



Published in final edited form as:

*J Am Acad Child Adolesc Psychiatry*. 2013 April ; 52(4): 333–338. doi:10.1016/j.jaac.2013.01.006.

## Ending the Silence on Gun Violence

**David A. Brent, M.D.,**

University of Pittsburgh School of Medicine

**Matthew J. Miller, M.D., M.P.H., Sc.D.,**

Harvard School of Public Health

**Rolf Loeber, Ph.D.,**

University of Pittsburgh School of Medicine

**Edward P. Mulvey, Ph.D.,** and

University of Pittsburgh School of Medicine

**Boris Birmaher, M.D**

University of Pittsburgh School of Medicine

---

Tragedy struck this past December in Newtown, Connecticut, when a 20-year-old man killed his mother and subsequently invaded a school, fatally shot 20 children and 6 school personnel, and then killed himself. In addition to the unspeakable loss of these young children and their devoted teachers, this incident leaves psychological scars on those who witnessed the event and on the families, friends, and communities of the victims. For their sake, we must not be silent. Instead, it is imperative that we harness our clinical and research capabilities to learn from this dark episode and inform actions that will decrease the toll of violent death among our citizenry. In this editorial, we wish to place this episode in national and international perspectives, and consider three approaches that have been recommended in the national media, namely restriction of access to firearms, clinical screening about firearm availability and storage in the home, and improved access to mental health care and better screening for violence potential.

Mass shootings, defined as those involving the deaths of at least 4 individuals through firearm homicide, represent a very small proportion of all firearm deaths in the United States. Since 2005, there have been an average of 55 individuals per year who have died in mass shootings, more often than not with guns acquired legally, whereas in 2010 more than 31,000 Americans died by gunfire (11,078 firearm homicides, 19,392 firearm suicides, and 606 unintentional firearm deaths).<sup>1,2</sup> Thus, mass shootings account for only 1 in more than 500 of the firearm homicides and suicides that occur in the United States every year. Mass shootings and other firearm homicides do have one thing in common—both are much more common in the United States than in any other high-income country in the world. Fifteen of the most recent 25 mass shootings recorded world-wide occurred in this country.<sup>2</sup> Moreover, in 2010, among American youth 24 years and younger, 44% of the 4,874 who took their lives by suicide died using a gun, and 73% of the 5,635 homicides in this age group were by firearms.<sup>1</sup> For 15- to 24-year-olds in the United States compared with adolescents and young adults in other high-income countries, the rates of firearm suicide, firearm homicide, and unintentional firearm death were about 9, 43, and 12 times more likely in the United States.<sup>3</sup> For U.S. children 5 to 14 years of age compared with children in other high-income

countries, rates of firearm suicide, firearm homicide, and unintentional firearm death were increased 9-, 12-, and 10-fold.<sup>3</sup>

There are substantial data linking the availability of firearms to suicide and homicide by these means. An analysis of nearly 400 firearm deaths that occurred in the home showed that for every self-defense homicide in the home, there were nearly five times as many domestic criminal homicides and 37 suicides.<sup>4</sup> A companion study examined all gunshot injuries in the home (non-fatal and fatal) in which the involved firearm had been kept in the home; home guns were four times more likely to be involved in an accident, seven times more likely to be used in a criminal assault or homicide, and 11 times more likely to be used in an attempted or completed suicide than to be used to injure or kill in self-defense.<sup>5</sup> In a comparison of states with higher rates to states with lower rates of firearm ownership, children 5 to 14 years old were over four times more likely to die by firearms, despite similar rates of nonfirearm deaths.<sup>6</sup>

In addition, changes in gun availability and storage have been associated with decreases in homicide and suicide. After a firearm massacre in Australia in 1996 in which 35 people died, the Australian government passed legislation to remove semiautomatic and pump-action shotguns and rifles from civilian possession, bought back nearly 650,000 of these weapons, and required that firearm sales occur only through licensed arms dealers with police approval. In the 18 years before this legislation, there were 13 mass shootings in Australia and none in the 10.5 years thereafter.<sup>7</sup> There was already evidence of a decrease in firearm homicides and suicides, but the rate of decrease doubled after the legislation, with no evidence of method substitution. Although researchers with funding from gun-ownership advocates have challenged these findings, subsequent analyses have generally supported the initial conclusions about the effects of the legislation.<sup>8</sup> Consistent with these findings, multiple studies in the United States and in other countries have shown that decreases in firearm ownership and accessibility, whether occurring naturally or after to legislation, are associated with parallel changes in firearm suicide and homicide rates.<sup>9-11</sup>

