The Unrelenting Epidemic of Firearm Violence
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Firearm violence in the US is an unrelenting clinical, public health, societal, and political concern of major proportion. The morbidity and mortality attributed to firearms have increased to such a degree; have adversely and profoundly affected individuals, families, and communities; and have exceedingly important consequences for all of society. The frequent occurrence of firearm violence and the repetitive episodes of mass shootings highlight the perverseness of firearms and the accessibility of assault weapons and serve as grim reminders that every person in the US is potentially vulnerable to firearm violence.

According to data from the Centers for Disease Control and Prevention, more than 45 000 firearm-related deaths occurred in the US in 2020, representing the highest reported rate (6.1 deaths/100 000 population) since 1994, with more than half of deaths due to suicide and more than 40% due to homicide. Provisional data indicate that these deaths have increased in 2021, reaching more than 48 000 firearm-related fatalities in the US, which would reflect nearly the same number of deaths as those attributable to influenza and pneumonia (53 000) and kidney disease (52 000) in 2020.3 Firearm fatality rates also demonstrate critically important inequities; in 2020, the firearm homicide rate among Black individuals (26.6/100 000) was substantially greater than the rate among White individuals (2.2/100 000).5

The number of nonfatal firearm injuries also is substantial. From 2018 through 2021, an estimated 100 000 persons experienced fatal or nonfatal firearm injuries each year, with nonfatal injuries thought to represent more than twice the number of fatal injuries, although the ratio of nonfatal to fatal injuries may be higher. For example, in Chicago, 797 homicides were reported in 2021, along with more than 3500 reported shooting incidents, representing one of the most violent years on record.5

This issue of JAMA includes 11 scholarly Viewpoints that provide state-of-the-science information about a wide range of issues related to firearms and violence in the US.

Three articles in this issue describe the epidemiology of firearm injuries and homicide. Kaufman and Delgado summarize current data on firearm injuries in the US, including homicides, suicides, nonfatal injuries, mass shootings, and shootings by law enforcement. The authors highlight the limitations of available data sources and propose measures for a comprehensive system to track firearm injury and death. This proposed system could expand national data infrastructure to provide reliable, real-time information on the incidence, epidemiology, health outcomes, and societal effects of firearm injuries and deaths to inform and evaluate effective interventions.

In their article on firearm-related suicide, Betz and colleagues report that among the 45 222 firearm deaths in the US in 2020, 60% were due to suicide, that among the 45 979 suicide deaths in 2020, 51% were due to firearm injury, and that among the 2797 youth aged 10 to 19 years who died by suicide in 2020, 42% used a firearm, almost always one that belonged to a family member. The authors emphasize that firearm-related suicide is preventable and that approaches to prevention should be comprehensive and data-informed, should include culturally informed interventions that engage health care systems and firearm owners outside of clinical settings in reducing firearm suicide risk, and should involve lethal means safety interventions, in which access to firearms and other lethal methods is reduced, as an evidence-based approach to reducing suicide risk.

In a Viewpoint based on data from the US National Violent Death Reporting System, McPherson summarized findings on homicides among American Indian and Alaska Native populations, including data on 2226 homicides in 34 states and the District of Columbia during 2003 to 2018. The overall homicide rate for American Indian and Alaska Native persons (8.6/100 000) was disproportionately higher than the rate among other racial and ethnic groups, such as White persons, but was substantially lower than the rate for non-Hispanic Black persons. A firearm was used in nearly half (48.4%) of homicides involving American Indian and Alaska Native individuals, with a higher percentage of firearm-related homicides among men than women. Of the homicides involving American Indian and Alaska Native adult women, 55.4% were related to intimate partner violence.

Two Viewpoints in this issue address important topics that have received increasing and long overdue attention. Mitchell and Aronson highlight the significantly disproportionate effects of firearm violence on Black communities, including that homicide is the leading cause of death among Black males aged 15 to 34 years, and that the majority of these fatalities are due to firearms. The authors also describe important racial inequities related to the criminal legal system, whereby Black individuals experience a far greater risk of morbidity and mortality when encountering law enforcement. In addition, they discuss deaths that occur in law enforcement custody and recommend improvement in data collection for these fatalities, including revising the death certificate to specifically capture deaths that occur within the criminal legal system.

