

# Reducing Youth Firearm Suicide Risk: Evidence for Opportunities

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Adolescent suicide by firearm imposes devastating losses to families and society, killing more than 1000 10- to 19-year-old children and adolescents annually in the United States. Youth suicide rates between 1999 and 2014 have tripled for 10- to 14-year-olds and increased by 50% for 15- to 24-year-old youth.<sup>1</sup> This preventable injury is still a leading cause of death in this age group.<sup>2</sup>

Household firearms create a suicide (and homicide) risk to all children and adults in a home.<sup>3</sup> Given the much higher relative risk to individuals with mental health conditions and substance abuse disorders,<sup>4</sup> a focus on families with high-risk adolescents merits top priority.

The interaction of guns, mental health, and injury is a topic of national interest. Mainly, the focus is preventing assault injuries and deaths through criminal background checks to restrict gun sales to high-risk individuals. For self-inflicted firearm injury among adults, restrictions are complicated by the challenges of limiting household access. For youth, however, parents and caretakers have a key responsibility in preventing gun access. Exercising this responsibility is critical because self-harm is generally more impulsive and with lower levels of intent in adolescents compared with adults.<sup>5</sup>

Restricting teenager access to guns in the home is a potentially promising strategy for families with high-risk adolescents.<sup>6,7</sup> A hypothetical framework for an effective strategy would be for families to: (1) be aware of potential risks to household

members posed by unlocked guns in the home and how risk is greatly amplified for teenagers with depression or substance abuse; (2) be ready to be engaged in discussion to eliminate access to guns in the home (and in homes of families and friends frequented by the teenager) by storing them in locked firearm safes or handgun lockboxes or outside the home; and (3) have access to effective treatment and longitudinal care for teenagers with mental health and substance abuse conditions, working toward remission and reducing self-harm risk. This framework, of course, must be confirmed with stronger evidence of effectiveness.

The study by Scott et al<sup>8</sup> in this issue of *Pediatrics* addresses the important question of whether families with children and/or adolescents with elevated risk, compared with those without, have different ownership or firearm storage behavior patterns. The results reinforce the substantial opportunity to protect high-risk youth living in homes with guns. In their nationally representative survey of US adults in households with children and/or teenagers, the authors found that gun prevalence and storage status did not differ by the presence of youth in the home with high-risk conditions. Firearms were present in ~42% of all households, and ownership prevalence did not differ between homes with or without youth at risk for self-harm. In homes with firearms, approximately one-third of families stored their guns locked and unloaded. As with ownership, firearm storage behavior did not vary between homes with and without youth with self-harm risk.

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These findings concur with a recent similar study that relied on medical claims diagnoses, rather than parent report, to classify the self-harm risk status of teenagers.<sup>9</sup>

Why do parents and caretakers of teenagers with depression and other self-harm risk factors have the same gun storage behaviors as those without at-risk teenagers? Parental and caretaker under recognition of behavioral risk factors is an unlikely explanation in this study because the authors relied on the parent's and caregiver's report of diagnosis. However, many cases of teenage depression are not recognized.<sup>10</sup> A second hypothesis is that parents and caretakers may not know the magnitude of self-harm risk potential among high-risk youth with access to household firearms. Even if aware, they may misjudge or downplay the risk to their child or teenager. Third, although parents have awareness of the risk, they may have overconfidence in their reliance on household behavioral, as opposed to environmental, controls (ie, use of gun storage devices) to manage gun access. Fourth, storing guns and ammunition in locked locations is challenging. Some barriers may include knowledge and beliefs about the effectiveness of specific safe storage practices, access to safe storage devices, and parent and caregiver conflicts about this risk-mitigation strategy.<sup>11</sup>

Pediatricians and other clinicians caring for teenagers play a critical role in preventing youth suicide, even while we test hypotheses and identify practical interventions for reducing firearm access by high-risk teenagers. Routine screening all adolescents

for depression is an important start, recommended in guidelines by both Bright Futures and the US Preventive Services Task Force. When screening yields concerns of depression, a natural opportunity arises to ask about access to household firearms and provide intensive behavioral counseling on safe storage. Ongoing treatment of teenage depression involves systematic monitoring of treatment effectiveness, possibly including message reinforcement about firearm storage. Clinicians may need to engage other family members to ensure that treatment and storage recommendations are followed.

The increased rate of youth firearm suicide over 2 decades indicates failure of both health care and public health systems to adequately address prevention of these tragic injuries and deaths. The article by Scott et al<sup>8</sup> tells us that we have much more to learn about how to successfully engage families in reducing access to guns in the home.

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## REFERENCES

1. Curtin SC, Warner M, Hedegaard H. Increase in Suicide in the United States, 1999–2014. *NCHS Data Brief, No 241*. Hyattsville, MD: National Center for Health Statistics; 2016
2. Sullivan EM, Annest JL, Simon TR, Luo F, Dahlberg LL; Centers for Disease Control and Prevention. Suicide trends among persons aged

10–24 years—United States, 1994–2012. *MMWR Morb Mortal Wkly Rep*. 2015;64(8):201–205

3. Anglemeyer A, Horvath T, Rutherford G. The accessibility of firearms and risk for suicide and homicide victimization among household members: a systematic review and meta-analysis. *Ann Intern Med*. 2014;160(2):101–110
4. Nock MK, Hwang I, Sampson N, et al. Cross-national analysis of the associations among mental disorders and suicidal behavior: findings from the WHO World Mental Health Surveys. *PLoS Med*. 2009;6(8):e1000123
5. Simon OR, Swann AC, Powell KE, Potter LB, Kresnow MJ, O'Carroll PW. Characteristics of impulsive suicide attempts and attempters. *Suicide Life Threat Behav*. 2001;32(suppl 1):49–59
6. Rivara FP. Youth suicide and access to guns. *JAMA Pediatr*. 2015;169(5):429–430
7. Rowhani-Rahbar A, Simonetti JA, Rivara FP. Effectiveness of interventions to promote safe firearm storage. *Epidemiol Rev*. 2016;38(1):111–124
8. Scott J, Azrael D, Miller M. Firearm storage in homes with children with self-harm risk factors. *Pediatrics*. 2018; 141(3):e20172600
9. Simonetti JA, Theis MK, Rowhani-Rahbar A, Ludman EJ, Grossman DC. Firearm storage practices in households of adolescents with and without mental illness. *J Adolesc Health*. 2017;61(5):583–590
10. Merikangas KR, He JP, Brody D, Fisher PW, Bourdon K, Koretz DS. Prevalence and treatment of mental disorders among US children in the 2001–2004 NHANES. *Pediatrics*. 2010;125(1):75–81
11. Azrael D, Miller M, Hemenway D. Are household firearms stored safely? It depends on whom you ask. *Pediatrics*. 2000;106(3). Available at: [www.pediatrics.org/cgi/content/full/106/3/e31](http://www.pediatrics.org/cgi/content/full/106/3/e31)

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