



## Gun Violence:

A Public Health Crisis that Demands Physician Advocacy and Action

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# Disclosures

I have nothing to disclose



# Objectives

Understand the epidemiology of pediatric firearm injury in the US

Appreciate the role of secure firearm storage in the prevention of firearm injury among youth

Consider opportunities for physician engagement in addressing gun violence as a public health crisis



*The* NEW ENGLAND JOURNAL *of* MEDICINE

SPECIAL REPORT

**The Major Causes of Death in Children and Adolescents  
in the United States**

Rebecca M. Cunningham, M.D., Maureen A. Walton, M.P.H., Ph.D., and Patrick M. Carter, M.D.

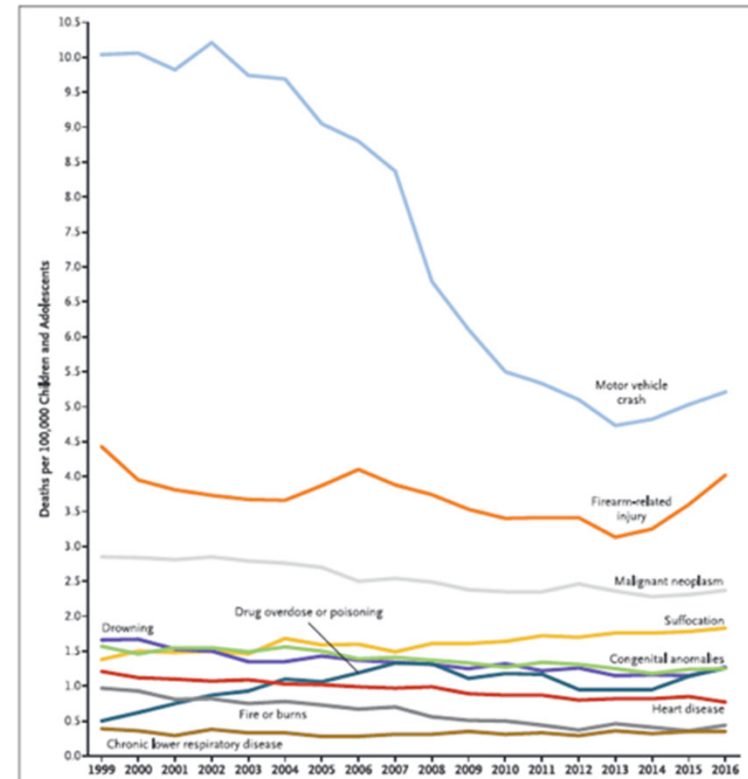


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**Table 1.** The 10 Leading Causes of Child and Adolescent Death in the United States in 2016, in Order of Frequency.\*

Cause of Death	No. of Deaths	Rate per 100,000 (95% CI)	Percent of Deaths
All causes	20,360	26.06 (25.70–26.42)	
All injury-related causes	12,336	15.79 (15.51–16.07)	60.6
Motor vehicle crash	4,074	5.21 (5.06–5.38)	20.0
Firearm-related injury	3,143	4.02 (3.88–4.16)	15.4
Homicide	1,865	2.39 (2.28–2.50)	
Suicide	1,102	1.41 (1.33–1.50)	
Unintentional	126	0.16 (0.13–0.19)	
Undetermined intent	50	0.06 (0.05–0.09)	
Malignant neoplasm	1,853	2.37 (2.27–2.48)	9.1
Suffocation†	1,430	1.83 (1.74–1.93)	7.0
Suicide	1,110	1.42 (1.34–1.51)	
Unintentional	235	0.30 (0.26–0.34)	
Drowning	995	1.27 (1.20–1.36)	4.9
Drug overdose or poisoning	982	1.26 (1.18–1.34)	4.8
Suicide	123	0.16 (0.13–0.19)	
Unintentional	761	0.97 (0.91–1.05)	
Congenital anomalies	979	1.25 (1.18–1.33)	4.8
Heart disease	599	0.77 (0.71–0.83)	2.9
Fire or burns	340	0.44 (0.39–0.48)	1.7
Unintentional	272	0.35 (0.31–0.39)	
Chronic lower respiratory disease	274	0.35 (0.31–0.40)	1.3



