

Children, Youth, and Gun Violence: Analysis and Recommendations

Each year, more than 20,000 children and youth under age 20 are killed or injured by firearms in the United States.¹ Thousands of young people are shot by peers, family members, or strangers, either intentionally or unintentionally. Thousands more use guns to attempt suicide, and these attempts prove successful more often than suicides attempted by other means.² Countless other children and youth, though not injured or killed themselves, are survivors of gun violence, scarred by the effects of such violence in their homes, schools, or communities. Although children and youth are often victimized by gun violence, they also can become perpetrators, using guns to kill or maim others.

Despite a dramatic drop in violent crime throughout the mid- to late 1990s,³ youth gun violence remains a significant concern among the public, policymakers, and researchers. The school shootings of the late 1990s, most notably at Columbine High School in Littleton, Colorado, in April 1999, brought home the issue of youth gun violence to many Americans. School shootings remain very rare; between 1993 and 1998, they accounted for fewer than 1% of firearm deaths among children and youth under age 20. Youth gun violence is most likely to affect minority youth in inner cities and white youth at risk of suicide.¹ Nonetheless, for many families, school shootings have underscored the fact that no child is safe from gun violence.

This journal issue takes a comprehensive look at youth gun violence in the United States, reflecting on the costs and consequences that firearm homicides, suicides, and unintentional shootings impose on young people. The journal summarizes research in youth gun violence prevention, a field that encompasses the work of public health researchers, criminologists, psychologists, sociologists, and legal scholars. By exploring the issue of youth gun violence from these varied perspectives, this journal issue draws a clearer picture of which children and youth are at risk of perpetrating or being victimized by gun violence; how gun violence affects young people; and what society can do to reduce the number of youth gun injuries and deaths.

Although youth gun violence is only part of the larger problem of youth violence, guns merit special attention for two key reasons. First, the lethality and widespread availability of guns have worsened youth violence in this country. Gun violence is a significant cause of death and injury among young people, and imposes serious psychological, economic, and social consequences on children, families, and communities.

Second, until very recently, public debates about gun policies have not focused on the safety of children and youth. Instead, much of the debate has centered on the meaning of the Second Amendment to the U.S. Constitution and the appropriate use of guns by adults. The Second Amendment reads, “A well regulated militia,

being necessary to the security of a free state, the right of the people to keep and bear arms, shall not be infringed.” Although there is extensive political and judicial debate over whether these words confer an individual right to bear arms or a collective right pertaining to state militias,⁴ few would argue that the Second Amendment gives children a right to possess guns.

The wide-ranging public debate about the appropriate uses of guns in society also frequently overlooks youth, focusing instead on the circumstances under which adults should have the right to own and use guns. Gun rights supporters emphasize the legitimate uses of guns for sport and self-defense.⁵⁻⁷ But here again, few propose that children and youth—especially younger children—should have access to guns for any purpose without adult supervision. As one prominent pro-gun advocate said, “No one defends unsupervised access to firearms by children.”⁸

The key point is that when it comes to gun policy, according to both law and public opinion, children and youth are a special case. Given this consensus, and the enormous negative impact that gun violence has on children and youth, the goal of this journal issue is to help ensure that young people’s safety becomes a central focus of the public debate on gun policy.

This article attempts to provide readers with a sense of the broad scope and complexity of the youth gun violence problem—and the understanding that multiple approaches are required if America is to make significant progress in reducing youth gun homicides, suicides, and unintentional shootings. The article begins with an overview of the physical, economic, and psychological effects of gun violence by and against young people. A discussion of strategies for reducing youth gun violence follows. We recommend a range of approaches to address the problem—including changing behaviors regarding guns among parents, youth, and communities; adopting community-based law enforcement approaches; altering the design of guns to make them harder for children to access and use; and tightening laws regarding gun sales to restrict youth access to guns.

Because few youth gun violence prevention policies or programs have been evaluated to date, the strategies and recommendations presented in this article should be

viewed as starting points, not solutions. Hopefully, they will spur policymakers and the public to think broadly and creatively about how to reduce the death and injury toll from firearms among children and youth.

Gun Deaths and Injuries among Children and Youth

Guns are exceptionally lethal weapons, and they are easily available to young people. In the late 1980s and early 1990s, the lethality and availability of guns, particularly handguns, fueled a youth gun violence epidemic that peaked in 1994, when nearly 6,000 young people under age 20 died from firearm injuries.¹ That crisis has abated, but the number and rate of youth gun homicides, suicides, and unintentional shooting deaths remain unacceptably high in this country. Nearly 4,000 children and youth under age 20 were killed with firearms in 1998, and more than 18,000 others were injured.¹ Unfortunately, data regarding the extent of and circumstances surrounding youth gun violence are limited, and the need for better data remains a major concern. This section summarizes what is known about youth gun deaths and injuries, and makes recommendations for obtaining better information.

The Lethality and Easy Availability of Guns

Youth violence is a complex problem, influenced by psychological, economic, and social factors.⁹ But the problem is worsened substantially because of the lethality and accessibility of firearms. Guns cause deaths and severe injuries more frequently than knives, clubs, or fists, and with guns, even transitory violent impulses can have lethal consequences. Guns also are easily available to young people, even though federal law, with a few exceptions,¹⁰ prohibits those under 21 from purchasing handguns and those under 18 from purchasing rifles and shotguns or possessing handguns.¹¹ (See the table on federal firearm laws in this issue.) Exceptional lethality, combined with easy access, accounts at least in part for the fact that firearm-related injuries remain the second leading cause of death among children and youth ages 10 to 19. Only motor vehicle accidents claim more young lives.¹

The Lethality of Guns

Guns are more lethal than other weapons. For example, robberies committed with guns are 3 times more likely to result in a fatality than are robberies with knives, and 10

times more likely than are robberies with other weapons.¹² Between 1996 and 1998, there was 1 death for every 4.4 visits to emergency departments by young people under age 20 for treatment of a firearm injury. In comparison, the ratio of deaths to emergency department visits for nonfirearm-related injuries for the same age group was 1:760.¹

