

Engagement and Leadership in Firearm-Related Violence Prevention: The Role of the Pediatric Hospitalist

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ABSTRACT

Gun violence is a US public health crisis. Approximately 7000 children are hospitalized each year because of firearm-related injuries. As pediatric hospitalists, we are poised to address this crisis, whether we care directly for patients who are victims of gun violence. In this article, we aim to provide practical tools and opportunities for pediatric hospitalists to address the epidemic of gun safety and gun violence prevention, including specifics related to the inpatient setting. We provide a framework to act within 4 domains: clinical care, advocacy, education and research.

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When I was 8 years old, I could outrun any kid in my elementary school. When I ran, all that mattered was the feel of the wind rushing by, the adrenaline pushing me on, and the sound of blood pumping. I have not felt much of those things for >40 years now because during a silly sibling argument, my brother shot me in the leg with his 0.30-30 rifle. That fight was so unremarkable, like so many we had before, only that time, when my brother stomped out of the room, he came right back with his gun.

That gun was his reward from my parents for winning "paperboy of the year." They thought the award revealed he was responsible enough to have his own gun, although he was only 16. That gun came with a lot of rules, and he had to take hunter's safety and gun handling classes. My dad used to tell us that guns only had one purpose, to kill, so if he found out anyone used a gun for anything other than hunting, there would be severe punishment. I knew my brother did not want to kill me, so I was not afraid when he pointed the gun at me. I was thinking about how much trouble he would be in when the gun went off.

The bullet hit me in my right leg, severing my sciatic nerve. I remember the feeling of the bullet hitting me and the sound of blood rushing, the adrenaline pushing me to survive. So much like running but with higher stakes. Through miracles and amazing medical care, my life and leg were saved that day. A few days later, I woke up in the hospital to the story of my shooting; my brother had been playing with a gun, he did not know it was loaded, it accidentally went off, and I had been shot.

How many times have you heard that particular story? I know I read it in the paper or on the Internet at least once a week. What I have come to realize over the years is that no matter who tells the story or what the circumstances are, that story is always a lie. Any time a child gains access to a gun that is not properly stored and someone gets shot, that is no accident. It is predictable and preventable.

My parents, like so many parents, believed that training and strict rules would keep kids safe in a home with guns. They did not

know that their rules and training did not stand a chance against a teenager that could not think through consequences. Parents do not realize that their rules will not stop an inquisitive toddler. No training can stop a kid who wants to show off for their friends. Sadly, rules and training will not change the mind of a child who thinks suicide is the answer for the day's difficulties. Only safe storage will keep a child safe in those situations.

Today, I have to strap a brace onto my leg to walk. On some days, I wonder what my life would be like if someone my parents respected, someone they trusted with my care, told them that the things they thought they were doing to keep us safe were not fail-safe and what they really needed to do was store their guns properly. I know one thing: I would not have been shot. Like so many other recommendations about my safety and care, my parents would have taken the advice.

Similar shootings that are all too common are leaving holes in bodies, lives, and communities. Pediatricians have a special role in addressing this problem. As respected members of your communities who are trusted with the care of children, you will be listened to. Your recommendations will be followed.

I am asking you to please talk to the parents of your patients. Tell them that the only way to keep their children safe is to store all guns properly.

Elizabeth Hjelmseth

BACKGROUND

Pediatric firearm-related injuries are the second leading cause of death for children and adolescents in the United States.¹ In 2017, guns killed twice as many children <5 years old than law enforcement officers in the line of duty.² The American Academy of Pediatrics (AAP) 2012 statement on firearm-related injuries recommended that pediatricians advocate for improved firearm-related legislation, provide gun safety information for parents, educate the next generation of pediatricians about gun safety counseling, and conduct research on gun violence prevention.³ Although there have been similar calls to action from

various medical societies and organizations,⁴⁻⁷ including from within the pediatric hospital medicine community,⁸⁻¹¹ this charge can feel insurmountable. How can a pediatric hospitalist engage in this issue and make a difference? We hope to provide a set of actionable tasks under the domains of clinical care, advocacy, education, and research specifically tailored for the busy pediatric hospitalist.

CLINICAL CARE

Primary Hospital-Based Prevention

Pediatricians in any clinical setting can play a role in preventing firearm injuries by engaging with parents and children living in rural or urban communities where either legal or illegal gun ownership may be common.¹² As pediatricians, we are a consistent and reliable source of information and guidance for our patients, their families, and our communities. It is our duty to help prevent disease, illness, and harm; protect and ensure safety; and educate our patients and families. In hospital medicine, we should approach firearm safety as we do many other public health issues, including motor vehicle safety, tobacco and substance abuse, and lead exposure. Treating every clinical encounter (in particular, always in those with clinical relevance) as an opportunity for screening for firearms in the home and counseling on safe storage can help mitigate future intentional and unintentional pediatric firearm injuries.¹² Given the example of Walley et al¹³ to similarly approach tobacco smoke exposure counseling in the inpatient setting in children admitted with respiratory illness, we can see the potential for similarly doing so with gun violence prevention efforts. Similarly, given the recent emphasis on the importance of social determinants of health screening in the inpatient setting, exposure to gun violence and risk factors for firearm injury can be viewed in line with these efforts as well.^{14,15}