**Figure 1.** Mortality Rates (Deaths per 100,000 Children and Adolescents) for the 10 Leading Causes of Death in the United States from 1999 to 2016. Data were obtained from the Wide-ranging Online Data for Epidemiologic Research (WONDER) system of the Centers for Disease Control and Prevention (CDC), known as CDC WONDER,<sup>2</sup> according to the codes of the *International Classification of Diseases, 10th Revision (ICD-10)*,<sup>3</sup> for the leading causes of death among children and adolescents. Age was restricted to children and adolescents 1 to 19 years of age.

# Pediatric Firearm Injury Mortality Epidemiology

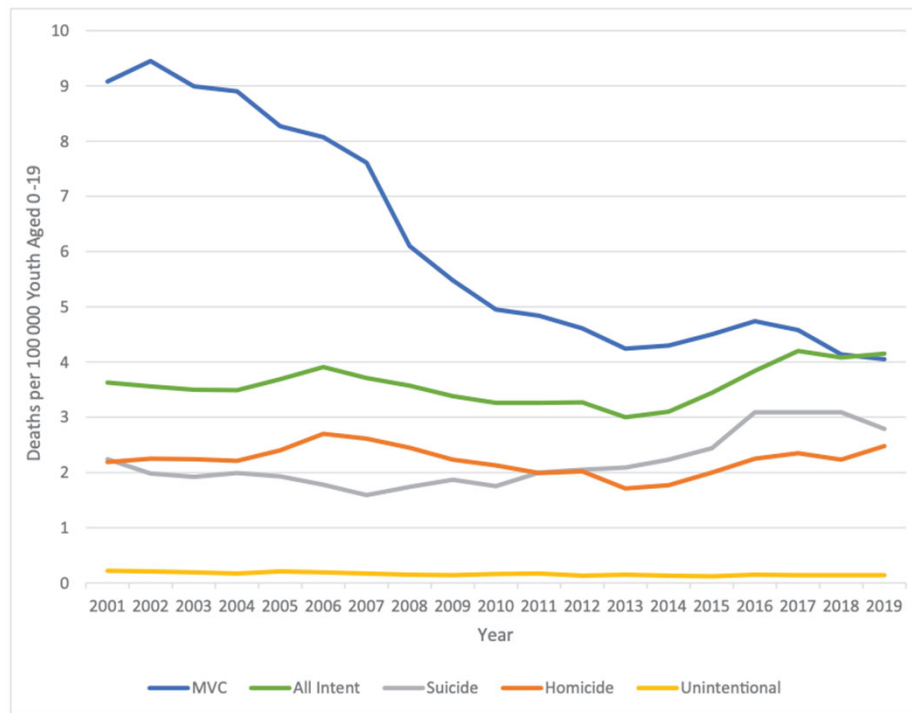
Annie L. Andrews, MD, MSCR,<sup>a</sup> Xavier Killings, MS,<sup>b</sup> Elizabeth R. Oddo, MD,<sup>a</sup> Kelsey A.B. Gastineau, MD,<sup>c</sup>  
Ashley B. Hink, MD, MPH<sup>d</sup>