Guns have become more lethal over the past few decades. As detailed in the article by Wintemute in this journal issue, the increase in youth gun violence in the late 1980s coincided with the diffusion of high-powered semiautomatic pistols into the legal and illegal gun markets. These pistols had higher calibers (the higher a gun's caliber, the higher its destructive potential^{13,14}) and held more ammunition than their predecessors. Semiautomatic pistols, particularly inexpensive ones, quickly became weapons of choice for criminals, including young people; by 1999, these pistols accounted for one-half of all guns traced by the U.S. Bureau of Alcohol, Tobacco and Firearms (ATF) after being recovered by law enforcement following a crime. With the increasing use of these guns came increases in rates of firearm violence, the average number of bullet wounds per person injured, and the proportion of victims who died before reaching the hospital.¹⁵

The Easy Availability of Guns

The increased lethality of guns, particularly handguns, coincided with their increasing availability to and use by young people. The article by Blumstein in this journal issue notes that the carrying of guns by youth began to rise in the late 1980s in tandem with the explosive growth of markets for crack cocaine. As young drug dealers in urban communities began using guns to protect the cash and narcotics they carried, other young people in the community also began carrying guns, often for self-protection. This process was exacerbated by the growth of youth gangs, which tightened social networks among teenagers and served as conduits for the diffusion of guns.¹⁶

Overall homicide rates in the United States rose to nearly unprecedented levels between 1985 and 1993, and the entire increase was attributable to homicides committed by young people with guns. Guns were not the only reason for this increase; the rise of crack cocaine, an increase

in child poverty, and expanded gang activity also were important factors.¹⁷ But the increasing lethality and availability of guns undoubtedly played a key role in the explosive growth of youth gun homicide.¹⁸ As the Surgeon General reported in 2001:

The epidemic of violence from 1983 to 1993 does not seem to have resulted from a basic change in the offending rates and viciousness of young offenders. Rather, it resulted primarily from a relatively sudden change in the social environment—the introduction of guns into violent exchanges among youth. The violence epidemic was, in essence, the result of a change in the presence and type of weapon used, which increased the lethality of violent incidents.¹⁹

Since the early 1990s, both youth gun carrying and youth gun violence have declined dramatically. Several articles in this journal issue offer theories to explain the decrease; these include a drop in illegal drug market activity (particularly surrounding crack cocaine), stronger law enforcement against youth gun carrying, and increased public education efforts promoting safe storage of guns and violence prevention.²⁰ Still, many young people apparently have little difficulty obtaining guns, either from home, from friends, through illegal purchase from gun dealers or “on the street,” or through theft.

For example, an estimated 34% of children in the United States live in homes with firearms.²¹ In addition, in a national study of male high school sophomores and juniors conducted in 1998, 50% of respondents reported that obtaining a gun would be “little” or “no” trouble.²² A 1999 national survey estimated that 833,000 American youth between the ages of 12 and 17 had carried a handgun at least once in the previous year.²³ Many teens who carry guns cite the need for self-protection as their primary reason for doing so.²⁴ With so many children and youth reporting easy access to guns, high rates of youth gun death and injury should not be surprising.

The Human Toll: Homicides, Suicides, Unintentional Shootings, and Firearm Injuries

In 1994, the number of gun deaths among children and youth under age 20 reached a historic high of 5,833; by 1998, annual deaths had fallen to 3,792.¹ Still, gun death

rates among children and youth due to homicide, suicide, and unintentional shooting are far higher in the United States than in other industrialized nations.

The risk of gun death is not spread evenly throughout the youth population, however. Certain groups of young people are at greatest risk. Moreover, a February 2002 study found that children ages 5 to 14 were more likely to die from gunshot wounds if they lived in states where firearm ownership was more common. This finding held true even after the researchers controlled for state-level poverty rates, education, and urbanization.²⁵

Homicide

An estimated 58% of firearm deaths among children and youth under age 20 in 1998 were homicides.²⁶ As detailed in the article by Fingerhut and Christoffel in this journal issue, older teens, males, minority youth, and young people residing in urban areas are more likely than other children and youth to die in gun homicides. Adolescent African American males are at highest risk for youth gun homicide; in 1998, some 63 out of every 100,000 African American males ages 15 to 19 died in a firearm homicide, compared with a rate of 29 per 100,000 for their Hispanic counterparts and 3 per 100,000 for white male teenagers.

Children and youth are perpetrators as well as victims of gun violence. In 1998, juveniles and youth under age 25 committed 54% of gun homicides in which the offender was known; juveniles under age 18 alone accounted for 12% of gun homicides in which the offender was known.²⁷ African American teenage males are more likely to commit gun homicides than are white or Hispanic youth.²⁸ Thus, African American youth are overrepresented both as victims and perpetrators of youth gun deaths.

Even without firearms, American children are more likely to die in homicides than their counterparts in other industrialized nations.²⁹ However, guns worsen the violence. The firearm-related homicide rate among children under age 15 in the United States is nearly 16 times higher than in 25 other industrialized nations combined.³⁰

If the United States could reduce youth gun homicide to levels more comparable to those of other nations, youth homicide rates in general would decline signifi-

cantly, giving more children and youth—particularly adolescent males, minority youth, and young people living in inner cities—a better chance of reaching adulthood. An important first step in this process is to forge a national commitment to reduce youth gun homicide. The effort should be led by the federal government and include active involvement by a wide range of stakeholders such as public health experts, law enforcement personnel, religious leaders, community leaders, educators, and parents.

Recommendation

Congress and federal health agencies should set a goal of reducing youth gun homicide to levels comparable to those of other industrialized nations, engaging in a comprehensive effort to identify the causes of youth gun homicide and reduce its prevalence in American society.

Suicide

Suicide is the second leading cause of firearm-related deaths among children and youth, accounting for 33% of these deaths in 1998.²⁶ Although youth gun suicides declined somewhat in the late 1990s, firearms remain the most common method of suicide among youth, as the article by Fingerhut and Christoffel notes. Youth are more likely to use guns to commit suicide than are older, nonelderly adults; in 1994, about 67% of 15- to 24-year-olds used firearms to commit suicide, compared with 56% of 25- to 64-year-olds.³¹ White adolescents, males, and youth living in rural areas are more likely than other youth to die in gun suicides,¹ although the gun suicide rate among African American adolescent males has risen sharply in the past 20 years, and is approaching the rate for white adolescent males.³²

Numerous studies have documented a clear association between the presence of firearms in the home and suicides, particularly suicides by adolescents and young adults.^{31,33,34} One study found that guns were twice as likely to be present in the homes of teen suicide victims as in the homes of suicide attempters or a comparison group of teen psychiatric patients who were not suicidal.³³ Household firearm ownership is positively associated with the firearm suicide rate for 15- to 24-year-olds,

even after controlling for education, unemployment, and urban residence.³¹

The rate of nonfirearm suicides among 5- to 14-year-olds in the United States is roughly equal to the rate in other industrialized countries combined. However, the firearm suicide rate among children in this age group is nearly 11 times higher. As a result, children in the United States commit suicide at twice the rate of children in 25 other industrialized nations combined.³⁵

Despite the prevalence of youth gun suicide, it has been something of a silent killer, not attracting nearly as much attention from policymakers, researchers, and the media as youth gun homicide or even unintentional shootings. One unresolved issue in academic literature is whether youth who commit suicide with a gun would simply have found another way to kill themselves if guns were not available to them. Given the extreme lethality of firearms, it seems plausible that at least some young people might not have succeeded in their suicide attempts if they had not had access to a gun. Therefore, convincing young people, parents, and the public to keep guns away from youth at risk of suicide should be a high priority.