It is not only the presence of guns in the home that is associated with higher homicide and suicide risks, but also the manner in which they are stored. For example, Grossman *et al.*<sup>12</sup> found that the risk of firearm suicide or unintended firearm death among youth was four- to sixfold lower if guns and ammunition were inaccessible. Suicide in younger adolescents is a particularly impulsive act, and having a loaded gun in the home may be the main factor that differentiates suicide decedents younger than 16 years from youth in the community.<sup>13,14</sup> Practice guidelines in primary care recommend assessing for the presence and method of storage of firearms, and at least three intervention studies have demonstrated that a 1-minute intervention as part of well-child care, along with an offer of free trigger locks, can substantially improve the safety of firearm storage.<sup>15-17</sup>

More than three fourths of parents were positive toward physicians providing gun safety counseling, but relatively few (17%) were willing to actually remove guns from their homes.<sup>18</sup> Therefore, it is concerning that there are multiple legislative initiatives designed to inhibit physician inquiry about gun ownership and storage, including 5 provisions in the Affordable Care Act.<sup>19</sup> These sections prohibit wellness and prevention programs from requiring disclosure or collection of information about the presence or storage of a lawfully possessed firearm, effectively interfering with any ability to systematically collect information about gun ownership and storage. Moreover, these provisions may inhibit firearm safety counseling even if such counseling is not strictly proscribed, and certainly would interfere with the promotion, monitoring, and evaluation of the impact of physician counseling. Given how much more we need to know about preventing firearm-related violence, it is unconscionable that the Centers for Disease Control has been severely limited

in its ability to fund firearm research for the past 15 years, despite the well-established connection between firearm availability and child and adolescent mortality.<sup>20</sup>

Because many of the perpetrators of mass killings and other homicides show indications of mental health disorders (and ultimately are very likely to commit suicide), some have called for the need to improve access and quality of mental health services as a primary focus for prevention of these violent acts. In this regard, a common profile of perpetrators of school shootings includes a recent threat of violence, suicidal ideation or behavior, and having been bullied by a peer.<sup>21,22</sup> Such hindsight, however, does not equate to increased foresight. To put the issue of prediction in statistical perspective, around 25% of individuals in the United States have a mental disorder, whereas 15 mass shootings have occurred in the United States since 1982. Predicting precisely who will commit these types of violent rampages, let alone when, is simply not an achievable goal. Instead, involving those individuals in clinical care who are troubled enough to take irrational action is the most logical approach. Engaging people with mental disorders in treatment provides them with the chance for a better life and allows clinicians an increased awareness of changes in their lives that might frustrate them to the point of hurting others and themselves. Although the prediction of imminent violence, given the frequency of these indicators and the rarity of school shootings, is impossible, experts recommend that there be a mechanism for the reporting of violent threats and a process in place for rapid assessment and triage.<sup>23,24</sup>

Although we support the need for rapid access to mental health care for those thought to be at risk for imminent violence, we believe it is unrealistic to place complete emphasis on mental health access, triage, and care, both because of the difficulty in assessing imminent risk for violence and because the United States leads all high-income countries in mass shootings despite having a similar rate of mental disorders.<sup>2</sup> The main factor that differentiates the United States from other high-income countries is having a much higher rate of per capita gun ownership, which in turn is reflected in a much higher firearm homicide rate and homicide rate overall (Figure 1).<sup>25</sup> Therefore, in our search for national solutions to the problem of violent death, we ignore this huge disparity in gun availability and firearm death between the United States and other high-income countries at our collective peril.