In another Viewpoint, Song points out that the economic considerations (the “business case”) for reducing firearm injuries have remained largely unexplored, even though the total economic toll of firearm injuries in the US is estimated to be $557 billion annually (2.6% of gross domestic product), 88% of which...
is attributed to quality-of-life losses among those who sustain firearm-related injuries and their families. The author reports that among US workers and retirees with employer-sponsored health insurance, each nonfatal firearm injury is associated with an estimated $30 000 in direct health care spending per survivor in the first year alone; losses in revenue and productivity are estimated to cost employers $535 million per year nationwide.

Meaningful reductions in firearm-related morbidity and mortality, inequities, and societal costs will not occur without effective legislative and regulatory actions, addressed in 3 Viewpoints in this issue. In their Viewpoint, Webster and Gostin11 explain the June 2022 US Supreme Court decision in New York State Rifle & Pistol Association v Bruen, in which the Court struck down a 109-year-old New York law requiring “proper cause” (a special need for self-defense) for obtaining a license to carry a concealed weapon in public. The authors indicate that the most immediate effect of the Bruen decision will be that New York and 7 other states with discretionary licensing for concealed carry of firearms will have to discontinue “good cause” requirements and suggest that these states should consider whether their laws need to be reformed to adequately screen out individuals most likely to be violent or unsafe with firearms.

In their Viewpoint that summarizes selected key literature on state-level firearm legislation published since 2016, Galea and Abdullah12 comment that given the political opposition to limiting access and availability of firearms, no state has enacted any single piece of legislation that has been singularly effective at reducing firearm-related harms. However, the authors report that the available evidence suggests that some state-specific laws and approaches together can reduce firearm-related harms, including laws that limit access to firearms by children, regulations to introduce checks in the process of firearm ownership, and efforts to limit access to firearms for persons demonstrated to be at risk of firearm-related injury to themselves or others. The authors also summarize findings of other studies highlighting some state-related laws and actions associated with increased risk of firearm-related mortality and morbidity, including stand your ground policies and, to a lesser extent, concealed carry laws.

Cook and Donohue13 note that even though mass public shootings in the US account for a small fraction of all firearm-related homicides, the proliferation of assault weapons and large-capacity magazines (for ammunition) have contributed to the recent surge in mass public shootings. The authors describe the previous and current efforts to implement measures highly specific to this problem of assault weapons and large-capacity magazines. They report that despite recent passage of Assault Weapons Ban of 2022 by the US House of Representatives, passage in the Senate may be unlikely, leaving to states the institution or expansion of bans on assault weapons or restrictions of the sale and possession of large-capacity magazines.

Three other Viewpoints provide thoughtful suggestions for new approaches for promoting violence prevention and advancing firearm-related research. Sakran and colleagues14 report that while violence accounted for 75 121 deaths in the US in 2021, the lack of coordination of public health, law enforcement, social support, education, and mental health approaches nationally and locally results in missed opportunity and the inability to operationalize and tailor solutions in a comprehensive and effective way. The authors propose establishing an Office of National Violence Prevention to identify opportunities across the federal government to more proactively address all forms of violence (interpersonal violence, intimate partner violence, firearm-related injury including mass shootings, child abuse, or elder abuse) and to oversee the implementation of federal actions to make meaningful change, including regulatory reforms, new enforcement strategies, research and data collection, education and public awareness, and new programmatic efforts.

Cunningham and colleagues15 explore the role of academic medical centers in the prevention of violence and firearm-related morbidity and mortality. The authors suggest that beyond caring for patients with firearm-related injuries and morbidity, academic medical centers have a larger responsibility to the health of the patients and the communities they serve and have the opportunity to lead the provision of evidence-based firearm clinical care, educate the next generation of health care professionals in firearm injury prevention, support the needed biomedical firearm research in and beyond the hospital, and provide state and regional organizational voice and leadership.