Recommendation

Federal and state public health agencies should make youth gun suicide a central focus of their gun violence prevention and suicide prevention activities, developing and assessing methods for keeping guns away from youth at risk of suicide.

Unintentional Shooting Deaths

Unintentional shootings among young people most frequently happen when children or youth obtain a gun and play with it, not realizing that it is real, or loaded, or pointed at themselves or a friend. In 1998, more than 7% of children and youth under age 20 killed by firearms died in unintentional shootings,³⁶ and these shootings accounted for 27% of firearm deaths among children under age 12, according to the article by Fingerhut and Christoffel. Boys, African American children, and Hispanic children are more likely to die in accidental shoot-

ings than are other groups of children. The death rate from unintentional shootings among children is nine times higher in the United States than in 25 other industrialized nations combined.³⁷

Although accidental shootings of children have declined significantly in recent decades, they still attract a great deal of public attention, perhaps because the victims, and sometimes even the perpetrators, are seen as blameless and the deaths preventable. If guns were not present in the home, if they were designed with safety features making them difficult for children to fire, or if they were stored safely—unloaded and locked, with ammunition stored separately from the guns—the risk to young children could be virtually eliminated.

Firearm Injuries

For every gun death among young people under age 20, there are more than four injuries. Although the data about nonfatal firearm-related injuries to children and youth are incomplete,³⁸ the article by Fingerhut and Christoffel summarizes what is known: From 1996–1998, an estimated 18,400 children and youth visited emergency departments for gun injuries each year, with nearly one-half of these visits requiring hospitalization. About 85% of these firearm injuries were among older teens, ages 15 to 19. Males were 7 times more likely than females to be injured. African American youth were 10 times more likely and Hispanic youth 2 times more likely to be injured than were white youth.

The Need for Better Data

To develop and evaluate policies for reducing youth gun injuries and deaths, policymakers need more complete data on how firearms are used by and against children and youth. Although 13 national data systems collect information about persons who are killed or injured in the United States, none of these systems is designed to capture information about firearm deaths and nonfatal injuries generally, or about firearm victimization of children and youth specifically. A substantial number of cases lack vital information about shootings involving children and youth, such as the victim–offender relationship, alcohol or drug involvement, the location where the shooting occurred, crime and gang involvement, and the frequency with which injuries occur.³⁹

Without more complete data, policymakers and researchers cannot answer many basic questions about gun violence among children and youth, or use data to design effective interventions.⁴⁰ For example, because public health professionals do not know the circumstances most likely to result in children and youth being shot, they may not know where to focus prevention efforts. In addition, ATF has concluded, “Insufficient information about how minors and criminals illegally acquire guns has impeded efforts to investigate and arrest illegal suppliers of firearms.”⁴¹ Two major efforts to improve data collection related to youth and guns are under way; they should be supported and expanded.

National Reporting on Violent Deaths and Injuries

To obtain more data about firearm victimization of children and youth, a consortium of universities has developed a pilot program for reporting violent deaths: the National Violent Injury Statistics System (NVISS). This system collects data on all violent deaths, including firearm-related deaths, in seven states and six cities and counties, and reports on more than 50 variables by aggregating information from existing data sources.⁴² NVISS is modeled on the Fatality Analysis Reporting System (FARS), which reports information on fatal auto accidents. FARS is credited with providing information that has led to numerous policy changes, including raising the legal drinking age from 18 to 21.⁴³

A national violent death reporting system—or better yet, a violent death and nonfatal injury reporting system—would document patterns of violence nationwide, yield more complete data about firearm violence, and support policymakers’ efforts to develop strategies for reducing all forms of violence, including gun violence. Full national implementation of such a system would cost an estimated \$20 million per year.⁴⁴ This investment would be worthwhile if it could lead to more effective strategies for reducing youth gun violence, which has been estimated to cost society \$15 billion a year, as detailed later in this article.

Tracing Guns Used in Crimes

In a separate data collection effort, ATF has launched the Youth Crime Gun Interdiction Initiative to document circumstances under which youth obtain guns used in crimes. Under this program, law enforcement agencies in 36 cities submit serial numbers to ATF for all guns that

they seize in crimes.⁴⁵ ATF then traces these guns to their original point of sale in an effort to identify sources of illegal gun trafficking to youth.

Already, the program has uncovered important information about where youth obtain illegal guns. The gun traces have revealed that between 25% and 36% of traced guns that were used by youth to commit crimes are new guns (less than three years old), often sold illegally to youth by corrupt licensed firearms dealers, or illegally bought for youth by adult purchasers (called “straw” purchases).⁴¹ Expanding the gun tracing program to more U.S. cities would give researchers a better understanding of where and how youth obtain illegal guns, and would inform efforts to prevent illegal sales to young people.

Recommendation

Federal, state, and local public health and law enforcement agencies should make a commitment to collecting better data about gun-related fatalities and injuries by supporting development of a national system for reporting violent deaths and injuries and a system for tracing all guns used in crimes.

The Economic and Psychological Toll of Youth Gun Violence

In addition to the human toll, gun violence among young people imposes significant financial and psychological costs on society. For children and youth, these costs can be especially high; those exposed to gun violence are at risk for significant and lasting psychological effects. Moreover, children do not have to be injured themselves to experience these negative effects. Exposure to gun violence at home, at school, in the community, or through the media all can cause harm.

Economic Costs

The most obvious economic costs associated with gun violence in the general population are health-related, in the form of increased medical costs due to injury and death. Other economic costs include those associated with strengthening law enforcement to combat gun crime, and prosecuting and incarcerating gun offenders.