Psychiatric disorder is also associated with risk for homicides that occur outside the context of mass shootings, which constitute the vast majority of homicides in the United States. Although the relative contribution of mental disorder to risk for homicide perpetration is open to debate, it is clear that psychosis, substance abuse, and antisocial personality disorder are more common in homicide perpetrators than in the general population.<sup>26-28</sup> Nevertheless, the proportion of psychiatrically disordered individuals who perpetrate homicide is small. For example, the risk of a person in a first-episode of psychosis committing a homicide is 1 in 629.<sup>29</sup> Although some characteristics (e.g., hostility, substance abuse) have been found to differentiate those psychotic patients who engage in homicidal acts from those who do not, precise prediction of violence in individuals with or without a mental disorder is statistically impossible.<sup>23,30</sup> High-risk individuals with mental health problems fluctuate in their likelihood of being involved in violence, depending on factors such as increased alcohol or drug use, and identifying these periods of increased risk can be done only by engaging these individuals in treatment or keeping them in contact with family and friends.<sup>23,29-31</sup> Therefore, although access to good-quality treatment in high-risk individuals may lower the rate of homicide, our ability to precisely identify which individuals are at imminent risk is limited. In our view, it is unrealistic to place complete emphasis on mental health care without also attending to the strong association between the very high availability of firearms in the United States and the similarly high American homicide rates.<sup>32</sup>

Adolescent suicide serves as another example of the relative contribution of mental disorder and firearm availability to risk for mortality in youth. Mental disorder is a critical risk factor for youth suicide, but firearms in the home is one of the only characteristics that differentiate suicide victims from psychiatrically ill, living suicide attempters.<sup>33</sup> Furthermore, many early adolescent suicide victims do not show clear evidence of a mental disorder, and one of the only risk factors for these young suicides is the presence of a loaded gun in the home.<sup>13,14</sup>

While we are circumspect about the ability of rapid assessment and triage to substantially lower the homicide rate, there is suggestive evidence that preventive efforts early in a child's life may decrease the number of homicides. Two examples of such programs are the nurse visitation or family support programs that focus on high-risk mothers and their infants and preventive interventions that target youth at risk for behavioral disorders before 13 years of age, with a particular emphasis on decreasing early aggression and nonlethal violence, and enhancing social problem-solving skills and impulse control.<sup>34</sup> These types of interventions have been successful in decreasing the rates of substance abuse, antisocial behavior, and involvement with the criminal justice system, all significant precursors of homicidal behavior, that, if lowered, are likely to decrease the rate of homicidal behavior.<sup>34,35</sup> Another, complementary approach is to focus on mental health disorders that tend to precede and predict homicide. Particularly important are disruptive behavior disorders (especially oppositional defiant disorder and conduct disorder with symptoms such as anger and aggression) which in at least one study predicted later homicide perpetration among young men.<sup>33</sup> These approaches require taking a long view about the decrease in youth violence, which ultimately can be cost-effective by increasing youth productivity and decreasing significant precursors of incarceration.<sup>34</sup> Nevertheless, although prevention can effectively decrease the public health burden of youth violence in the long run, it is unreasonable to expect that this approach can yield an immediate solution.

Other factors that have been discussed as contributing to mass shootings and to firearm violence in general have been the effects of exposure to violence by the media, games and entertainment, and neighborhood violence. Media exposure at most may have very modest effects on homicide, and although exposure to violence in entertainment may increase aggressive behavior, its link to actual criminal behavior has not been demonstrated.<sup>36,37</sup> Exposure to neighborhood violence is associated with an increased likelihood of weapon-carrying and violent behavior, but the effects of violence exposure are difficult to disentangle from those of overall social disadvantage and the mediating influence of family environment.<sup>38-40</sup>

We summarize our recommendations as follows (see Table 1): we advocate for effective legislation that will bring our country's firearm death toll more in line with the rest of the developed world, such as universal background checks for all firearm purchases and a ban on the sale of assault weapons and other firearms with high-capacity magazines. Such programs have been shown to dramatically decrease the incidence of mass shootings and appear to accelerate an overall downward trend in firearms deaths. We insist that there should be no interference on best practice for primary care and child psychiatry, which requires respectful inquiry into the availability and safe storage of firearms in the home to protect children and adolescents who are those most vulnerable to the risks that firearms may pose. We support investment in better mental health care, recognizing that a decrease in youth violence is best achieved through long-term commitments to early intervention aimed at the decrease of juvenile aggression and nonlethal violence, rather than a sole emphasis on short term screening to identify potentially violent individuals. We urge Congress to lift the ongoing restrictions uniquely constraining research on one of the most common causes of morbidity and mortality in childhood, including research on gun safety and storage, that may lead to a society where we can more effectively shield children from the lethal consequences

of random acts of mayhem.<sup>41</sup> Letting the tragedy of Newtown pass without a careful examination of the policies that have contributed to the scourge of firearm violence in our country would be morally, politically, and scientifically irresponsible. We must not be silent about gun violence, and must speak for those who have been silenced.

