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Curbing Gun Violence

Lessons From Public Health Successes

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THE TRAGIC SLAUGHTER OF INNOCENTS IN NEWTOWN, Connecticut, has horrified and refocused the nation on the burden of gun violence. Each year in the United States, more than 30 000 individuals are killed by guns¹ (homicides, suicides, and unintentional fatalities)—85 deaths per day plus many hundreds of nonfatal injuries. Gun homicide alone causes 11 000 deaths each year,¹ more than all US troops killed throughout the last decade in Iraq and Afghanistan. Remarkably, the 26 deaths in Newtown represent fewer gun homicides than the daily US average.

The Newtown shooting has rekindled a national discussion about gun policy. Most proposals focus on gun ownership such as a ban on rapidly firing assault weapons, piercing bullets, and high-capacity ammunition clips; waiting periods for firearm purchases; and universal background checks for all gun sales and transfers. This focus on gun ownership has been controversial due to Second Amendment interpretations and regional, partisan, and personal preferences. Although such commonsense regulations on ownership warrant implementation, a broader public health perspective is imperative. Gun violence arises from sociocultural, educational, behavioral, and product safety issues that transcend gun ownership alone. Addressing this crisis will require a comprehensive, multidimensional strategy. Toward that end, much can be learned from prior public health successes in changing the prevalence, social norms, and cultures of harmful behaviors.²⁻⁶ These major achievements—in the realms of tobacco, unintentional poisoning, and motor vehicle safety—provide a set of evidence-based, successful tactics for immediate application to gun violence (TABLE).

Between 1966 and 2010, the prevalence of cigarette smoking among US adults was reduced by more than half from 43% to 19%.⁷ This remarkable success was achieved by multicomponent approaches across a range of public health domains.^{2,4} For example, taxation produced better representation of long-term societal costs in the purchase price of tobacco products and, crucially, secured funding for prevention efforts. Existing federal and local taxes on firearms and ammunition are neither comprehensive nor representative of the true external costs of gun ownership.⁸ A new, substantial national tax on all firearms and ammunition would provide stable revenue to meaningfully target gun violence preven-

tion. This revenue should fund a national endowment to benefit those harmed by gun violence and their families; a sustained public awareness campaign to increase gun safety, reduce gun violence, and assist in recognition of at-risk individuals; and stronger enforcement of existing gun laws. Such efforts would not necessarily be intended to reduce ownership, a key regulatory and political distinction.

A multicomponent initiative to modify sociocultural norms also played a critical role in reducing tobacco use. Through much of the 20th century, cinema, television, and advertisements glorified cigarettes as “symbols of modernity, autonomy, power, and sexuality.”³ Strategic use of media, education, celebrities, peers, teachers, and physicians served to shift sociocultural norms toward cigarettes as symbols of “weakness, irrationality, and addiction.”³ An analogous campaign could equate gun violence with weakness, irrationality, and cowardice. In today’s society, US adults and especially youth view a staggering amount of graphic violence in television shows, commercials, movies, and video games, much of it idolized and glorified. A generation ago, many popular movie heroes smoked. Today, many movie heroes shoot at other people. To protect children, current policies strictly restrict obscenities and sexual imagery, yet remain permissive of gun violence. In a recent poll, 4 of 5 US adults agreed that decreasing depictions of gun violence in television shows, movies, and video games would be “somewhat” or “very effective” at preventing mass shootings; notably, this conviction spans partisan lines.⁹

Efforts to prevent unintentional poisonings^{5,6} afford additional off-the-shelf approaches for immediate application to gun violence. These approaches include safety measures to limit access to appropriate users, product changes to reduce toxicity potential, routine education and counseling by physicians, and national networks for education and prevention (Table). Together, the Poison Prevention Packaging Act of 1970 and related public health measures produced a remarkable 75% reduction in childhood deaths from poisonings over a 20-year period.⁵

The public health strategy to reduce motor vehicle deaths offers further instructive analogies.³ Culminating years of effort, systematic safety standards³ were implemented for

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Table. A Public Health Approach to Reducing Gun Violence