Together, these costs total an estimated \$4 billion to \$5 billion annually.⁴⁶ However, the article by Cook and Ludwig in this journal issue notes that these costs account for only a small share of the total costs of gun violence to society. Other, less tangible costs related to gun violence—such as higher taxes to ensure public safety, higher housing costs as families move to areas that are perceived as safe from gun violence, and the psychological costs associated with fear—make up most of the costs of gun violence.

Such costs affect not only the families of gun violence victims, but all Americans, through increased taxes, decreased property values, limits on choices about where to live and work, and concerns about safety, particularly children's safety. These intangible costs can be difficult to quantify, but Cook and Ludwig argue that the costs of gun violence can be considered equivalent to the value that people place on safety from gun violence. Therefore, they estimate the costs of gun violence by assessing how much Americans would be willing to pay to reduce or eliminate gun violence from their lives.

A 1998 national survey that asked people about their willingness to pay for policy interventions to reduce gun violence found that the average American household was willing to pay \$239 a year to reduce the threat of gun violence in its state by 30%. Based on these answers, Cook and Ludwig estimate that the total annual cost of gun violence in the United States is \$100 billion, of which \$15 billion is attributable to costs associated with gun violence against children and youth.

Psychological Costs

Just as the economic costs of gun violence are substantial, so are the psychological costs. Children exposed to gun violence, whether they are victims, perpetrators, or witnesses, can experience negative psychological effects over the short and long terms. Psychological trauma also is common among children who are exposed to high levels of violence in their communities or through the media. The article by Garbarino, Bradshaw, and Vorrasi in this journal issue details common effects associated with exposure to gun violence, including sleep disturbance, anger, withdrawal, posttraumatic stress, poor school performance, lower career aspirations, increased delinquency, risky sexual behaviors, substance abuse, and desensitization to violence. All of these effects can make children and youth more prone to violence

themselves, feeding a continuing cycle of violence within some families, peer groups, and communities.

Arguably, every child in the United States is exposed to gun violence through media coverage of shootings, films and television shows, and violent video games that allow young people to shoot lifelike targets on the screen. More than 1,000 studies have documented a link between violent media and aggressive behavior. Children exposed to media violence have been shown in experimental studies to become more aggressive, to view more favorably the use of aggression to resolve conflicts, to become desensitized to violence, and to develop a belief that the world around them is a frightening place.⁴⁷

However, the children and youth at highest risk for psychological trauma from gun violence are those exposed to it directly: children who are injured, who witness gun violence at close proximity, or who are exposed to high levels of gun violence in their homes, schools, or communities.⁴⁸ School and community violence are particularly worrisome because they can affect large numbers of children at one time.

A December 2001 study of 119 African American seven-year-olds living in inner-city Philadelphia, for example, found that three-quarters had heard gunfire, one-third had seen someone shot, and one-tenth had someone in their own family or household who had been shot or stabbed. Among children in the study, exposure to higher levels of violence was correlated with more anxiety, greater likelihood of depression, lower self-esteem, lower grade point average, and more absences from school. More than 60% of the children worried that they might be killed or die, and 19% sometimes wished they were dead.⁴⁹

Despite widespread recognition of the psychological costs to children and youth associated with gun violence, physicians and mental health professionals have been slow to develop treatments that help young people cope with gun-related trauma. Even children and youth who are injured often go without psychological help. One group of doctors has observed, "When patients present with suicide attempts, evaluation for future risk and follow-up treatment are considered standard practice. However, individuals treated for violent injuries generally receive no further evaluation."⁵⁰

Government, schools, and health care practitioners should work together to ensure that children and youth who are exposed to gun violence get the psychological help they need. Two examples of innovative programs discussed in this journal issue include a pioneering project developed at the University of California, Los Angeles, that provides school-based group therapy for adolescents who have sustained or witnessed violent injury,⁴⁸ and a collaboration between the New Haven Police Department and Yale University School of Medicine to train police officers in how to deal with children who are victimized by or witnesses to violence.⁵¹ Additional programs are needed to help youth overcome gun-related psychological trauma, especially because treating traumatized young people may make them less prone to violent acts in the future.

Recommendation

Policymakers, mental health professionals, and educators should develop, implement, and evaluate treatment programs that help youth exposed to gun violence cope with trauma.

Strategies for Addressing the Problem

No single policy solution will end youth gun violence in the United States; a wide repertoire of approaches is needed to address different aspects of the problem. Key strategies that may reduce youth gun violence include: reducing unsupervised exposure to guns among children and youth; strengthening social norms against violence in communities; enforcing laws against youth gun carrying; altering the design of guns to make them less likely to be used by children and youth; and, perhaps most importantly, implementing new legal and regulatory interventions that make it more difficult for youth to obtain guns. Parents, community leaders, policymakers, and researchers all have vital roles to play in implementing these strategies.

Reducing Children's Unsupervised Exposure to Guns

By monitoring their children's behavior, environments, and media use, parents can be the first line of defense in

protecting children from gun violence. Parents who choose to keep guns in the home have a special responsibility to make sure that their children, and other children who visit their homes, do not have access to these weapons without supervision. Because research indicates that educational efforts aimed at persuading children and youth to stay away from guns or behave responsibly around them are of limited effectiveness,⁵² policymakers and public health experts need to find creative, effective ways to educate parents about the importance of keeping their children safe through parental monitoring and safe gun storage.

Parental Monitoring

Close parental supervision can help keep children away from dangerous environments and situations.⁴⁸ Ethnographic research indicates that this approach may be especially effective in neighborhoods where violence is commonplace.⁵³ Parents who monitor their children closely also may be able to spot signs of violent behavior in their children more easily.

