



Firearm-Related Injuries and Deaths in Children and Youth: Injury Prevention and Harm Reduction

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Firearms are the leading cause of death in children and youth 0 to 24 years of age in the United States. They are also an important cause of injury with long-term physical and mental health consequences. A multipronged approach with layers of protection focused on *harm reduction*, which has been successful in decreasing motor vehicle-related injuries, is essential to decrease firearm injuries and deaths in children and youth. Interventions should be focused on the individual, household, community, and policy levels. Strategies for harm reduction for pediatric firearm injuries include providing anticipatory guidance regarding the increased risk of firearm injuries and deaths with firearms in the home as well as the principles of safer firearm storage. In addition, lethal means counseling for patients and families with individuals at risk for self-harm and suicide is important. Community-level interventions include hospital and community-based violence intervention programs. The implementation of safety regulations for firearms as well as enacting legislation are also essential for firearm injury prevention. Increased funding for data infrastructure and research is also crucial to better understand risks and protective factors for firearm violence, which can then inform effective prevention interventions. To reverse this trend of increasing firearm violence, it is imperative for the wider community of clinicians, public health advocates, community stakeholders, researchers, funders, and policy makers to collaboratively address the growing public health crisis of firearm injuries in US youth.

Firearms are the leading cause of death in children and youth 0 to 24 years of age in the United States, surpassing deaths from motor vehicle crashes, since 2017.^{1,2} This change is attributable in part to increasing rates of

abstract

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firearm suicides and homicides in US youth 15 to 24 years of age³ and not solely because motor vehicle crash deaths have been decreasing. As motor vehicle injury prevention is focused on *harm reduction* by increasing the safety of the vehicle, environment, and decreasing user risk—and not removal of vehicles from the road—a similar strategy must be considered for firearm injury prevention.

There are significant disparities in victims of firearm death and injury based on age, gender, race, ethnicity, and geographic region. Most suicides and homicides by firearm occur in males and youth 15 to 24 years of age.⁴ The highest rates of firearm suicide are in American Indian and Alaska Native youth.⁴ Firearm homicides, including from legal intervention, occur disproportionately in communities of marginalized racial and ethnic groups.⁴⁻⁷ Understanding how different communities are differentially impacted by firearm violence is essential for implementing prevention strategies.

The principles of the Haddon matrix for injury prevention⁸ can be applied to develop a multipronged approach for pediatric firearm injury prevention at the individual, household, community, state, and national levels.⁹⁻¹¹ This approach has been very effective in decreasing motor vehicle crash-related deaths and injuries by focusing on risk reduction—not only risk removal. The Haddon matrix principles examine potential prevention strategies by using a phase-in-time approach (ie, before, during, and after the shooting event) applied to the host (the injured individual), the agent (the firearm), and the environment (both physical and social or legislative).¹²

Ultimately, the goal for firearm injury prevention should be to

implement layers of protection with multiple interventions to make it more difficult for youth to access firearms. Anticipatory guidance and lethal means counseling can help youth and families make informed choices about reducing firearm access to decrease the risk of a firearm death or injury. Harm reduction approaches include promoting safe storage or firearm removal, safety designs and regulations so only authorized users can fire a firearm, community violence prevention programs, and state and federal level legislation. The purpose of this policy statement is to guide clinicians, public health researchers and professionals, community stakeholders, and policy makers regarding the evidence-based best practices for decreasing firearm-related deaths and injuries to children and youth. This policy statement accompanies the technical report, “Firearm-Related Injuries and Deaths in Children and Youth.”¹³

ANTICIPATORY GUIDANCE ON SAFER FIREARM STORAGE AND LETHAL MEANS COUNSELING

The majority of deaths (85%) from firearms in younger children (0–12 years of age) occur in the home. Older children (13–17 years of age) are equally likely to be killed at home (39%) or on the street or sidewalk (38%).¹⁴ Therefore, providing barriers to access to firearms in the home is a crucial mechanism to decrease the risks of unintentional firearm shooting as well as suicide and homicide.¹⁵ Removal of firearms from the home, which is the most protective measure¹⁶ and may be strongly advisable in some scenarios, may not be acceptable or achievable for many firearm-owning families. However, families should be informed that firearms can be temporarily transferred to other people (ie, family, friends, firearm dealers), stored at gun clubs or

shooting ranges, or stored with the local police in many localities.¹⁷⁻¹⁹ In households with firearms, it is important to discuss the safer storage of firearms in the home, which includes the following:

1. Store the firearm unloaded.
2. Store the firearm locked.
3. Store the ammunition separated from the firearm.
4. Store the ammunition locked separately from the firearm.^{20,21}