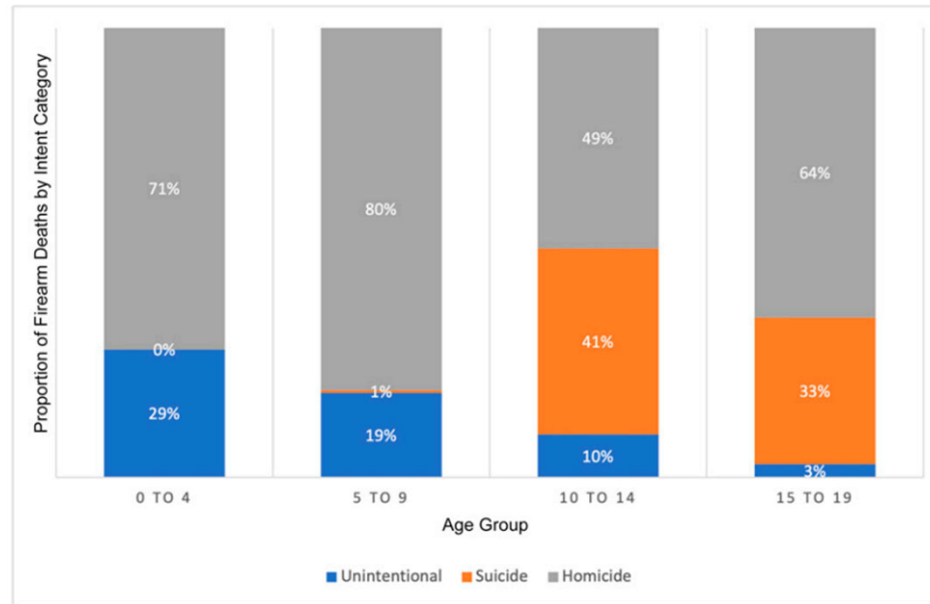
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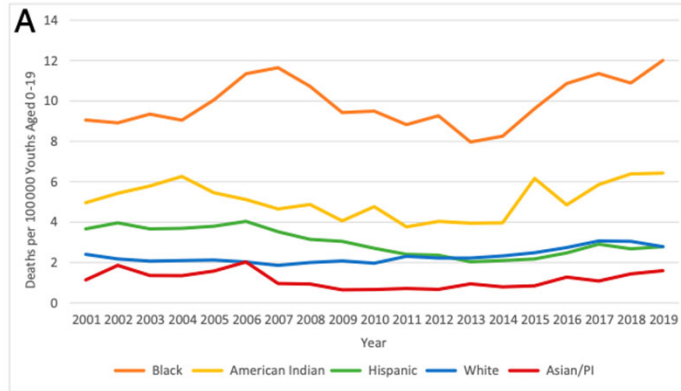
# Firearm Injury and Motor Vehicle Collision Mortality Rates from 2001-2019 for US Youth Age 0-19



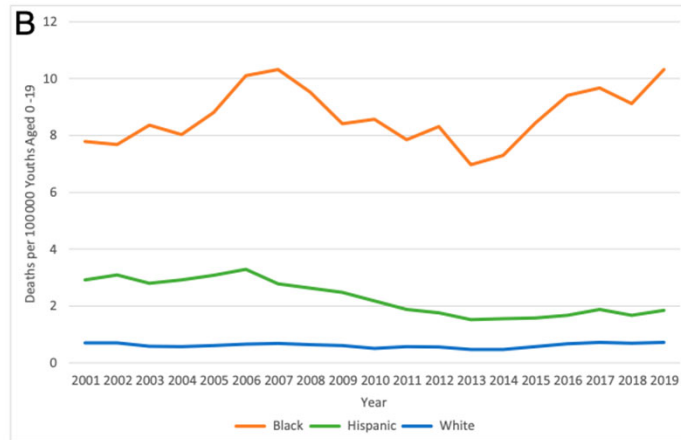
# Firearm Violence Death by Age and Intent, CDC 2001-2019