In addition, parents should monitor their children's media use, including their use of computers and video games. The American Academy of Pediatrics recommends that parents watch programming with their children; limit screen time for all media, including computers and video games, to a total of one to two hours per day; use the V-chip to restrict viewing of violent television; avoid violent video games; and keep children's bedrooms media-free.⁵⁴

Safe Storage

As the American Academy of Pediatrics observes, the best way to prevent firearm injuries among children in the home is to remove guns from the home.² However, some parents who use guns for sport or self-defense are unwilling to take this step. In recent years, some gun control advocates and firearms manufacturers have promoted an alternative: safe storage of guns in homes with children or where children are likely to visit. They have counseled parents who own guns to store them locked, unloaded, and separate from their ammunition.⁵⁵

Safe gun storage practices have the potential to decrease unintentional shootings by making guns less accessible to children and youth.⁵⁶ Safe storage also may reduce criminal gun use by youth by decreasing their access to guns in

the home and by deterring theft, which is a prominent supply source for the illegal market, where many youth obtain guns.^{56,57}

Although some oppose safe storage because they believe it makes guns less accessible for self-defense,⁵⁸ this concern must be weighed carefully against the risk that a child could find and use guns that are not stored safely. A 1999 study of young people under age 20 who were killed or injured in unintentional shootings in King County, Washington, found that 69% of these shootings took place in the young person's home, or in the residence of a relative or friend.⁵⁹ As the article by Smith in this journal issue notes, more than 70% of Americans support enacting laws that require guns to be stored locked and/or unloaded.

One interesting approach to promoting safe storage is being taken by the nonprofit group PAX, which has developed a series of public service announcements for its ASK (Asking Saves Kids) campaign.⁶⁰ The campaign, designed in consultation with the American Academy of Pediatrics, encourages parents to ask their neighbors if they have guns in their home—and if so, how those guns are stored—before sending their children over to play. However, this program has not yet been evaluated.

The Need for Parent Education and Awareness

Although efforts to promote safe gun storage have been widespread in recent years, studies estimate that only 30% to 39% of gun-owning American households with children store their guns locked and unloaded.^{21,61} A study published in 2000 estimates that in 1.4 million homes—households that include approximately 2.6 million children—guns are stored loaded and unlocked. Guns are most likely to be stored in this manner in households in the South, in households with teenagers, and in households where someone is employed in law enforcement.²¹

The low safe storage rates in gun-owning households with children highlight the need for greater parent education and awareness about the risks that guns pose to children and youth. As detailed in the article by Hardy in this journal issue, parents often have serious misperceptions about their children's vulnerability to injury, believing that their children are unlikely to become victims of serious injury, that injuries are

unavoidable products of fate, or that their children can take care of themselves.

A 1999 study of 400 parents in metropolitan Atlanta illustrates the latter point: 74% believed their child would either leave a gun alone or tell an adult if they found a gun.⁶² A follow-up study published in 2001 that tested this perception found the reality to be quite different. In this study, parents were asked to rate their 8- to 12-year-old sons' interest in guns. The boys were then paired with a playmate or sibling and left alone to play in a room containing two toy guns and a real handgun. Among the boys whose parents thought their sons had a low interest in guns, 65% handled the real handgun; 35% of boys perceived to have a low interest pulled the trigger.⁶³

Misperceptions about children's ability to assess dangers and avoid guns may be one reason that many parents resist messages to store their guns safely or remove them from the home, even when children are clearly at risk. In one study published in 2000, gun-owning parents of depressed adolescents at risk of suicide were counseled by their doctors to remove firearms from the home. Only 27% did so. In a comparison group of parents who had depressed adolescents but who did not own guns when the study began, 17% acquired them over the next two years.³⁴

Nor have gun safety training programs been shown to increase safe storage practices. In fact, one study of gun owners found, "Individuals who have received firearm training are significantly more likely to keep a gun in the home both loaded and unlocked."⁶⁴

By and large, laws requiring adults to store guns safely also do not appear to be successful in reducing unintentional gun deaths among young people. Seventeen states have enacted these Child Access Prevention (CAP) laws, which make it a crime for adults to store guns negligently so that they are later accessed by children or adolescents.⁶⁵ A 2000 analysis of 15 states with CAP laws found a 17% decrease in unintentional child gun deaths in those states, but the entire decrease was explained by one state, Florida, where the death rate fell by 51%. No other state with a CAP law experienced a statistically significant decline in unintentional firearm deaths among children. The study's authors theorized that Florida experienced

unique declines because its law imposed the stiffest penalties of any state, its unintentional child gun death rate was unusually high prior to the law's enactment, and the law was highly publicized as Florida was the first state to enact a CAP law.⁶⁶

Although CAP laws and programs designed to promote safe storage of guns have shown mixed results to date, parents still may be more promising targets for education and prevention efforts than are children and youth. As noted in the article by Hardy, it is difficult to persuade children and adolescents to stay away from guns or behave responsibly around them. Young children and those in elementary school frequently lack the ability to judge their probable risk of injury, identify hazardous situations, spot ways to prevent injury, or apply safety lessons they have learned in a classroom to the real world. In one experiment, for example, preschool children and their parents attended a session in which a police officer discussed the dangers of guns and asked children to promise never to touch one. After the session, the children were videotaped playing in a room where toy and real guns were hidden. Despite their promises, the children who had attended the class found and played with real guns at virtually the same rate as children who had received no instruction.⁶⁷

Adolescents may have more of the cognitive maturity necessary to understand and apply gun safety lessons, but they also frequently have trouble assessing the risk of injury, and some are highly susceptible to peer pressure to engage in risky behaviors. Several researchers have documented that peer pressure plays a pivotal role in youth gun carrying; adolescents whose peers carry guns are more likely to feel the need to carry guns themselves.^{28,68} So far, the data evaluating programs that help adolescents to develop skills to resist peer pressure, make responsible choices about guns, and resolve conflicts peacefully do not show that the programs have been effective at reducing youth gun violence.⁵²

Thus, the potential of educational approaches aimed at children and adolescents appears to be limited, making it critical that parents understand the risks that guns pose to their children, and take action to shield their children from unsupervised exposure to

guns. Policymakers, educators, and health care professionals should expand their efforts to promote stronger parental monitoring, as well as safe storage, so that children and youth do not have unsupervised access to guns.

Recommendation

Federal and state policymakers, in conjunction with public health experts and educators, should initiate creative public awareness and educational efforts—and evaluate existing approaches—to encourage stronger parental monitoring of children's exposure to guns and safe storage of guns in the home.

Engaging Communities to Reduce Youth Gun Violence

Even the most vigilant parents cannot shield their children fully from exposure to gun violence among their peers, in their schools, and in their neighborhoods. Therefore, any strategy to reduce gun violence must engage communities in prevention efforts.