Clinician-initiated firearm safety anticipatory guidance to patients and families can increase household safe firearm storage behaviors.^{14,22} Many families are interested in discussing firearm injury prevention.^{23,24} Families underestimate how children will behave when they encounter a firearm²⁵⁻²⁷ and, thus, miscalculate the risk of having a firearm in the home.^{28,29} The application of successful behavioral economics principles³⁰ to firearm injury prevention includes addressing parental beliefs regarding their child’s firearm injury risk and the immediate inconvenience versus likely future benefits of safe firearm storage.³¹

Anticipatory guidance is an important component of every well-child visit, with firearm-related anticipatory guidance included in the American Academy of Pediatrics (AAP) *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescent*, Fourth Edition for well-child care.³² Several interventional studies have examined the effectiveness of firearm safety anticipatory guidance,^{22,33-35} and overall, provision of firearm safety storage devices is associated with safer storage practices.³³ Anticipatory guidance should also include asking about firearms in the homes of relatives and friends where the child(ren) may visit.^{36,37} However, because conversations involving

firearms can be challenging, culturally appropriate messaging is important.²⁴

Firearms have the highest fatality rate (>90%) compared with other methods of suicide.³⁸ Lethal means counseling in households with individuals at risk for self-harm and suicide should include discussions to prevent access to lethal agents of harm, including firearms and other means.³⁹ In addition to the primary care office, this type of counseling can occur in the emergency department (ED)⁴⁰ or mental health professional's office.^{41,42}

FIREARMS AS A CONSUMER PRODUCT AND SAFETY REGULATIONS

In addition to decreasing firearm access, policies should be implemented that focus on the safety of firearms themselves. Currently firearms, even though they are sold as a consumer product, are not regulated for safety.^{43,44} Firearms should also be designed with affordable technological barriers to prevent firing in the hands of an unauthorized user, like cellphone biometric technology.²¹

VIOLENCE PREVENTION PROGRAMS

For community-level intervention strategies, the National Academy of Medicine stated that successful interventions must involve health and public safety organizations, educators, and community groups.⁴⁵ Hospital-based violence intervention programs are 1 example of a violence prevention program engaging both hospitals and community groups. Hospital-based violence intervention programs identify youth injured from violence, including firearms, at the index ED visit and enroll them in community-based programs to decrease recidivism.^{46,47} Violence intervention advocacy programs are community-based programs that include interventions at the

individual and community level to address risk and protective factors for firearm injuries and deaths.^{46,48,49} These programs include multidimensional interventions focused on improving public transportation, environmental safety, and housing.^{50,51} Increased funding to support and expand these programs is essential, especially to address the inequities associated with firearm violence.

LEGISLATION

Greater firearm availability is associated with increased risks of firearm suicide and unintentional deaths in youth 0 to 24 years of age.⁵²⁻⁵⁴ Increased state-level firearm household ownership and prevalence has been associated with higher state-level rates of firearm suicides, homicide, and unintentional deaths in children 5 to 14 years of age.⁵⁵ Stronger state-level legislation is associated with lower state-level firearm prevalence and access⁵⁶ and decreased firearm deaths in children and youth.⁵⁷

DATA AND RESEARCH FUNDING

Research funding is vitally needed for firearm injury prevention, with an estimated \$120 million needed annually to close the research funding gap.⁵⁸ The passage of the Dickey amendment in 1996 led to a nearly 25-year prohibition of federal funding. Not until 2020 was Congressional federal funding appropriated again for research on firearm injury and violence prevention. Between 2008 and 2017, on average, \$597 was spent on research per pediatric firearm death. In comparison, motor vehicle-related research received \$26 136 per pediatric death, whereas cancer, the third leading cause of death, received \$195 508 per death in funding.⁵⁹ Consequently, research and publications addressing firearm-related injuries, deaths, and

interventions remain far behind other areas of research. This lack of funding and research has impeded our ability to apply evidence-based approaches to decrease firearm injuries and deaths in US children and youth.^{59,60}

In 2013, the Institute of Medicine issued a summary of research priorities to reduce the threat of firearm-related violence, including characteristics of violence, risk and protective factors, intervention strategies, the impact of gun safety technology, and the influence of media.⁶¹ Better data sources for research are also critical. The National Highway Transportation Safety Administration has detailed databases on motor vehicle crash deaths and injuries,⁶² which have been vitally important in implementing interventions and ultimately decreasing motor vehicle-related deaths.⁶³ As of 2020, funding has been appropriated for the first time for all 50 states to provide data for the National Violent Death Reporting System⁶⁴—a very important start. However, this database only provides information about deaths and is not available in real-time for surveillance of firearm deaths. To truly understand the changing dynamic of firearm injuries and deaths, a real-time data surveillance system for injuries, including those caused by firearms, is necessary.