## Acknowledgments

This work was supported by the National Institute of Mental Health (NIMH) grants MH56612, MH55123, MH018851, MH66371 (D.A.B.); MH056630 (R.L.); and MH060952 (B.B.).

Drs. Brent, Miller, and Mulvey served as the statistical experts for this research.

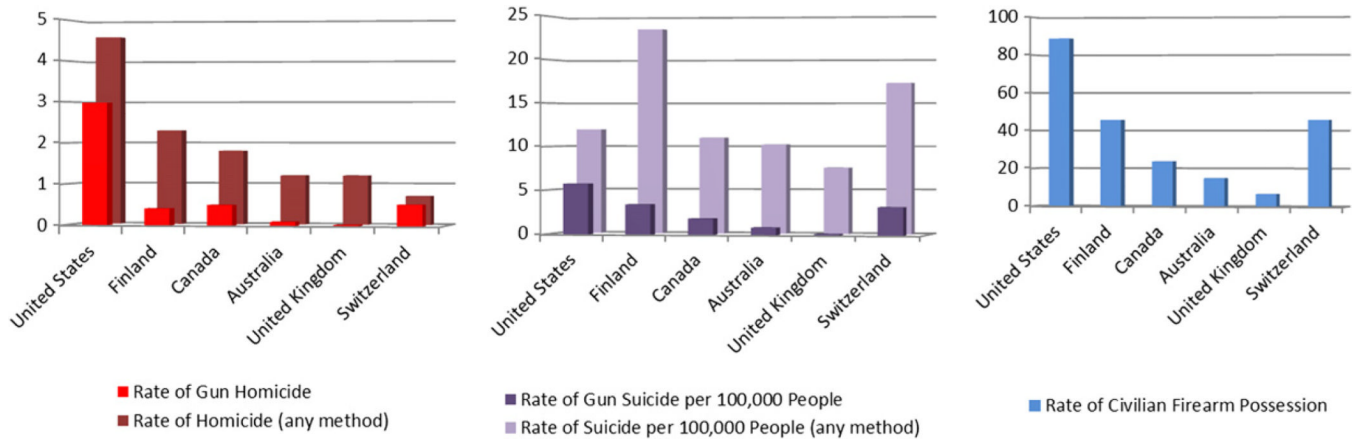
Dr. Brent has received research support from the NIMH, has received royalties from Guilford Press, has or will receive royalties from the electronic self-rated version of the Columbia–Suicide Severity Rating Scale from ERT, Inc., and has served as an UpToDate Psychiatry Editor. Dr. Loeber has received research funding from the NIMH. Dr. Mulvey has received research funding from the National Institute on Drug Abuse. Dr. Birmaher has received research funding from the NIMH and has or will receive royalties for publications from Random House (*New Hope for Children and Teens with Bipolar Disorder*) and Lippincott Williams and Wilkins (*Treating Child and Adolescent Depression*).