In their Viewpoint describing a new era for firearm violence prevention research, Morral and Smart16 indicate that many critical research questions that have been neglected for decades (due to limitations on federal funding for firearm research beginning in 1996) may benefit from recent funding, including congressional appropriation of $25 million in annual funding for firearm violence research since 2019 and research investments by private philanthropies. The authors report that these resources have supported an unprecedented wave of new research on preventing firearm-related injury, and along with improvement in important data resources and growing interest among researchers representing diverse disciplinary perspectives, the field of firearm injury research is expanding, with important opportunities for discovery and life-saving policy innovation.

Two articles in the Medical News section discuss other aspects of firearm injuries. Rubin17 explores the relationship between firearm safety laws and suicide, including research on extreme risk protection orders, numbers and types of state firearm legislation, and youth-oriented state firearm laws. Ruder18 summarizes the development of guidance on responding to mass shooting events, with recommendations for improving care based on group consensus from trauma surgeons, emergency physicians, and emergency medical services (EMS) professionals. In the JAMA Patient Page, Walter19 describes the different types of firearm injuries and discusses some measures for decreasing the risk of firearm injury in homes.

These articles in this issue of JAMA provide information that should increase professional awareness and public understanding about firearm injuries and highlight the importance of approaching firearm violence prevention from medical and public health perspectives. As previously described,20 approaches by physicians and other health professionals may include patient-centered interventions and education, such as discussing the potential hazards of firearms and the importance of safe firearm storage; identifying patients at risk for violence, such as those with behavioral problems, emotional disorders, and substance use disorders; and screening for domestic violence, child abuse, and elder abuse. Some evidence suggests that patients may be receptive
to some of these approaches. According to a 2019 survey of 4030 US adults residing in households with firearms, 76% to 89% reported that clinicians should “sometimes” or “always” discuss firearm safety with patients as part of routine care in certain clinical scenarios (such as if the patient or family member is at risk for suicide, has mental health or behavioral problems, has alcohol or substance use disorders, has been affected by domestic violence, or has dementia). Other approaches for health care professionals may include involvement in community, state, or national initiatives and activities that support violence prevention from a public health perspective and—depending on the individual physician’s values, perspectives, and beliefs about firearms—consideration of supporting regulatory and legislative measures that limit the availability of firearms.

Without deliberate action, firearm-related violence will not abate. As the articles in this issue of JAMA highlight, addressing the challenges, devastation, and complexity of firearm violence will require comprehensive, evidence-based, adequately funded, multidisciplinary approaches involving physicians and other health care professionals, public health leaders, researchers, criminal justice experts, and social scientists partnering with legislators, policy makers, and community leaders. The devastating and unrelenting epidemic of firearm-related violence merits urgent attention and action.

ARTICLE INFORMATION

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Respiratory Support in the Time of COVID-19

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COVID-19 infection commonly causes pneumonitis, which can result in acute hypoxic respiratory failure (AHRF). While many hospitalized patients recover after only requiring conventional oxygen therapy (typically nasal cannula or face mask oxygen), a number of patients require additional noninvasive respiratory support, such as high-flow nasal oxygen (HFNO), continuous positive airway pressure (CPAP), and noninvasive ventilation (NIV). Despite this support, however, a significant proportion of patients experience clinical deterioration necessitating invasive mechanical ventilation and these patients are at high risk of death and significant morbidity.1

The optimal initial method to provide noninvasive respiratory support to patients with COVID-19-related AHRF is subject of significant controversy. Early in the pandemic, there was marked variability in guideline recommendations on the use of noninvasive respiratory support,2 particularly HFNO. The decision to use noninvasive respiratory support was also constrained by resource capacity and concerns regarding aerosol generation and the perceived risk of nosocomial infection, although emerging evidence did not indicate higher risk of environmental contamination.3 As a result, the use of all forms of noninvasive respiratory support became widespread.

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