In some communities, particularly those, as noted in the article by Fagan in this journal issue, “where disorder and crime are conflated with poverty and socioeconomic disadvantage,” social norms against violence have broken down, fostering conditions where youth gun violence can thrive. In these environments, many youth feel the need to arm themselves for self-protection.^{24,28}

To convince youth that carrying guns is not necessary or desirable, communities need to become safer. Because poverty, discrimination, and violence are often linked,⁶⁹ one way to decrease violence is to address economic inequality and social injustice in the United States. Indeed, as the article by Forman in this journal issue notes, some believe this is the only way to reduce youth gun violence. For example, researcher Gary Kleck, who has written extensively about the limits of gun control in reducing gun crime, argues,

Significant, lasting reductions in violence are not likely to be produced by revisions in the criminal laws, reallocation of law enforcement resources, or tinkering with crime control strategies, whether they involve the conservative panaceas of ‘getting

tough' on criminals and making war on drugs, or the liberal panaceas of offender rehabilitation and gun control. In the long run, solving the violence problem will have to involve reducing economic inequality, injustice, and the social disorder these generate. It will have to involve improving the life chances of the underclass that contributes both the bulk of the victims and the perpetrators of violent crime.⁷⁰

Clearly, the economic and social factors that underlie youth gun violence must be addressed. Eliminating economic disadvantage and racism are important long-term societal goals, and would undoubtedly reduce youth violence while improving a broad range of outcomes for children. At the same time, however, policymakers and communities should not lose sight of a more proximate cause of youth gun violence: the guns themselves. As the article by Blumstein notes, one of the key factors in the rise of youth gun violence in the late 1980s and early 1990s was the diffusion of handguns into young people's hands. As researchers Jeffrey Fagan and Deanna Wilkinson have written, "The ready availability of guns in the inner city has undoubtedly shaped and skewed street codes toward the expectation of lethal violence."⁷¹

Community leaders should take steps to change this expectation. They can promote young people's safety by sending unequivocal messages to youth that gun violence is not an acceptable way to resolve conflict. Elected officials, faith leaders, and educators all can play key roles in enforcing social norms against youth gun use. Because many youth who carry guns report obtaining them from family members and friends,⁷² community leaders also should send messages to adults that it is dangerous—to youth and to the broader community—to allow young people unsupervised access to guns.

A few communities have experimented with antiviolence initiatives that provide safe places for children to study and play, focus on community revitalization, and feature public awareness campaigns against gun violence.⁵² In addition, the article by Fagan describes law enforcement-oriented approaches to community gun violence prevention. In Boston, for example, a coalition of African American ministers joined forces with police to send a forceful message—targeted at young gang members—that gun violence would not be tolerated in the community. Approaches like

these have not been evaluated extensively, but they may hold promise for changing youth attitudes toward guns, empowering communities, and ultimately reducing youth gun violence.

Engaging youth themselves as agents for change in their neighborhoods also may be a promising strategy for reducing gun violence, and is being tried in some communities.⁷³ For example, one program, Youth ALIVE! in Oakland, California, employs young people who were formerly involved in gun violence to work as mentors to youth who have been injured by guns.⁷⁴ Programs such as these try to help youth create norms against gun carrying and gun violence in their communities.

Recommendation

Federal, state, and local policymakers should develop and evaluate comprehensive, community-based initiatives to reduce youth gun violence—partnering with schools, faith communities, community service programs, parents, and young people.

Strengthening Law Enforcement against Youth Gun Violence

Stronger enforcement of existing laws against youth gun carrying is another strategy to reduce gun violence. Beginning in the early 1990s, some police departments adopted an aggressive approach toward identifying and punishing youthful gun offenders. Supporters of this approach argue that punitive law enforcement against the criminal use of guns is an effective way to deter gun violence.⁷⁵ Indeed, at least one study found that fear of arrest can deter youth from carrying guns.⁷⁶ Other observers maintain, however, that community-based policing strategies, which emphasize close collaboration between police and citizens to prevent crime before it occurs, may reduce youth gun violence more effectively over the long term.⁵¹

The article by Fagan presents case studies from eight cities that have experimented with different approaches toward policing gun crime, particularly youth gun crime. For example, New York City adopted an aggressive, punitive approach, and gun homicide rates declined. However, the drop came at the price of severe strains in relations with

minority communities, which viewed the police tactics as racist. This made it more difficult for police to engage the community in youth gun violence prevention efforts.

In contrast, San Diego's policing strategy focused on stopping youth gun crime before it started by combining aggressive law enforcement with equally aggressive outreach strategies to engage the community in controlling crime and preventing youth gun violence. The San Diego police met frequently with community advisory boards to identify crime problems and discuss potential solutions. More than 1,000 citizen volunteers were trained to prevent crime and assist crime victims in their neighborhoods, and police officers were assigned to schools to assess at-risk youth and connect them with social services. Youth gun violence rates declined in San Diego, and the city was spared the racial tension that plagued law enforcement efforts in New York.

It remains unclear how much police really can do to prevent or reduce youth gun violence, however. Analyses of gun violence rates in the nation's 20 largest cities suggest few differences from one place to another in the 1990s, regardless of whether police in those cities pursued punitive law enforcement strategies, community-based policing, a combination of approaches, or no specific policing innovation.⁵¹ Nonetheless, the San Diego example illustrates how police can partner with the community to communicate social norms against youth gun carrying and gun violence.

Recommendation

Police should complement their existing efforts to deter youth gun carrying by developing and evaluating law enforcement approaches that include extensive police–community collaboration.

Changing the Design of Guns

Rather than focus on changing the behavior of parents and young people through education, community efforts, or law enforcement, some injury prevention experts suggest that it might be easier to reduce youth gun violence by changing the design of guns them-

selves.⁷⁷ Ample precedent for this approach can be found in the injury prevention field. As discussed in the article by Teret and Culross in this journal issue, changing the design of medication packages proved to be a more effective poisoning prevention strategy than convincing children to stay away from bottles of pills. Similarly, legislators, regulators, and litigators forced major design changes to cars that made them safer in crashes, thereby reducing motor vehicle fatalities in a way that driver training could not.