One in 3 children in America live in a home with a gun, three-quarters of these children know where the gun is located, and more than one-third have held the gun.¹⁶ There are 4.6 million American children living in homes where guns are loaded and

unlocked.¹⁷ The presence of a gun in the home is associated with adolescent suicide and homicide regardless of underlying psychiatric disorders.^{3,18} Safe storage is an effective way to reduce morbidity and mortality from firearms.¹⁸ Safe gun storage means keeping guns locked and unloaded and keeping the ammunition locked separately. However, barriers to effective firearm screening and gun safety counseling in the clinical setting exist, and screening rates for firearm access in the inpatient setting are low.¹⁰ Gun violence is a polarizing and politicized topic in our society, and there have been efforts to ban physicians from inquiring about firearm ownership and providing counseling and education.¹⁹ Currently, no state bans firearm safety counseling by health care providers. Capitalizing on the concept of universal screening and education helps maintain the focus of the conversation on sharing information and providing education, emphasizing safety and, ideally, preventing politically charged conversations.

Safe storage counseling can be incorporated into routine developmentally appropriate guidance on home and environmental safety, including smoke detectors and guidance to prevent ingestions. Toddlers and young children are at greatest risk for unintentional firearm injuries, which most often occur within the home.²⁰ School-aged children and adolescents are at greatest risk for intentional firearm injury in the form of homicide and suicide.²⁰ Discussing access to firearms is critically important in the context of other high-risk behaviors such as other forms of violence, bullying, substance abuse, gang participation, mental health concerns, and suicidality.

Finally, firearm injuries can occur outside a patient's own home. As we counsel families to discuss other safety concerns when their children are in others' homes, such as food allergies or pool safety, we should encourage caregivers to ask about unsecured firearms. The Asking Saves Kids campaign encourages caregivers to ask family and friends if there is a gun where their child plays and if the gun is stored safely. Everytown for Gun Safety created the

Be SMART campaign, another framework to help families discuss firearm ownership and safe storage with others in their communities.²¹ Be SMART advocates for safely securing all guns in your home and vehicles, modeling responsible behavior around guns, asking about the presence of unsecured guns in other homes your children will visit, recognizing the role of guns in suicide, and telling your peers to be smart.

The time commitment of screening and counseling can vary, similar to any screening and counseling topic that we choose to address with inpatients. Simply screening for guns in the home can be as brief as asking a simple question. Counseling on safe firearm storage can vary from reviewing the principles of guns being locked and unloaded and the ammunition locked separately, to showing a 5-minute Be SMART video, to more in depth discussion about various aspects of gun safety, including reviewing each of the tenants of Be SMART, for example. As with other social determinants of health, if screening is particularly concerning for aspects that would involve mental health needs or other specific resources, partnering with social workers or case managers or other local community groups available may help address some of these specific needs.¹⁴

Secondary and Tertiary Hospital-Based Prevention

The primary goal of clinical care in the acute setting of gun violence victims is to address traumatic injuries in victims of violent trauma through an interdisciplinary pediatric trauma team, including collaboration between pediatric hospitalists, trauma surgeons, and/or pediatric surgeons. Beyond the acute physical injuries, we need to improve screening and treatment of acute stress disorder and posttraumatic stress disorder (PTSD) in these young victims. The prevalence of acute stress disorder in pediatric patients presenting to an emergency department (ED) for violent trauma is high and is associated with a heightened risk of PTSD.^{22,23} Tools such as the Screening Tool for Early Predictors of PTSD²⁴ have been validated in the ED but have yet to be

incorporated into an inpatient setting to screen for acute stress disorder in children and parents.²⁵ Applying this tool in the inpatient pediatric setting may improve referrals to mental health resources to mitigate the effects of acute stress disorder and its progression to PTSD. Furthermore, the Home and Environment, Education and Employment, Activities, Drugs, Sexuality, Suicide/Depression assessment (commonly known as the HEADSS assessment) and social histories with every adolescent clinical encounter should continue to be used to screen for depression, suicidal ideation, and guns in the home given the known increased risk of completed suicide and homicide with a firearm in the home¹⁸ and the fact that each year, >1000 children 10 to 19 years old complete suicide with a gun.²⁶