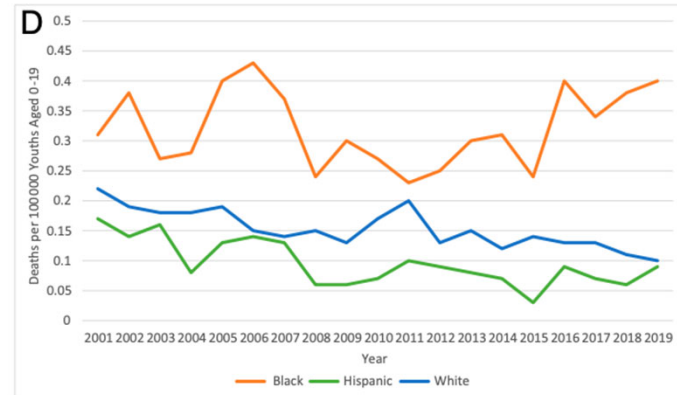
## All Intent



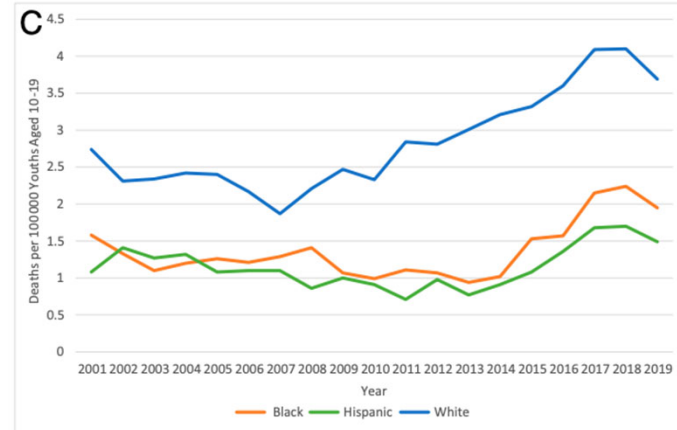
## Homicide



## Unintentional



## Suicide



## Coroner identifies 5-year-old killed in Summerville shooting

by ABC News 4 | Thursday, August 6th 2020

## Unsecured guns were used in dozens of child deaths in SC in recent years, report says

**Anna Lee** The Greenville News

Published 5:28 a.m. ET Jun. 28, 2019 | Updated 10:11 a.m. ET Aug. 11, 2019

CHARLESTON COUNTY

## 4-year-old killed in accidental shooting in North Charleston

LOCAL

### North Charleston teen killed in gun play

### Child, 5, dead after accidental shooting in North Charleston, police say

### Toddler, shot by brother, dies four months later

TRI-COUNTY

## 13-year-old charged after gun found in backpack at Charleston Co. middle school, police say

### Loaded gun found at North Charleston school on day of national gun violence walkouts



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## The Numbers

Firearms are the leading cause of death for ALL American children and the rate is increasing more quickly for Black youth compared to White youth

When American children are killed with guns the majority are homicides

1/3 of these deaths are suicide

Approximately 5% of these deaths are related to unintentional shootings

CDC. National Centers for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS) Fatal Injury Reports. Data from 2017.

CDC. National Centers for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS) Fatal Injury Reports. A yearly average was developed using five years of most recent available data: 2013 to 2017.



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## The Numbers: Firearm Access

13 million US children live in a household with a gun

5.4 million US children live in a household with at least one loaded, unlocked gun

The majority of children in gun-owning households are aware of where their parents store their guns

More than 1/3 reported handling their parents' guns

1/4 of these parents did not know that their children had handled the gun in their house

Azrael D, Cohen J, Salhi C, Miller M. Firearm Storage in Gun-Ownning Households with Children: Results of a 2015 National Survey. *J Urban Health*. 2018;95(3):295-304.

Baxley F, Miller M. Parental misperceptions about children and firearms. *Archives of pediatrics & adolescent medicine*. 2006;160(5):542-547



# The Risks of Firearm Access

Nearly 90% of unintentional gun deaths and injuries in children occur in the home

The firearm used in youth suicide comes from the home 9 out of 10 times

In incidents of gunfire on school grounds, 78% of shooters under the age of 18 obtained the gun from their home or the home of a friend or relative

Li G, Baker SP, DiScala C, Fowler C, Ling J, Kelen GD. Factors associated with the intent of firearm-related injuries in pediatric trauma patients. *Archives of pediatrics & adolescent medicine*. 1996;150(11):1160-1165.

Grossman et al. Self-inflicted and Unintentional Firearm Injuries Among Children and Adolescents: The Source of the Firearm. *JAMA Pediatrics*. 1999

Everytown for Gun Safety, Gunfire on School Grounds Database. 2013-2018.