## REFERENCES

- Centers for Disease Control and Prevention, National Center for Health Statistics. [Accessed December 24, 2012] Multiple causes of death 1999–2010. 2012. <http://wonder.cdc.gov/mcd-icd10.html>.
- Follman M, Aronsen G, Pan D. A guide to mass shootings in America. Mother Jones. 2012 <http://www.motherjones.com/politics/2012/07/mass-shootings-map>.
- Richardson EG, Hemenway D. Homicide, suicide, and unintentional firearm fatality: comparing the United States with other high-income countries, 2003. *J Trauma*. 2011; 70:238–243. [PubMed: 20571454]
- Kellermann AL, Reay DT. Protection or peril? An analysis of firearm-related deaths in the home. *N Engl J Med*. 1986; 314:1557–1560. [PubMed: 3713749]
- Kellermann AL, Somes G, Rivara FP, Lee RK, Banton JG. Injuries and deaths due to firearms in the home. *J Trauma*. 1998; 45:263–267. [PubMed: 9715182]
- Miller M, Azrael D, Hemenway D. Firearm availability and unintentional firearm deaths, suicide, and homicide among 5–14 year olds. *J Trauma*. 2002; 52:267–274. [PubMed: 11834986]
- Chapman S, Alpers P, Agho K, Jones M. Australia's 1996 gun law reforms: faster falls in firearm deaths, firearm suicides, and a decade without mass shootings. *Inj Prev*. 2006; 12:365–372. [PubMed: 17170183]
- Hemenway D. How to find nothing. *J Public Health Policy*. 2009; 30:260–268. [PubMed: 19806067]
- Kapusta ND, Etzersdorfer E, Krall C, Sonneck G. Firearm legislation reform in the European Union: impact on firearm availability, firearm suicide and homicide rates in Austria. *Br J Psychiatry*. 2007; 191:253–257. [PubMed: 17766767]
- Miller M, Azrael D, Hepburn L, Hemenway D, Lippmann SJ. The association between changes in household firearm ownership and rates of suicide in the United States 1981–2002. *Inj Prev*. 2006; 12:178–182. [PubMed: 16751449]
- Lubin G, Werbeloff N, Halperin D, Shmushkevitch M, Weiser M, Knobler HY. Decrease in suicide rates after a change of policy reducing access to firearms in adolescents: a naturalistic epidemiological study. *Suicide Life Threat Behav*. 2010; 40:421–424. [PubMed: 21034205]
- Grossman DC, Mueller BA, Riedy C, et al. Gun storage practices and risk of youth suicide and unintentional firearm injuries. *JAMA*. 2005; 293:707–714. [PubMed: 15701912]
- Brent DA, Baugher M, Bridge J, Chen T, Chiappetta L. Age- and sex-related risk factors for adolescent suicide. *J Am Acad Child Adolesc Psychiatry*. 1999; 38:1497–1505. [PubMed: 10596249]

14. Brent DA, Perper JA, Moritz G, Baugher M, Schweers J, Roth C. Firearms and adolescent suicide. A community case-control study. *Am J Dis Child*. 1993; 147:1066–1071. [PubMed: 8213677]
15. Barkin SL, Finch SA, Ip EH, et al. Is office-based counseling about media use, timeouts, and firearm storage effective? Results from a cluster-randomized, controlled trial. *Pediatrics*. 2008; 122:e15–e25. [PubMed: 18595960]
16. Carbone PS, Clemens CJ, Ball TM. Effectiveness of gun-safety counseling and a gun lock giveaway in a Hispanic community. *Arch Pediatr Adolesc Med*. 2005; 159:1049–1054. [PubMed: 16275796]
17. Albright TL, Burge SK. Improving firearm storage habits: impact of brief office counseling by family physicians. *J Am Board Fam Pract*. 2003; 16:40–46. [PubMed: 12583649]
18. Webster DW, Wilson ME, Duggan AK, Pakula LC. Parents' beliefs about preventing gun injuries to children. *Pediatrics*. 1992; 89:908–914. [PubMed: 1579403]
19. The Patient Protection and Affordable Care Act, 42 USC 124 §2716. 2010
20. Kellermann AL, Rivara FP. Silencing the science on gun research [published online December 21, 2012]. *JAMA*. 2012
21. Anderson M, Kaufman J, Simon TR, et al. School-associated violent deaths in the United States 1994–1999. *JAMA*. 2001; 286:2695–2702. [PubMed: 11730445]
22. Verlinden S, Hersen M, Thomas J. Risk factors in school shootings. *Clin Psychol Rev*. 2000; 20:3–56. [PubMed: 10660827]
23. Mulvey EP, Cauffman E. The inherent limits of predicting school violence. *Am Psychol*. 2001; 56:797–802. [PubMed: 11675986]
24. Bondu R, Cornell DG, Scheithauer H. Student homicidal violence in schools: an international problem. *New Dir Youth Dev*. 2011; 2011:13–30. [PubMed: 21491570]
25. Alpers, Philip and Marcus Wilson. *Guns in the United States: Facts, Figures and Firearm Law*. Sydney: Sydney School of Public Health, University of Sydney; 2012 Dec 20. <http://www.gunpolicy.org/firearms/region/united-states>. [Accessed January 3, 2013]
26. Fazel S, Grann M. Psychiatric morbidity among homicide offenders: a Swedish population study. *Am J Psychiatry*. 2004; 161:2129–2131. [PubMed: 15514419]
27. Shaw J, Hunt IM, Flynn S, et al. The role of alcohol and drugs in homicides in England and Wales. *Addiction*. 2006; 101:1117–1124. [PubMed: 16869841]
28. Shaw J, Hunt IM, Flynn S, et al. Rates of mental disorder in people convicted of homicide. National clinical survey. *Br J Psychiatry*. 2006; 188:143–147. [PubMed: 16449701]
29. Nielssen O, Large M. Rates of homicide during the first episode of psychosis and after treatment: a systematic review and meta-analysis. *Schizophr Bull*. 2010; 36:702–712. [PubMed: 18990713]
30. Large MM, Ryan CJ, Singh SP, Paton MB, Nielssen OB. The predictive value of risk categorization in schizophrenia. *Harv Rev Psychiatry*. 2011; 19:25–33. [PubMed: 21250894]
31. Mulvey EP, Odgers C, Skeem J, Gardner W, Schubert C, Lidz C. Substance use and community violence: a test of the relation at the daily level. *J Consult Clin Psychol*. 2006; 74:743–754. [PubMed: 16881782]
32. Large M, Smith G, Swinson N, Shaw J, Nielssen O. Homicide due to mental disorder in England and Wales over 50 years. *Br J Psychiatry*. 2008; 193:130–133. [PubMed: 18669997]
33. Brent DA, Perper JA, Allman CJ, Moritz GM, Wartella ME, Zelenak JP. The presence and accessibility of firearms in the homes of adolescent suicides. A case-control study. *JAMA*. 1991; 266:2989–2995. [PubMed: 1820470]
34. Loeber, R.; Farrington, DP. *Young Homicide Offenders and Victims; Development, Risk Factors, and Prediction from Childhood*. New York: Springer; 2011. p. 123-152.
35. Olds D, Henderson CR Jr, Cole R, et al. Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *JAMA*. 1998; 280:1238–1244. [PubMed: 9786373]
36. Ferguson CJ, Kilburn J. The public health risks of media violence: a meta-analytic review. *J Pediatr*. 2009; 154:759–663. [PubMed: 19230901]
37. Browne KD, Hamilton-Giachritsis C. The influence of violent media on children and adolescents: a public-health approach. *Lancet*. 2005; 365:702–710. [PubMed: 15721477]