RECOMMENDATIONS TO DECREASE FIREARM DEATHS AND INJURIES TO CHILDREN AND YOUTH

- I. Firearm anticipatory guidance and lethal means counseling
 - A. Educate clinicians about firearm epidemiology, anticipatory guidance, and lethal means restriction: clinicians, including trainees, should be provided training on the importance of, and how to have, these discussions with patients and

families to decrease firearm injuries and deaths.⁶⁵

B. Mental health screening: age-appropriate, evidence-based screening for depression and suicide risk should be conducted in the primary care, subspecialty care, and ED settings to identify youth at risk for self-harm or for harming others.^{39,66}

C. Anticipatory guidance: anticipatory guidance regarding safer firearm storage, including “smart” gun safety technology, or removal of firearms from the home, should be provided as part of routine injury prevention discussions.³³ These open, nonjudgmental conversations should be normalized and personalized to the specific situation of the family to foster shared decision making. For families with toddlers and older children, the focus should be on the prevention of an unintentional shooting event. For families with adolescents and young adults, the focus should also include the prevention of suicide, while acknowledging many teenagers who attempt suicide do not have a known history of depression or suicidal ideation. When counseling, consider direct messages such as:

- “Having a loaded or unlocked firearm in your house increases the risk of injury or death to all family members, including children, whether by accident or on purpose. I urge you to store your unloaded firearms in a locked box or safe, separate from the locked ammunition, and out of the reach of children.”⁶⁷
- Safer storage includes having the firearm unloaded and

locking the firearm and ammunition away separately.

- Anticipatory guidance on safety storage can be provided, preferably with a safety device (eg, trigger lock, firearm lock box),²¹ or at least with resources on how to obtain these devices.

D. Asking Saves Kids (ASK): the Asking Saves Kids (ASK) campaign advocates for greater awareness about the risks of unintentional firearm shootings and asking about firearms in the homes of others. As part of anticipatory guidance, parents and caregivers should also be counseled on asking about firearms in the homes where their child(ren) are visiting.³⁶

E. Lethal means counseling: this counseling should be provided to young adults and families of individuals at risk for self-harm or harming others (eg, individuals with suicidal ideation, history of intimate partner violence in the household, individuals with history of violent acts or substance use disorders) in primary care, mental health, ED, or other health care settings (<https://www.hsph.harvard.edu/means-matter/recommendations/clinicians/>). Counseling about firearms should be included in the context of the removal of other lethal means, including medications, toxic substances (eg, cleaners), and sharp objects.^{68,69}

II. Hospital and community-level interventions

A. Violence intervention programs: advocate for increased funding⁷⁰ for and disseminate best practices for the development of hospital- and community-based violence intervention advocacy

programs, tailoring resources to needs of the community.

B. Location restrictions for firearms: as smoking is restricted in certain public places, firearms should have similar restrictions (eg, airlines, hospitals, sports stadiums, schools, and other public places).¹²

C. Neighborhood environment interventions: advocate for community development, including cleaning and greening of open neighborhood land spaces and mitigation of abandoned houses (by securing the doors and windows), as these practices have been associated with decreased firearm violence.⁵⁰

D. Community investment in addressing the social determinants of health: because poverty is associated with increased firearm deaths, decreasing the poverty level of the community by increasing affordable housing and educational and employment opportunities may be another strategy to decrease firearm violence on the community level.^{71,72}

E. Law enforcement: address policies and practices in law enforcement that have led to greater policing of youth from marginalized racial and ethnic communities and reform laws (eg, minimum mandatory sentence drug laws, repeat offender laws) that may influence the frequency of contact with the police and the criminal justice system.^{71,73,74}

III. Firearms as a consumer product

A. Consumer product regulations: firearms should be regulated for safety like other consumer products. Similar to motor vehicles, firearm regulations could be enacted so national requirements are established for training, licensing,

insurance coverage, and registration of individuals purchasing firearms and requirements for safe storage.⁷⁵

- B. Establish a federal agency to regulate firearms: comparable to the National Highway Transportation Safety Administration that regulates motor vehicles for safety, a similar organization could be established for firearms to make policies and respond efficiently to changes in technology. This agency would be focused on safety standard setting, recalls, and collecting data on firearms.⁷⁵
- C. Firearm safety design and regulation: advocate for the design and sale of affordable personalized “smart” gun and safety technology, which allow only authorized users to pull the trigger on the firearm. Safety mechanisms, like trigger locks, should be required.²¹ There should be regulations for privately made firearms (“ghost guns”), which are untraceable, including those printed by 3D printers, with requirements for background checks for purchase of key components and for identifying markings.⁷⁶

IV. Legislation

Stronger, effective legislation should be enacted and enforced at the state and federal level, including the following laws.