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# Firearm Access and Suicide

Firearms are the most lethal method of suicide attempt

>80% case fatality rate compared to 61% for suffocation/hanging, 1.5% for ingestion

Overwhelming evidence that the presence of a firearm in the home significantly increases risk for youth suicide

Systematic review found access to firearms has a pooled risk of >3x for completed suicide

Up to 32% of firearm related deaths could be avoided with safe storage counseling interventions

Spicer et al. Suicide Acts in 8 States: Incidence and Case Fatality Rates by Demographics and Method. American Journal of Public Health. 2000

A. Knopov et al. Household gun ownership and youth suicide rates at the state level, 2005–2015. Am J Prev Med 2019.

Anglemyer et al. The Accessibility of Firearms and Risk for Suicide and Homicide Victimization Among Household Members. Annals of Internal Medicine. 2014

Manuteaux et al. Association of Increased Safe Household Firearm Storage With Firearm Suicide and Unintentional Death Among US Youths. JAMA Pediatrics 2019.



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# Firearm Access and School Shootings

While school shootings represent a fraction of pediatric firearm injuries and deaths, from 2013 to 2019, there were 549 incidents of gunfire on school grounds

Of these, 347 occurred on the grounds of an elementary, middle, or high school, resulting in 129 deaths and 270 people wounded

In a study analyzing 41 incidents of targeted school violence from 2008 through 2017 finding that of the 25 incidents that involved firearms, 76 percent of shooters acquired the gun(s) used in the incidents from their home or that of a relative

National Threat Assessment Center, "Protecting America's Schools: A US Secret Service Analysis of Targeted School Violence" (US Secret Service, Department of Homeland Security, 2019), <https://bit.ly/2U7vnwa>.



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# Prevention



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# Prevention Strategies: Firearm Access

Preschool aged children, observed 1 week after informational intervention where they were told not to play with guns (“just say no”)

No difference in gun-playing behavior

4-7 year old children went through a week-long skills based gun safety training program

Just as likely as children with no training to approach or play with a handgun

4-5 year old children in two different gun safety programs

Able to verbally repeat gun safety message

Could not demonstrate gun safety skills in real-life assessments

Hardy MS, Armstrong FD, Martin BL, Strawn KN. A firearm safety program for children: they just can't say no. *J Dev Behav Pediatr.* 1996;17(4):216-221.

Hardy MS. Teaching firearm safety to children: failure of a program. *J Dev Behav Pediatr.* 2002;23(2):71-76.

Himle MB, Miltenberger RG, Gatheridge BJ, Flessner CA. An evaluation of two procedures for training skills to prevent gun play in children. *Pediatrics.* 2004;113(1 Pt 1):70-77.



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# Prevention Strategies: Responsible Storage

Responsible storage is storing a gun **LOCKED, UNLOADED** and **SEPARATE** from ammunition.

Responsible storage is associated with decreased risk of firearm suicide and unintentional firearm injury among children  
Households with locked firearms and separate locked ammunition:

78% lower risk of self-inflicted firearm injuries

85% lower risk of unintentional firearm injuries

Grossman DC, Mueller BA, Riedy C, et al. Gun storage practices and risk of youth suicide and unintentional firearm injuries. *JAMA : the journal of the American Medical Association*. 2005;293(6):707-714.

Parikh K, Silver A, Patel SJ, Iqbal SF, Goyal M. Pediatric Firearm-Related Injuries in the United States. *Hosp Pediatr*. 2017;7(6):303-312.



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# How can Pediatricians Help?

Brief physician counseling combined with distribution of a cable gun lock is effective in increasing safe storage of home firearms

Educational interventions targeting adults and including distribution of cable gun locks are the most likely to be effective

AAP recommends pediatricians routinely screen for access to firearms and counsel about risk reduction

On ASK day, June 21, the first day of summer, the AAP reminds parents to ensure their kids are safe by asking about gun safety and storage

**ASK**  
ASKINGSAVESKIDS

**1 in 3** homes with children in America have guns, many unlocked or loaded.

**17,500** children and teens are injured or killed each year due to gun violence.

**ASK:**  
Is there an unlocked gun where my child plays?

**IF THE ANSWER IS "NO"**  
that's one less thing you have to worry about.

**IF THE ANSWER IS "YES"**  
make sure all guns are stored unloaded and locked, ideally in a gun safe, with ammunition locked separately.