38. Halliday-Boykins CA, Graham S. At both ends of the gun: testing the relationship between community violence exposure and youth violent behavior. *J Abnorm Child Psychol.* 2001; 29:383–402. [PubMed: 11695541]
39. Molnar BE, Miller MJ, Azrael D, Buka SL. Neighborhood predictors of concealed firearm carrying among children and adolescents: results from the project on human development in Chicago neighborhoods. *Arch Pediatr Adolesc Med.* 2004; 158:657–664. [PubMed: 15237065]
40. Fabio A, Tu LC, Loeber R, Cohen J. Neighborhood socioeconomic disadvantage and the shape of the age-crime curve. *Am J Public Health.* 2011; 101(suppl 1):S325–S332. [PubMed: 21778512]
41. Weiner J, Wiebe DJ, Richmond TS, et al. Reducing firearm violence: a research agenda. *Inj Prev.* 2007; 13:80–84. [PubMed: 17446246]



**FIGURE 1.** Comparison of the United States with other high-income countries on total and firearm homicide rates and civilian gun ownership.<sup>25</sup>



TABLE 1

## Firearms Facts and Policy Recommendations

Firearms Facts	Policy Recommendations
The United States leads all high-income countries in rates of firearm availability and in firearm deaths	Institute universal background checks for all firearm purchases and restrict access to assault weapons and other highmagazine firearms
Restriction in access to handguns and assault weapons has been associated with decreases in homicides and mass shootings	
Firearm deaths and injuries are less likely to occur if guns and ammunition are stored locked	Promote physician screening and counseling for firearm safety and remove legislative barriers to counseling and recording firearm safety information in health records
Physician counseling can increase safe storage of firearms in the homes of patients	
Treatment of psychosis, antisocial personality disorder, and substance abuse can lower homicidal risk	Augment treatment infrastructure and workforce to provide improved access and rapid assessment of at-risk patients, but ...
Prediction of particular violent incidents is nearly impossible, given the high rate of mental disorders and low rate of homicidal acts	Be realistic about our current inability to accurately predict imminent violence
A substantial proportion of the precursors of homicidal behavior can be prevented by early intervention with at-risk youth and their families	Prioritize preventive interventions to decrease the burden of future violent behavior among at-risk youth
Firearm safety, morbidity, and mortality research has been greatly decreased and restricted	Restore funding for research in firearm safety in proportion to its contribution to national morbidity and mortality