- A. Universal background checks: background checks, using both federal databases, as well as information from local law enforcement, should be performed before all firearm purchases. These background checks should be applied not only to firearms sold at federally licensed firearm dealers but for all transactions resulting in firearm sales. These transactions
- B. Buyer regulations: buyer regulations include laws increasing age limits for certain types of firearms (eg, semiautomatic, military-style weapons), requiring buyers to obtain a permit or license, and a waiting period before firearm purchase. Standardized, evidence-based safety training should be mandatory for all buyers. Waiting periods may reduce the risk of impulsive acts (eg, suicide, intimate partner violence) and allow sufficient time for background checks to be conducted.^{77,79}
- C. Child access prevention laws: these laws hold firearm owners liable if a child can or does access a firearm. The degree of rigor of these law vary by state.⁷⁷ More stringent child access prevention laws are associated with decreased firearm deaths in children 0 to 14 years of age.⁸⁰
- D. Extreme risk protection order laws: also known as “red flag laws,” these laws prohibit individuals at risk from harming themselves or others from purchasing or owning a firearm by a court order. These laws also allow for the temporary removal of firearms already owned by the at-risk individual. These laws are associated with decreases in firearm violence.^{81–84}
- E. Semiautomatic military-style weapons and high-capacity magazine bans: these weapons can fire multiple rounds of ammunition without reloading the firearm, increasing the morbidity and mortality of shooting events. Banning these weapons would restrict access to the types of weapons most often used in mass shootings.^{75,77}

V. Data and research

Better data sources are needed to be able to develop targeted interventions.

- A. A comprehensive data system for firearm injuries and deaths, including real-time surveillance, should be developed at the national level.⁵⁸
- B. State firearm registration files, including handguns and rifles, should be made accessible to researchers to better understand firearm ownership and purchasing. The 2003 Tiahrt amendment prohibits the release of firearm tracing data for research.⁸⁵
- C. Increased research funding is essential to develop effective and impactful injury prevention strategies. Better understanding of the risk and protective factors for firearm injuries and interventions at the individual, household, community, state, and federal level is essential for designing focused interventions.^{45,47,61}
- D. Firearm injury and prevention research should be expanded. Important areas of research include, but are not limited to, the following:^{86,87}
 1. Risk and protective factors for firearm injuries and deaths.
 2. Epidemiology of fatal and nonfatal firearm injuries, including inequities existing among communities, and for legal intervention shootings, school shootings, adolescent intimate partner violence, health care utilization and cost, and long-term consequences.
 3. Parental and young adult attitudes and behaviors regarding firearms, including safer storage.
 4. Effective approaches to firearm safety anticipatory guidance and lethal means counseling.
 5. Implementation, effectiveness, and dissemination of school-, hospital-, and community-based

firearm violence prevention programs.

6. Development and impact of firearm safety technologies.
7. Effectiveness of firearm-related legislation.
8. Linking data systems for firearm surveillance and research.

VI. Clinician advocacy

For clinicians interested in advocacy to advance firearm injury prevention, there are multiple ways to become involved.

- A. Join the AAP and your local chapter or other professional medical society (eg, AAP, American Medical Association, American College of Physicians, American College of Emergency Physicians, American College of Surgeons) and grassroots firearm violence prevention organizations (eg, <https://www.everytown.org/>, <https://momsdemandaction.org/>) to support their efforts against firearm violence.
- B. Engage in advocacy. These efforts can focus on advocacy for community approaches to decreasing the impact of firearm injuries, including legislation and increasing research funding. This advocacy can be at the institutional, municipal or county, state, or federal level. Pediatricians should work with their AAP state chapter to advance state and local policy change.
- C. Assess institutional policies around firearm possession and gun-free zones, including use of force by police and security officers in clinical settings.
- D. Encourage health system investment by working with payers, institutional leadership, media, injury prevention or wellness departments, and government affairs teams to ensure firearm injury prevention is a priority with their provision of financial and

personnel resources. Advocate for adequate payment for health risk assessments and care coordination services as necessary as well as payment for gun safety devices, like durable medical equipment.