If there are any doubts about the safety of another home, invite the kids to your house instead.

Hiding guns is not enough. Just talking to kids is not enough. Kids are curious and if they find guns they're likely to play with them.

For more information on how to keep your kids safe visit [WWW.ASKINGSAVESKIDS.ORG](http://WWW.ASKINGSAVESKIDS.ORG).

Source:  
Anderson A, Cooper-Reilly T, Foyan C. Firearm Ownership and Storage Practices, U.S. Households, 2000-2002. A Subnational Review. APM 05A-07 01 175-181.  
Early warning, need more? 5 years of data released from CDC, NCHADS, WISQARS online. October 2011 April 15. <http://www.cdc.gov/gunprevention/>

Barkin SL, Finch SA, Ip EH, et al. Is officebased counseling about media use, timeouts, and firearm storage effective? Results from a cluster-randomized, controlled trial. *Pediatrics*. 2008;122

Parikh K, Silver A, Patel SJ, Iqbal SF, Goyal M. Pediatric Firearm-Related Injuries in the United States. *Hosp Pediatr*. 2017;7(6):303-312.



# Prevention Strategies: Physician Counseling

The majority of health care providers agree they should provide firearm counseling, but they report many barriers:

lack of time

inadequate training

uncertainty of the effect

A recent study demonstrated poor pediatric resident documentation of screening for firearm access in patients with suicidal ideation or homicidal ideation

Another recent study demonstrated low rates of firearm screening and safe storage counseling by pediatric residents in the inpatient setting

Webster DW et al. Firearm injury prevention counseling; a study of pediatricians' beliefs and practices. *Pediatrics*. 1992

Naureckas Li C et al. Screening for access to firearms by pediatric trainees in high-risk patients. *Academic Pediatrics*. 2019.

Monroe KK et al. Firearms screening in the pediatric inpatient setting. *Hospital Pediatrics*. 2020.



# Prevention Strategies: Physician Counseling

A 2019 study showed that when prompts for firearm screening and smoke alarms were added to the Electronic Health Record (EHR), pediatricians and residents were significantly less likely to document firearm screening than smoke alarm counseling

A 2020 study assessed the impact of a firearm safety counseling workshop on pediatric resident knowledge, self-efficacy and self-reported practice patterns

In pre-post analysis they found participants were 5x more likely to counsel their patients on firearms (6 months post compared to pre)

Reported greater comfort in asking about firearms

Stipelman CH et al. Home gun safety queries in well-child visits. JAMA Pediatrics. 2019.

McKay S et al. Addressing Firearm Safety Counseling: Integration of a Multidisciplinary Workshop in a Pediatric Residency Program. Journal of GME. 2020



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BE SMART

**BE**  
**SMART**

**SECURE**

**all guns in  
your homes  
and vehicles**

**MODEL**

**responsible  
behavior**

**ASK**

**about  
unsecured  
guns in  
other homes**

**RECOGNIZE**

**the role  
of guns  
in suicide**

**TELL**

**your peers  
to Be SMART**

BE SMART

S

**Secure all guns in your homes and vehicles**

- 13 million households with children contain at least one gun.<sup>1</sup>
- One study found that the majority of children in gun-owning households knew where the gun was stored.<sup>2</sup>
- Store guns locked and unloaded, store ammunition separately.
- Hiding a gun is not “securing” a gun.

1. Azrael D, et al. Firearm storage in gun-owning households with children: Results of a 2015 national survey. *Journal of Urban Health*. 2018.

2. Baxley F, et al. Parental misperceptions about children and firearms. *Archives of Pediatrics & Adolescent Medicine*. 2006.

