgeons Committee on Trauma. The MOU allows for the NNHVIP to offer consulting and mentoring services, among other items, to fledgling programs. This MOU was established around the time that the Committee on Trauma published its abovementioned *Primer* in the October 2017 *Bulletin* of the American College of Surgeons. The *Primer* aimed to provide immediate assistance to interested trauma centers. Other efforts between the two groups include research endeavors and advocacy.

The Committee on Trauma's Injury Prevention and Control Committee has a working group dedicated to hospital-based violence intervention. This group developed the abovementioned *Primer* and is currently working on slide sets for a speakers bureau and setting a research agenda (Dicker et al., 2017). In addition, several working group members are part of the committee working on revising the Prevention chapter in the *Resources for the Optimal Care of the Injured Patient* (Rotondo, Cribari, & Smith, 2014). This book provides guidelines by which trauma centers are verified by the American College of Surgeons. Revisions of the Prevention chapter may reflect the endorsement of the Committee on Trauma regarding the current best practices model for HVIPs that was highlighted in the October 2017 *Bulletin* of the American College of Surgeons.

Strengthening Program Evaluation Practices

There is mounting evidence for the effectiveness and cost-effectiveness of HVIPs in terms of reducing reinjury, aggression, arrests, and convictions for violent crime and saving costs associated with hospitalizations due to violent injury (Cheng et al., 2008; Cooper et al., 2006; Juillard et al., 2015, 2016). Despite this, there is still a need for further demonstration of effectiveness and individual program evaluation.

Traditionally, the gold standard study design used to evaluate a health intervention is the RCT. While there are a few examples of the use of an RCT design to evaluate an HVIP, an RCT may not be feasible in many settings, as explained above (see section "Application of Injury Prevention Principles to Violence Prevention" above) (Cheng et al., 2008; Cooper et al., 2006). For example, if a program has the bandwidth to consider all eligible persons for enrolment in HVIP services, restricting

these services to only part of the eligible population may violate the principle of equipoise, as explained above. For this reason, other evaluative models need also to be considered, such as counterfactual models, retrospective case-control studies, pre-/post-implementation studies, and quasi-experimental study designs, such as a stepped-wedge approach, which can be used to control for bias.

Another challenge inherent in designing program evaluation studies is the lack of standardized screening processes and the associated ability to control for case mix. Often, HVIPs have only limited resources and therefore restrict inclusion criteria to clients who the Case Managers consider to be "high risk." The lack of a standardized approach to screening to date has left screening largely to the discretion of the program and sometimes the Case Manager. Correspondingly, if researchers evaluate the reinjury rates of a program that focuses on high-risk clients and compares the rates with those in non-high-risk clients not enrolled in the program, they may find that the enrolled cohort has a higher reinjury rate (despite excellent HVIP support). However, this finding may simply be due to higher risk in the study group than in the clients who were not offered services. This selection bias is difficult to control for without a formalized approach to risk assessment. Current opportunities for strengthening program evaluation include the development of tools to facilitate initial screening for risk level that may ultimately provide a measure of risk that can be applied to control for case mix through the evaluation process.

While reinjury has historically been the primary outcome most valued in program assessment, this metric has several limitations. Simply waiting for a short period of time for a reinjury to occur may result in underreporting and under-capture of injury events because reinjury may not manifest for several years. Consequently, programs may have to wait years to collect enough data to allow for adequate evaluation. Development of a standard model for the theory of change linking HVIP services to reduction in reinjury may provide specific process measures that can serve as shorter-term surrogates for interim program evaluation.

Additionally, every HVIP has clients who have succeeded on many levels, only to have an unfortunate event happen that leads to reinjury, despite aggressive risk factor modification and marked improvement in quality of life. There are major gains to be made in terms of educational achievement, job readiness, community health, reduction in interactions with the justice system, mental health, resilience, reduced substance abuse, and other crucial quality-of-life metrics that are simply not captured by measuring reinjury alone. Improved identification of these metrics and development of standardized tools to measure changes in them are critically needed. One preliminary step that is underway is the qualitative assessment of program effectiveness through client interviews. Allowing themes to emerge through the clients' voices may provide insight into program value that is hard to measure, such as the quality of peer mentorship and the impact of Case Manager role modeling on clients' lives. Finally, long-term follow-up of clients up to 5 years after the HVIP intensive case management experience is needed to better understand the successes and challenges of individual HVIPs in creating lasting change for their clients.

Sustainability

The hallmark of a mature HVIP is the institutionalization of its funding through incorporation into existing infrastructure, such as city, hospital, or other institutional budgets. Early government and local stakeholder engagement can play an important role in developing these relationships and crafting program evaluation plans that meet stakeholder needs. The prospect of institutionalizing an HVIP can be made more enticing to stakeholders by increasing recognition of the value of HVIPs and strong advocacy at the state or local level for health-care reimbursement systems to support case management services. Broad HVIP participation in advocacy groups, such as the NNHVIP, is necessary to create the policy change underlying these initiatives.

Clinical Pearls

- Violence is a public health issue that can be addressed by focusing on modifiable risk factors associated with violent injury.
- Social determinants of health can affect the health of entire communities by adding to the burden of chronic disease states within each generation; violence largely affects youth and young adults.
- Hospital-based violence intervention programs work within a public health framework to provide culturally competent case management and collaborate with community partners to reduce risk factors.
- Broadly speaking, health-care inequities, such as risk for violence, can be addressed by focusing on socioeconomics and not only considering access to care but also making provisions for aftercare that can lead to risk reduction.

References

Beard, J. H., Morrison, C. N., Jacoby, S. F., Dong, B., Smith, R., Sims, C. A., et al. (2017). Quantifying disparities in urban firearm violence by race and place in Philadelphia, Pennsylvania: A cartographic study. *American Journal of Public Health, 107*(3), 371–373. https://doi.org/10.2105/AJPH.2016.303620

Center for Disease Control. (2014). *Injury prevention and control. Data and Statistics (WHISQARS)*. Available at http://www.cdc.gov/injury/WISQARS/. Accessed 17 Aug 2014.

Center for Disease Control. (2016). *Injury prevention and control. Data and Statistics (WHISQARS)*. Available at http://www.cdc.gov/injury/WISQARS

Cheng, T. L., Haynie, D., Brenner, R., Wright, J. L., Chung, S. E., & Simons-Morton, B. (2008). Effectiveness of a mentor-implemented, violence prevention intervention for assault-injured youths presenting to the emergency department: Results of a randomized trial. *Pediatrics, 122*(5), 938–946. https://doi.org/10.1542/peds.2007-2096