- E. Write op-eds, letters to the editor, or blog posts specific to your community.
- F. Identify and support the work of local community-based organizations (eg, community associations, culturally specific organizations) around firearm injury prevention.
- G. Engage your elected officials to educate them about the impact of firearm injury.
- H. When applicable, support policy change efforts through written and/or oral testimony at the local, state, and federal level to advance firearm safety legislation, including participating in state lobby days throughout your institution, AAP chapter, or other professional medical organization.⁸⁸

CONCLUSIONS

As with motor vehicle safety, we must acknowledge a multipronged approach, including principles of the Haddon matrix^{8,10} and focusing on harm reduction, is essential to decrease firearm deaths and injuries in the United States. Clinicians should educate themselves and their patients and families about the increased risks of unintentional and intentional firearm injuries and deaths with increased access to firearms in the home and in the community. Firearms should be regulated and designed to decrease the risk of unauthorized users being able to use the firearm. Federal and state legislation must be enacted to increase the safety of firearms and decrease access to those at risk for harming themselves or others. Better data sources and robust and sustained research funding are also critical to advance the science of firearm injury

prevention. We must resolve to make progress and work collaboratively. This public health approach must engage individuals, the health care sector, communities, corporations, and the government to address the persistent epidemic and inequities of firearm violence among children and youth in the United States.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
ED: emergency department

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REFERENCES

1. Goldstick JE, Cunningham RM, Carter PM. Current causes of death in children and adolescents in the United States. *N Engl J Med*. 2022;386(20):1955–1956
2. Lee LK, Douglas K, Hemenway D. Crossing lines—a change in the leading cause of death among U.S. children. *N Engl J Med*. 2022;386(16):1485–1487
3. Lee LK, Mannix R. Increasing fatality rates from preventable deaths in teenagers and young adults. *JAMA*. 2018;320(6):543–544
4. Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS). Available at: <https://www.cdc.gov/injury/wisqars/index.html>. Accessed May 3, 2022
5. Badolato GM, Boyle MD, McCarter R, Zeoli AM, Terrill W, Goyal MK. Racial and ethnic disparities in firearm-related pediatric deaths related to legal intervention. *Pediatrics*. 2020;146(6):e2020015917
6. Formica MK. An eye on disparities, health equity, and racism—the case of firearm injuries in urban youth in the United States and globally. *Pediatr Clin North Am*. 2021;68(2):389–399
7. Livingston MD, Rossheim ME, Hall KS. A descriptive analysis of school and school shooter characteristics and the severity of school shootings in the United States, 1999–2018. *J Adolesc Health*. 2019;64(6):797–799
8. Haddon W Jr. A logical framework for categorizing highway safety phenomena and activity. *J Trauma*. 1972;12(3):193–207
9. Xuan Z, Hemenway D. State gun law environment and youth gun carrying in the United States. *JAMA Pediatr*. 2015;169(11):1024–1031
10. Bulger EM, Kuhls DA, Campbell BT, et al. Proceedings from the medical summit on firearm injury prevention: a public health approach to reduce death and disability in the US. *J Am Coll Surg*. 2019;229(4):415–430.e12
11. Laraqe D, Barlow B. The prevention of penetrating trauma. In: Ivatory R, Cayten C, eds. *The Textbook of Penetrating Trauma*. Philadelphia, PA: Williams and Wilkins; 1996:89–101
12. Hemenway D. Policy lessons. In: *Private Guns, Public Health*. Ann Arbor, MI: The University of Michigan Press; 2004
13. Lee LK, Fleegler EW, Goyal MK, Fraser Doh K, Laraqe-Arena D; American Academy of Pediatrics, Council on Injury, Violence, and Poison Prevention. Technical report. Firearm-related injuries and deaths in children and youth. *Pediatrics*. 2022;150(6):e2022060071
14. Fowler KA, Dahlberg LL, Haileyesus T, Gutierrez C, Bacon S. Childhood firearm injuries in the United States. *Pediatrics*. 2017;140(1):e20163486
15. Grossman DC, Mueller BA, Riedy C, et al. Gun storage practices and risk of youth suicide and unintentional firearm injuries. *JAMA*. 2005;293(6):707–714
16. Kellermann AL, Reay DT. Protection or peril? An analysis of firearm-related deaths in the home. *N Engl J Med*. 1986;314(24):1557–1560
17. Gibbons MJ, Fan MD, Rowhani-Rahbar A, Rivara FP. Legal liability for returning firearms to suicidal persons who voluntarily surrender them in 50 US states. *Am J Public Health*. 2020;110(5):685–688
18. Fleegler EW, Madeira JL. First, prevent harm: eliminate firearm transfer liability as a lethal means reduction strategy. *Am J Public Health*. 2020;110(5):619–620
19. Barber C, Frank E, Demicco R. Reducing suicides through partnerships between health professionals and gun owner groups—beyond docs vs glocks. *JAMA Intern Med*. 2017;177(1):5–6
20. Dowd MD, Sege RD, Ewald MB, et al; Council on Injury, Violence, and Poison Prevention Executive Committee; American Academy of Pediatrics. Firearm-related injuries affecting the pediatric population. *Pediatrics*. 2012;130(5):e1416–e1423
21. Dodington J. Safety devices for firearms. In: Lee LK, Fleegler EW, eds. *Pediatric Firearm Injuries and Fatalities: The Clinician's Guide to Policies and Approaches to Firearm Harm Prevention*. Springer Nature; 2020
22. 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(1):e15–e25
23. Garbutt JM, Bobenhouse N, Dodd S, Sterkel R, Strunk RC. What are parents willing to discuss with their pediatrician about firearm safety? A parental survey. *J Pediatr*. 2016;179:166–171
24. Hinnant A, Boman CD, Hu S, et al. The third rail of pediatric communication: discussing firearm risk and safety in well-child exams. *Health Commun*. 2021;36(4):508–520
25. Jackman GA, Farah MM, Kellermann AL, Simon HK. Seeing is believing: what do