BE SMART



**M**

**Model responsible  
behavior**

- It is always an adult's responsibility to prevent unauthorized access to guns, not a curious child's responsibility to avoid guns.
- Make it part of the normal safety conversation you have with your children.
- Keep the language simple; for example: "If you see a gun, don't touch it. Tell an adult right away."

BE SMART

A

**Ask about unsecured guns in other homes**

- Make it part of your general safety conversation you have when sending your child to a new home.
- Try email or text.
- 4.6 million U.S. children live in a household with at least one loaded, unlocked gun.<sup>1</sup>

1. Azrael D, et al. Firearm storage in gun-owning households with children: Results of a 2015 national survey. *Journal of Urban Health*. 2018.

## EXAMPLE

He isn't allergic to anything.

One other safety question.  
Do you guys have guns in  
the home? I know kids are  
curious & just want to make  
sure if you do have any that  
they are securely stored.

Screen time is ok? Just in case  
they want to play and we have  
time. If not then that's ok too.  
No guns.

Great! Yes. Video games are ok.



BE SMART

R

**Recognize the role of  
guns in suicide**

- Most people who attempt suicide do not die — unless they use a gun.<sup>1</sup>
- 85% of suicide attempts with a gun result in death—a much higher fatality rate than any other means of self-harm.<sup>1</sup>
- This contributes to the fact that 40% of child suicides involve a gun.<sup>2</sup>
- Nearly half of those who survive a suicide attempt report spending 10 minutes or less deliberating before the actual attempt.<sup>1</sup>

1. Everytown for Gun Safety, *Disrupting Access: Addressing Firearm Suicide in the U.S.* 2018.

2. CDC, *Fatal Injury Reports.* 2013-2017.



BE SMART


**T**

**Tell your peers  
to Be SMART**

- Your voice and all voices are critical.
- Research shows that law enforcement, the military, and hunting or outdoor groups are particularly effective at communicating safe storage practices.<sup>1</sup>
- Someone hears the Be SMART message every 21 minutes.


1. Crifasi CK, et al. Storage practices of US gun owners in 2016. *American Journal of Public Health*. 2018.

# The Post and Courier

FOUNDED 1803  WINNER OF THE PULITZER PRIZE

## MUSC doctors will ask questions about guns in the home with new safety campaign

BY MARY KATHERINE WILDEMAN MKWILDEMAN@POSTANDCOURIER.COM

JUL 2, 2018 



MUSC physician Annie Andrews started an effort to encourage fellow pediatricians to open more conversations about gun safety with their patients' parents. Wade Spees/Staff

BUY NOW

WADE SPEES



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# Improving the Frequency and Documentation of Gun Safety Counseling in a Resident Primary Care Clinic

Kelsey A.B. Gastineau, MD; Cassandra L. Stegall, DO; Laura K. Lowrey, MD; Barbra K. Giourgas, MD; Annie Lintzenich Andrews, MD, MSCR

Date	Intervention
Jan-May 2018	Baseline time period
May 2018	Be SMART lecture
June 2018	Resident initial survey
June 2018	Parent Safety Survey Resident follow-up survey Wear Orange Day
July 2018	Be SMART roll-out in PPC clinic
March 2019	EHR prompt added
June 2019	Wear Orange Day
July 2019	New intern class
October 2019	Email reminder prompt to residents
Weekly	Informal in-person reminders

1. Is there a gun in the home or vehicles? Yes/No
2. Is the gun stored locked, unloaded and separate from ammunition? Yes/No
3. Was a gunlock or other additional gun safety information such as Be SMART materials provided? Yes/No?
  - a. If yes, what additional materials were provided:

Figure 3. EHR prompt for firearm safety screening questions. EHR indicates Electronic Health Record.