Established Public Health Success	Application to Gun Violence Reduction
Tobacco	
Taxation	Taxation of guns and ammunition to better represent societal costs and provide funding for gun safety and violence reduction programs
Change social and cultural norms, with particular focus on protecting youth	Change depictions of gun violence in advertising, television, movies, video games, and other media; broad media and spokesperson campaigns on the consequences of gun violence
Media and educational campaigns	Sustained, multicomponent media and educational campaigns to reduce gun violence, gun suicides, and unintentional fatalities, including how to recognize at-risk persons
Patient education and counseling	Routine primary care education and counseling to increase gun safety and prevent gun violence
Unintentional poisoning	
Childproof safety packaging	Key or security code locking devices on guns
Toxicity reduction (eg, reducing the numbers of pills per bottle, or the concentrations of poisons)	Reduced magazine clip size; restrictions on rapid-fire assault rifles
Routine pediatrician counseling on safe storage and use	Routine primary care education and counseling on safe and secure storage and use of guns/ammunition and on recognizing at-risk behaviors
National Poison Control Center Network	National and community-based prevention programs, including well-publicized hotlines for discussing potential at-risk family members or friends
Motor vehicle safety	
Crash safety standards	Reduced magazine clip size; restrictions on rapid-fire assault rifles
Automobile safety inspections	Periodic safety inspections of firearms, including documentation of home storage and safety measures
Passive protection (padded interiors, collapsible steering columns, air bags)	Smart guns with automatic security or locking devices
Active protection (seat belts, child seats, motorcycle helmets)	Regulations for safe storage of guns and ammunition
Driver education	Mandatory gun safety classes
Licensing	Licensing with periodic renewal, including safety test and background check
Speed limits	Reduced magazine clip size; restrictions on rapid-fire assault rifles
Drunk-driving legislation	Stricter legislation and penalties for violators of gun safety and gun violence laws
Age requirements	Minimum age requirements for use of certain guns and ammunition
Governmental and private advocacy (eg, Mothers Against Drunk Driving)	Strong, active nonprofit advocacy focused on reducing gun violence

the driver (eg, education and licensing, speed limits, seat belts and child seats, drunk-driving legislation), the product (safety glass, collapsible steering columns, padded interiors, shoulder seat belts, air bags), and the environment (crash cushions, divided highways) (Table). Together, these sensible, comprehensive policies reduced death rates per mile of driving by more than 90%.³ Policy aimed exclusively at the individual perpetrator of gun violence would be no more effective than a motor vehicle injury prevention strategy focused only on the individual driver in a motor vehicle crash.

The lessons from other public health successes do not mean that guns should be equated with cigarettes. Tobacco at any dose harms when used as intended, whereas guns can be used safely. The primary priority should be reducing gun violence. This distinction between ownership and violence is important for the design, focus, and implementation of these strategies. Safety standards for gun ownership still represent one key facet of a comprehensive approach—just as automobiles and medications are widely used but are subject to sensible safety policies. A coordinated, multidimensional public health strategy informed by other public health successes will reduce the risk of future tragedies like the Newtown shooting and the broader scourge of gun violence.

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REFERENCES

1. Hoyert DL, Xu J. Deaths. *Natl Vital Stat Rep*. 2012;61(6):1-65.
2. Mozaffarian D, Afshin A, Benowitz NL, et al. Population approaches to improve diet, physical activity, and smoking habits. *Circulation*. 2012;126(12):1514-1563.
3. Hemenway D. The public health approach to motor vehicles, tobacco, and alcohol, with applications to firearms policy. *J Public Health Policy*. 2001;22(4):381-402.
4. Institute of Medicine Committee on Reducing Tobacco Use. *Ending the Tobacco Problem: A Blueprint for the Nation*. Washington, DC: National Academies Press; 2007.
5. Walton WW. An evaluation of the Poison Prevention Packaging Act. *Pediatrics*. 1982;69(3):363-370.
6. Lovejoy FH Jr, Robertson WO, Woolf AD. Poison centers, poison prevention, and the pediatrician. *Pediatrics*. 1994;94(2 pt 1):220-224.
7. Centers for Disease Control and Prevention (CDC). Vital signs: current cigarette smoking among adults aged ≥18 years—United States, 2005-2010. *MMWR Morb Mortal Wkly Rep*. 2011;60(35):1207-1212.
8. Cook PJ, Ludwig J. The social cost of gun ownership. *J Public Econ*. 2006;90:371-390.
9. Gallup Politics. To stop shootings, Americans focus on police, mental health. <http://www.gallup.com/poll/159422/stop-shootings-americans-focus-police-mental-health.aspx>. Accessed December 23, 2012.