- boys do when they find a real gun? *Pediatrics*. 2001;107(6):1247–1250
26. Farah MM, Simon HK, Kellermann AL. Firearms in the home: parental perceptions. *Pediatrics*. 1999;104(5 Pt 1):1059–1063
 27. Connor SM, Wesolowski KL. “They’re too smart for that”: predicting what children would do in the presence of guns. *Pediatrics*. 2003;111(2):E109–E114
 28. Rowhani-Rahbar A, Moe C. School shootings in the U.S.: what is the state of evidence? *J Adolesc Health*. 2019;64(6):683–684
 29. Scott J, Azrael D, Miller M. Firearm storage in homes with children with self-harm risk factors. *Pediatrics*. 2018;141(3):20172600
 30. Patel MS, Asch DA, Rosin R, et al. Framing financial incentives to increase physical activity among overweight and obese adults a randomized, controlled trial. *Ann Intern Med*. 2016;164(6):385–394
 31. Hoskins K, Roy Paladhi U, McDonald C, Bittenheim A. Applying behavioral economics to enhance safe firearm storage. *Pediatrics*. 2020;145(3):3–5
 32. Hagan JF, Shaw JS, Duncan PM, eds. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*, 4th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2017
 33. Rowhani-Rahbar A, Simonetti JA, Rivara FP. Effectiveness of interventions to promote safe firearm storage. *Epidemiol Rev*. 2016;38(1):111–124
 34. Grossman DC, Cummings P, Koepsell TD, et al. Firearm safety counseling in primary care pediatrics: a randomized, controlled trial. *Pediatrics*. 2000;106(1 Pt 1):22–26
 35. Stevens MM, Olson AL, Gaffney CA, Tosteson TD, Mott LA, Starr P. A pediatric, practice-based, randomized trial of drinking and smoking prevention and bicycle helmet, gun, and seatbelt safety promotion. *Pediatrics*. 2002;109(3):490–497
 36. Agrawal N, Arevalo S, Castillo C, Lucas AT. Effectiveness of the Asking Saves Kids gun violence prevention campaign in an urban pediatric clinic [abstract]. *Pediatrics*. 2018;142(1_MeetingAbstract):730
 37. Brady. Asking saves lives (ASK). Available at: <https://www.bradyunited.org/program/end-family-fire/asking-saves-kids>. Accessed July 21, 2021
 38. Miller M, Azrael D, Hemenway D. The epidemiology of case fatality rates for suicide in the northeast. *Ann Emerg Med*. 2004;43(6):723–730
 39. Qayyum Z, Wilson C. Depression and means restriction. In: Lee LK, Fleegler EW, eds. *Pediatric Firearm Injuries and Fatalities: The Clinician’s Guide to Policies and Approaches to Firearm Harm Prevention*. New York, NY: Springer Nature; 2021:127–142
 40. Miller M, Salhi C, Barber C, et al. Changes in firearm and medication storage practices in homes of youths at risk for suicide: results of the SAFETY Study, a clustered, emergency department–based, multisite, stepped-wedge trial. *Ann Emerg Med*. 2020;76(2):194–205
 41. American Academy of Child and Adolescent Psychiatry. Policy statement on children and guns. Available at: https://www.aacap.org/AACAP/Policy_Statements/2013/Children_and_Guns.aspx%0A. Accessed May 20, 2022