Gastineau KAB et al. Improving the Frequency and Documentation of Gun Safety Counseling in a Resident Primary Care Clinic. Academic Pediatrics. Epub 2020

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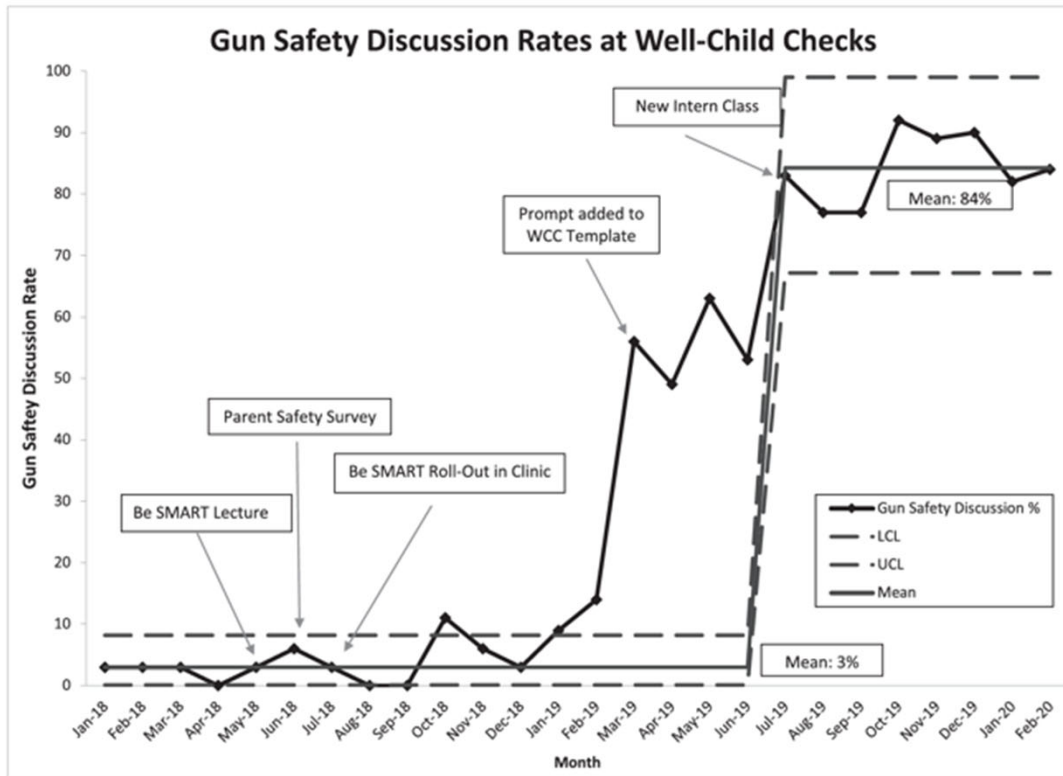


Figure 4. Statistical process control chart. LCL indicates lower confidence limit; UCL, upper confidence limit; and WCC, well-child check.

## Specific Language Tips

Instead of asking “Do you have a firearm in the home?” ask “If firearms are present where your child lives or plays, how are they stored?”

If they say their firearms are kept away from children, that is great. Explore how they are stored, emphasizing the importance of safe storage such as keeping firearms locked, unloaded, and with the ammunition stored separately.

If they say their firearms are not stored away from children, then there is an opportunity for education about safe storage.

If the response is “we don’t own firearms,” then the provider should still encourage the parents to talk to other family and friends where their child visits to ask about safe storage of firearms in those homes. About two out of five homes have firearms in the US, and that number could be higher depending on the location.

From AAP SAFER



# Counseling Tips

## Counseling Tips

Ask questions to understand the patient's perspective.

Share solutions that work for their situation.

Provide concrete options for safe storage.

Assess interest with open-ended questions.

## Swimming Pools

**Frame the conversation of safe storage in terms of risk mitigation.** Just as having a pool in the backyard increases the risk of drowning, having a firearm in the home increases the risk of firearm injury. To prevent drowning, you put a fence around the pool and a cover over it. To prevent firearm injury, you secure the firearm away from non-owners by locking it up and removing the ammunition.

From AAP SAFER



# Be SMART in the Schools

- Partnered with school nursing
- Presentations to all school nurses, principals and SROs
- Be SMART postcards distributed to every student in the district
- Parent informational nights
- Gun locks in the schools
- Be SMART linked on district website
- Individual school events



Please Take our Survey!