Requiring product safety features on guns, such as child safety grips (which make it difficult for young children to fire guns), magazine disconnect devices (which prevent guns from being fired when their magazines are detached, even if a round of ammunition remains in the gun), and loaded chamber indicators (which indicate whether guns are loaded), could reduce unintentional shootings among children and youth. This view is supported by a 1991 report from the U.S. General Accounting Office, which concluded that 31% of the unintentional gun deaths in 10 cities could have been avoided through use of child safety devices and loaded chamber indicators.⁷⁸

In addition, emerging technologies would enable manufacturers to personalize guns, which could prevent unauthorized users such as teenagers or thieves from operating the weapons. Personalized guns, referred to as "smart" guns, hold promise for preventing intentional as well as unintentional shootings.⁷⁹

Nearly 86% of respondents to a national poll on gun safety supported requiring all new handguns to be childproof, and more than 63% supported requiring new handguns to be personalized.⁸⁰ At the same time, the product safety approach to gun violence prevention is not without controversy. Some gun control advocates fear that if the public perceives guns to be childproof, more Americans will buy guns, increasing the risk of both intentional and unintentional shootings.⁸¹ The Beretta Corporation, a leading gun manufacturer, has expressed concern that childproof guns could lead parents into lax gun storage practices, putting children at risk.⁸² Some gun rights advocates claim that gun safety devices could easily be dismantled if gun owners did not want them,⁸ and that personalization technologies are undeveloped and unproven.⁸³

One major reason these technologies remain undeveloped and unproven, however, is that no one is requiring them. Guns are not regulated for safety by the Consumer Product Safety Commission, ATF, or any other federal agency. The federal government requires that imported guns meet a few basic safety standards (which do not include child safety features), but Congress has exempted domestically manufactured guns from these standards.

Virtually all other consumer products—such as motor vehicles and children’s toys—are regulated for product safety. Particularly in view of their lethality, guns should not be an exception. If Congress mandated federal regulatory authority over guns, it could lead to requirements for standard product safety features on guns, such as magazine disconnect devices or loaded chamber indicators. Federal regulatory agencies also could fund research to develop other product safety features, including personalization, and assess whether these innovations are effective in reducing intentional and unintentional youth gun deaths.

State legislatures and consumer safety agencies also can assert the authority to regulate guns. In Massachusetts, the attorney general promulgated regulations requiring that commercially sold handguns incorporate product safety features that prevent young children from firing them.⁸⁴ Maryland enacted legislation requiring any newly manufactured handgun sold in the state beginning in 2003 to be equipped with an integrated mechanical locking device. Maryland’s law also requires a state agency to review the status of personalized gun technology and report to the legislature annually.⁸⁴

Recommendation

Congress should extend the jurisdiction of the Consumer Product Safety Commission or the Bureau of Alcohol, Tobacco and Firearms to regulate guns as consumer products, establish regulations requiring product safety features on guns, and evaluate the effectiveness of product safety interventions. State governments should extend similar authority to their consumer product safety agencies.

Limiting the Flow of Illegal Guns to Youth

Despite efforts by parents, community leaders, and police, many American young people can easily obtain guns for use in crimes. In 1999, approximately 9% of guns traced by ATF after being recovered by police following a crime were taken from juveniles, and an additional 34% were seized from people ages 18 to 24.⁴⁵ As described in the article by Wintemute, youth can obtain guns from family or friends, from corrupt dealers or straw purchasers, through theft, or on the street from private sellers or illegal dealers. Because private sales of guns in the United States are largely unregulated, it is all too easy for guns—especially handguns—to flow illegally into the hands of young people, even though federal law prohibits most young people from owning or possessing them.¹⁰ A controversial but powerful approach to reducing youth gun crime is to tighten federal and state laws regarding gun sales so that fewer weapons are accessible to youth.

The Extent of the Problem

Numerous studies document the ease with which youth can obtain guns in the United States.^{23,24} In a 1998 national study of male high school sophomores and juniors, 6% of respondents had carried a handgun outside the home in the previous 12 months. Among the youth who had carried guns, 48% had been given or loaned the gun by a family member or friend. Nearly an equal percentage had obtained the gun through an illegal purchase or theft: 35% had bought the gun (of those, 53% bought from family or friends), 5% reported asking someone else to purchase the gun, and 6% had stolen or traded something for it.²²

Youth can obtain guns illegally from licensed dealers or in private transactions. Although licensed firearms dealers are regulated by the federal government (and by many states) and are required to conduct criminal background checks on all purchasers, some dealers do sell illegally to youth, often by turning a blind eye to straw purchases, in which youth ask older acquaintances to buy guns for them. It appears that only a small minority of licensed gun dealers are involved in illegal activity. According to federal statistics, guns sold by 1.2% of retailers account for more than 57% of the weapons that are later traced by ATF after being recovered by law enforcement following a crime.⁸⁵ Nevertheless, stricter federal and state oversight of licensed dealers might eliminate some of the more egregious offenders.

At the same time, guns sold by licensed dealers account for only about 60% of the guns sold in the United States. Guns sold by private parties, collectors, and unlicensed vendors at gun shows account for 40% of all gun sales.⁸⁶ These sales are not regulated by the federal government, nor by most states.⁸⁷ In an unregulated private sale, no background check takes place. Sellers are not required to keep records of their sales, and they do not even have to ask buyers for identification. Such lax requirements make it easy for youth to obtain guns.

Curbing Illegal Gun Sales to Youth

It is difficult to fully prevent unsupervised youth access to guns when guns are freely available to adults—and when nearly 200 million guns are already estimated to be in circulation in the United States.⁸⁸ However, significant steps can be taken to limit young people's ability to obtain guns illegally. The article by Wintemute assesses a number of these strategies, including stricter regulation and oversight of licensed gun dealers, regulation of gun sales on the private market, and requirements that guns be registered and their owners licensed.

Closer federal and state oversight of licensed dealers, for example, could help prevent straw purchases and could catch dealers who knowingly sell in bulk to illegal gun dealers, who in turn sell guns on the street to criminals and youth. Regulating sales on the private market—requiring identification and background checks for all purchasers, mandating that sellers keep records of all transactions so that police could more easily trace guns used in crimes, or requiring that all gun sales take place through licensed dealers—also could decrease the flow of guns to young people and others who are prohibited by law from having them.⁸⁹ Finally, requiring all gun owners to register their firearms and obtain licenses for their use, just as people must register their cars and be licensed to drive them, could decrease the number of guns available to youth. A gun confiscated from a young person could be traced to its registered owner, who could then face criminal penalties for transferring it illegally.

It is unlikely that any one of these proposals, or even all of them together, would stop the illegal flow of guns to youth completely. Even with stricter regulations on gun sales, illegal street markets for guns would probably continue to exist, as they do for drugs. But tighter regulations undoubtedly would make it more difficult and

more expensive for young people to buy guns through these illegal channels,⁹⁰ and could deter some youth from buying guns altogether.