 42. American Psychiatric Association. APA official actions position statement on firearm access, acts of violence and the relationship to mental illness and mental health services. Available at: <https://www.psychiatry.org/getattachment/8b32e119-1995-4ac6-bc66-5c3972cb221f/Position-Firearm-Access-Acts-of-Violence-and-the-Relationship-to-Mental-Health.pdf>. Accessed July 11, 2022
 43. Hemenway D. Supply. In: *Private Guns, Public Health*. Ann Arbor, MI: The University of Michigan Press; 2004:130–151
 44. Li O. Cars, toys, and aspirin have to meet mandatory safety standards. Guns don’t. Here’s why. Available at: <https://www.thetrace.org/2016/01/gun-safety-standards/>. Accessed July 21, 2021
 45. National Academies of Sciences, Engineering, and Medicine. *Health Systems Interventions to Prevent Firearm Injuries and Death: Proceedings of a Workshop*. Washington, District of Columbia: National Academies Press; 2019
 46. Pino EC, Fontin F, Duġan E. Violence intervention advocacy program and community interventions. In: Lee LK, Fleegler EW, eds. *Pediatric Firearm Injuries and Fatalities: The Clinician’s Guide to Policies and Approaches to Firearm Harm Prevention*. New York, NY: Springer Nature; 2021:157–178
 47. The Health Alliance for Violence Intervention (HAVI). The health alliance for violence intervention. Available at: <https://www.thehavi.org/>. Accessed October 20, 2020
 48. Durkin MS, Kuhn L, Davidson LL, Laraque D, Barlow B. Epidemiology and prevention of severe assault and gun injuries to children in an urban community. *J Trauma*. 1996;41(4):667–673
 49. Cavanaugh SM, Branas CC, Formica MK. Community-engaged and informed violence prevention interventions. *Pediatr Clin North Am*. 2021;68(2):489–509
 50. Kondo MC, Andreyeva E, South EC, MacDonald JM, Branas CC. Neighborhood interventions to reduce violence. *Annu Rev Public Health*. 2018;39:253–271
 51. Branas CC, South E, Kondo MC, et al. City-wide cluster randomized trial to restore blighted vacant land and its effects on violence, crime, and fear. *Proc Natl Acad Sci USA*. 2018;115(12):2946–2951
 52. Swanson SA, Eyllon M, Sheu YH, Miller M. Firearm access and adolescent suicide risk: toward a clearer understanding of effect size. *Inj Prev*. 2020;27(3):264–270
 53. Prickett KC, Gutierrez C, Deb S. Family firearm ownership and firearm-related mortality among young children: 1976–2016. *Pediatrics*. 2019;143(2):e20181171
 54. Choi NG, DiNitto DM, Marti CN. Youth firearm suicide: precipitating/risk factors and gun access. *Child Youth Serv Rev*. 2017;83:9–16
 55. Miller M, Azrael D, Hemenway D. Firearm availability and unintentional firearm deaths, suicide, and homicide among 5–14 year olds. *J Trauma*. 2002;52(2):267–274, discussion 274–275
 56. Fleegler EW, Lee LK, Monuteaux MC, Hemenway D, Mannix R. Firearm legislation and firearm-related fatalities in the United States. *JAMA Intern Med*. 2013;173(9):732–740
 57. Goyal MK, Badolato GM, Patel SJ, Iqbal SF, Parikh K, McCarter R. State gun laws and pediatric firearm-related mortality. *Pediatrics*. 2019;144(2):e20183283

58. Health Management Associates. Cost estimate of federal funding for gun violence research and data infrastructure. Available at: <https://assets.joycefdn.org/content/uploads/CostEstimateofFederalFundingforGunViolenceResearch.pdf?mtime=20210712175851&focal=none>. Accessed July 11, 2022
59. Cunningham RM, Ranney ML, Goldstick JE, Kamat SV, Roche JS, Carter PM. Federal funding for research on the leading causes of death among children and adolescents. *Health Aff (Millwood)*. 2019;38(10):1653–1661
60. Alcorn T. Trends in research publications about gun violence in the United States, 1960 to 2014. *JAMA Intern Med*. 2017;177(1):124–126
61. Leshner AI, Altevogt BM, Lee AF, McCoy MA, Kelley PW, eds; Institute of Medicine and National Research Council of the National Academies. *Priorities for Research to Reduce the Threat of Firearm-Related Violence*. Washington, DC: The National Academies Press; 2013
62. National Highway Traffic Safety Administration. Data. Available at: <https://www.nhtsa.gov/data>. Accessed July 21, 2021
63. Hemenway D. The Public Health Approach. In: *Private Guns, Public Health*. Ann Arbor, MI: The University of Michigan Press; 2006:8–26
64. Centers for Disease Control and Prevention. National Violent Death Reporting System. Available at: <https://www.cdc.gov/violenceprevention/datasources/nvdrs/index.html>. Accessed July 11, 2022
65. Hoops K, Fahimi J, Khoer L, et al. Consensus-driven priorities for firearm injury education among medical professionals. *Acad Med*. 2022;97(1):93–104
66. American Academy of Pediatrics. 2022 Recommendations for preventive pediatric health care. *Pediatrics*. 2022;150(1):e2022058044
67. Albright TL, Burge SK. Improving firearm storage habits: impact of brief office counseling by family physicians. *J Am Board Fam Pract*. 2003;16(1):40–46
68. Betz ME, Kautzman M, Segal DL, et al. Frequency of lethal means assessment among emergency department patients with a positive suicide risk screen. *Psychiatry Res*. 2018;260:30–35
69. Betz ME, Miller M, Barber C, et al. Lethal means access and assessment among suicidal emergency department patients. *Depress Anxiety*. 2016;33(6):502–511
70. Alliance for Safety and Justice. The promise of the American Rescue Plan. Available at: <https://allianceforsafetyandjustice.org/wp-content/uploads/2021/04/ARP-Report-Issue-1-2.pdf>. Accessed July 11, 2022
71. Johnson TJ, Wright JL. Executions and police conflicts involving children, adolescents and young adults. *Pediatr Clin North Am*. 2021;68(2):465–487
72. Hoffmann JA, Farrell CA, Monuteaux MC, Fleegler EW, Lee LK. Association of pediatric suicide with county-level poverty in the United States, 2007–2016. *JAMA Pediatr*. 2020;174(3):287–294
73. Farkas K, Duarte CdP, Ahern J. Injuries to children and adolescents by law enforcement. *JAMA Pediatr*. 2022;176(1):89–91
74. Jindal M, Mistry KB, Trent M, McRae A, Thornton RLJ. Police exposures and the health and well-being of black youth in the US a systematic review. *JAMA Pediatr*. 2022;176(1):78–88
75. Hemenway D. Policy actions. In: *Private Guns, Public Health*. Ann Arbor, MI: The University of Michigan Press; 2004:209–223
76. Liptak K, Vazquez M. You likely will hear the term “ghost guns” today. Here’s what it means. Available at: <https://www.cnn.com/2021/04/08/politics/ghost-guns-explainer/index.html>. Accessed July 21, 2021
77. Madeira J. Firearm legislation and advocacy. In: Lee LK, Fleegler EW, eds. *Pediatric Firearm Injuries and Fatalities: The Clinician’s Guide to Policies and Approaches to Firearm Harm Prevention*. New York, NY: Springer Nature; 2021:193–211
78. Lee LK, Fleegler EW, Farrell C, et al. Firearm laws and firearm homicides. *JAMA Intern Med*. 2017;177(1):106–119
79. Sudanağunta SP, Gilchrist EC, Haasz M, Wong SL. Policy pathways to address American youth firearm injury and death. Available at: https://medschool.cuanschutz.edu/docs/librariesprovider231/pdfs/national-firearm-policy-brief-march2021.pdf?sfvrsn=373d75ba_12. Accessed July 11, 2022
80. Azad HA, Monuteaux MC, Rees CA, et al. Child access prevention firearm laws and firearm fatalities among children aged 0 to 14 years, 1991–2016. *JAMA Pediatr*. 2020;174(5):463–469
81. Swanson JW, Easter MM, Alanis-Hirsch K, et al. Criminal justice and suicide outcomes with Indiana’s risk-based gun seizure law. *J Am Acad Psychiatry Law*. 2019;47(2):188–197
82. Swanson JW, Norko MA, Lin HJ, et al. Implementation and effectiveness of Connecticut’s risk-based gun removal law: does it prevent suicides? *Law Contemp Probl*. 2017;80(2):179–208
83. Pallin R, Schleimer JP, Pear VA, Wintemute GJ. Assessment of extreme risk protection order use in California from 2016 to 2019. *JAMA Netw Open*. 2020;3(6):e207735
84. Kivisto AJ, Phalen PL. Effects of risk-based firearm seizure laws in Connecticut and Indiana on suicide rates, 1981–2015. *Psychiatr Serv*. 2018;69(8):855–862
85. Rowhani-Rahbar A, Bellenger MA, Rivara FP. Firearm violence research: improving availability, accessibility, and content of firearm-related data systems. *JAMA*. 2019;322(19):1857–1858
86. Small Arms Survey. Small arms survey. Available at: www.smallarmssurvey.org/home.html. Accessed October 15, 2020
87. Cunningham RM, Carter PM, Zimmerman M. The Firearm Safety Among Children and Teens (FACTS) Consortium. The Firearm Safety Among Children and Teens (FACTS) Consortium: defining the current state of the science on pediatric firearm injury prevention. *J Behav Med*. 2019;42(4):702–705
88. Sangji NF, Masiakos PT. How to be a firearm legislative advocate. In: Lee LK, Fleegler EW, eds. *Pediatric Firearm Injuries and Fatalities: The Clinician’s Guide to Policies and Approaches to Firearm Harm Prevention*. New York, NY: Springer Nature; 2021:213–221