Decreasing the availability of illegal guns to youth is an important strategy to de-escalate the violence that plagues many communities, and to reduce the fear and need for self-protection that lead many youth to acquire guns in the first place. Researcher David Kennedy, who has written extensively about youth gangs and gun violence, has observed, “Many of the kids involved in this life do not really want to live it. Less readily available weaponry would ease tensions and diminish the deadliness of incidents.”⁹¹

Recommendation

Congress and state legislatures should institute tighter restrictions on gun sales so that fewer guns illegally end up in the hands of youth. A variety of approaches should be implemented and evaluated—in particular, closer oversight of licensed dealers, regulation of private sales, and mandated licensing of gun owners and registration of guns.

Conclusion

Guns are unique weapons, highly lethal, and easily available. Their use by and against children and youth has exacted an enormous toll on American society. The economic costs associated with youth gun violence have been estimated in the billions of dollars. But the most significant costs—lost lives or diminished futures for children and youth affected by gun violence—are probably incalculable. The federal government and state governments, working in partnership with local communities and parents, should adopt a unified, comprehensive strategy for reducing youth gun violence in the United States.

Precedent exists for such a broad injury prevention strategy. Over the past 40 years, Congress, federal agencies, public health practitioners, and law enforcement professionals have worked together in a systematic effort to reduce motor vehicle deaths and injuries.⁹² The approaches they have adopted include: national data systems that track all motor vehicle fatalities; federal safety

standards for motor vehicles and equipment; federal and state requirements for driver training and licensing; strict enforcement of motor vehicle laws, especially against drunk driving; federal, state, and private-sector investment into research to improve motor vehicle safety and treatment of injuries; and extensive public awareness activities. As a result, the federal government estimates that 243,400 lives were saved between 1966 and 1990.⁹³

Obviously, the task of reducing gun injury and death poses different and perhaps more difficult challenges than reducing motor vehicle injury and deaths, most of which are unintentional. Still, the motor vehicle example points to what is lacking in youth gun violence prevention efforts. As yet, no broad national consensus exists on how to approach the problem. There is no broad-based commitment to a wide range of strategies that will reduce unsupervised youth access to and use of guns.

There needs to be. Without more concerted efforts to reduce youth gun violence, children and youth will continue to die, unnecessarily and senselessly, from gunshot wounds. A national campaign against youth gun violence should be strongly grounded in research, and should encompass the broad range of strategies recommended in this journal issue. Such strategies should include promoting parental monitoring and safe gun storage; strengthening community norms against gun violence; implementing creative collaborations between law enforcement and communities; regulating guns as consumer products; and tightening federal and state laws regarding gun sales.

Common ground often proves elusive on an issue as polarizing as gun violence. Both gun control and gun rights advocates surely can agree, however, that it is unacceptable for the United States to have a higher rate of gun-related deaths and injuries to children and youth than all other industrialized nations combined. Hopefully, that point of agreement can serve as the foundation for aggressive efforts to reduce youth gun violence in the United States.

Kathleen Reich, M.P.P.
Patti L. Culross, M.D., M.P.H.
Richard E. Behrman, M.D.

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ENDNOTES

1. See the article by Fingerhut and Christoffel in this journal issue.
2. American Academy of Pediatrics, Committee on Injury and Poison Prevention. Firearm-related injuries affecting the pediatric population. *Pediatrics* (April 2000) 105(4):888–94.
3. The evidence is conflicting as to whether the decline in violent crime may be ending. In June 2001, the U.S. Department of Justice released statistics based on a national survey of crime victims indicating that violent crime had fallen 15% in 2000. However, this survey does not include homicides, and it does include “simple” assaults, such as pushing and shoving incidents, which are much more frequent than other more serious crimes and thus tend to dominate the survey. A May 2001 report by the Federal Bureau of Investigation, which measured only serious crimes like homicide, rape, robbery, and aggravated assault, indicated that these serious crimes increased slightly in 2000. See Butterfield, F. Victim poll on violent crime finds 15% drop last year. *New York Times*, June 14, 2001, at A16.
4. The Supreme Court ruled in 1939 that the right to keep and bear arms is a collective right bestowed upon organized militias, not individuals. See Carter, G.L. *The gun control movement*. New York: Twayne Publishers, 1997, p. 24. A recent lower federal court decision disagreed with that ruling, supporting an individual right to keep and bear arms. However, the lower court acknowledged that, like other constitutional rights, this right is not unlimited. See Glaberson, W. Court says individuals have a right to firearms: Ruling leaves door open for gun control. *New York Times*, October 17, 2001, at A12. For instance, states and the federal government can and do ban certain categories of individuals, including convicted felons, those deemed mentally incompetent, and minors, from owning or possessing firearms. See Carter, p. 34. It is unclear whether or when the Supreme Court will revisit issues surrounding the meaning and reach of the Second Amendment.
5. An estimated 7% of Americans over age 16 use guns for hunting. Estimates of how often guns are used for self-defense vary widely, from 100,000 to 2.5 million times per year. See Cook, P.J., Moore, M.H., and Braga, A.A. Gun control. In *Crime: Public policies for crime control*. J.Q. Wilson and J. Petersilia, eds. Oakland, CA: ICS Press, 2002.
6. Researcher Gary Kleck has been the most prominent academic proponent of the view that guns are used to defend against attack much more frequently than they are used to commit crimes. His work, based on a national telephone survey, indicates that guns are used in self-defense about 2.5 million times per year. See, for example, Kleck, G. *Targeting guns: Firearms and their control*. New York: Aldine de Gruyter, 1997, pp. 149–52. Some researchers have criticized Kleck’s methodology, however, stating that it overestimates the number of defensive gun uses. See, for example, Hemenway, D. Survey research and self-defense gun use: An explanation of extreme overestimates. *The Journal of Law and Criminology* (Summer 1997) 87(4):1430–45.
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10. Exceptions relate to employment, ranching, farming, target practice, and hunting. See Krouse, W. *Gun control legislation in the 107th Congress*. Congressional Research Service issue brief for Congress. Washington, DC: CRS, June 12, 2001.
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13. The term *caliber* applies to both guns and ammunition. A bullet’s caliber is its diameter, and a gun’s caliber is the diameter of the inside of the barrel. Caliber is measured in millimeters or fractions of an inch. See Karlson, T.A., and Hargarten, S.W. *Reducing firearm injury and death: A public health sourcebook on guns*. New Brunswick, NJ: Rutgers University Press, 1997, pp. 27–28.
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