Besides addressing medical and psychological needs of victims of violent trauma, pediatric trauma centers can play a role in injury prevention. The American College of Surgeons recommends all pediatric American College of Surgeons-certified level I trauma centers have major activity in prehospital management, education, and injury prevention.²⁴ In many urban trauma centers throughout the United States, the majority of adolescent trauma results from firearm-related injuries. There are significant disparities with respect to these gun-related injuries. In one study focused on hospitalizations, the rate of hospitalization due to firearm-related injuries is nearly 8 times higher for boys compared with girls, 10 times higher for black children compared with white children and adolescents, and 2.5 times higher for Hispanic children compared with white children.²⁷ The age group with the highest rate of hospitalization is 15 to 19 years, and for black male adolescents aged 15 to 19 years, the hospitalization rate is >13 times that for white male adolescents in the same age group.²⁷ The combination of the complex socioeconomic factors that contribute to firearm-related injury has resulted in the implementation of youth violence surveillance and prevention programs.²⁸⁻³⁰ Although few in number, all currently established programs share the

common aim of addressing social and psychological consequences of violent trauma with help from social workers and psychologists.³¹ Furthermore, these programs demonstrate the need for partnerships with community-based organizations to address the socioeconomic issues contributing to violent trauma.³¹ At New York City Health and Hospitals Jacobi Medical Center in the Bronx, New York, a program incorporating both hospital and community components employs community outreach workers from targeted neighborhoods to mentor victims of violent trauma in the hospital and high-risk individuals in the community. Preliminary data suggest that since the program's inception, there are significantly decreased rates of reinjury in participating patients and decreased community shootings.³² Similar programs strive to inform evidence-based practices with measurable improved outcomes to establish a standard of clinical care in all major US urban trauma centers.

ADVOCACY

Join a Group

Advocacy is a team sport. Between responsibilities at home and work, it is near impossible for a busy physician to keep track of every upcoming bill or policy being considered at the state and federal level. Getting involved with a gun violence prevention group removes some of the individual burden. State AAP chapters are an excellent resource to connect with to learn about different advocacy avenues. The AAP has also produced a simple guide for pediatricians on gun safety advocacy, including bullet-pointed resources of how to get involved.³³ Grassroots groups, such as Moms Demand Action for Gun Sense in America (which is under the umbrella organization of Everytown for Gun Safety), March for Our Lives, Sandy Hook Promise, Brady United, or Giffords Law Center to Prevent Gun Violence, can also decrease barriers to action by tracking upcoming bills, organizing advocacy action days, and allowing members to be as involved as they choose. Once barriers to entry into advocacy are reduced, physician advocates should then decide how much energy they can commit: low, medium, or high.

Low Effort

Calling senators and representatives is fast and easy. Members of congress have dedicated staffers to answer calls, tally support and opposition to legislation, and communicate the results of those calls daily to the congressperson. For the call to be effective, it should include the caller's name and address and clear support or opposition for a particular piece of legislation. Calling outside of office hours is acceptable as well, voicemails and in-person discussions carrying equal weight. Saving representatives' and senators' contact information in one's phone (easily found online)^{34,35} is an effective way to decrease personal barriers to calling.

Another relatively low-effort task is sending a letter to the editor of a local paper. Examples of letters to the editor and gun violence prevention talking points are available through the AAP. The OpEd Project (available at www.theopedproject.org) has excellent advice on structuring an effective letter to the editor and has useful media contact information.³⁶

Medium Effort

After engagement with lower-effort activities, broader opportunities to engage on the issue will become apparent. Attending a meeting of any local gun violence prevention organization, often easy to find online, is a good next step. Community organizations will likely be thrilled to have a pediatrician join them. Physicians have agency in the community, and these groups will undoubtedly find a way to use this voice. Physicians must use these opportunities to elevate the voices of those who do not share their privilege. Leaving with concrete next steps to get further involved will sustain momentum. Remember that passion will often drive advocates to find time and energy they did not realize they had.³⁷

Members of the AAP can attend Advocacy Day in their state's capital, an excellent opportunity to network with pediatricians from across the state who have similar interests in advocacy. Pediatricians can have significant impact on their legislators just by showing up and engaging in

conversation. Pediatricians have all encountered patients affected by gun violence. Relaying these personal experiences can powerfully affect legislators.

High Effort

Hospitals and pediatrics departments have varying levels of advocacy infrastructure and engagement. In some cases, there may be an existing robust advocacy curriculum for trainees, and simply joining the existing group is an excellent place to start. Adding a focus on gun violence prevention, if not already fully covered in the existing curriculum, can be beneficial. Alternatively, for departments, hospitals, and/or residency programs that may have minimal ongoing advocacy efforts, this is an excellent opportunity to build something from the ground up. Starting small by giving a lecture to residents and hospital staff on the importance of gun safety or arranging a meeting of advocacy-minded faculty, trainees, and hospital staff can be an effective way to begin this effort. Hospital-based advocacy teams have opportunities to design quality improvement projects around specific issues. One example is a project aimed at increasing the frequency of gun safety discussions during well-child checks or on inpatient units. The Be SMART campaign²¹ has volunteers in all 50 states and can be an excellent partner for improvement efforts in your hospital. They can provide educational materials for families as well as posters for any clinical areas. The Be SMART message is in line with the AAP's position on firearm injuries in children. Hospitals can also get involved with Stand SAFE (Scrubs Against the Firearm Epidemic) or Wear Orange Weekend for gun violence awareness or plan an event for ASK (Asking Saves Kids) Day, an official AAP campaign that occurs annually on the first day of summer and encourages parents to ask about guns in the home before sending children over to play.

Stricter gun laws lead to fewer childhood gun deaths.³⁸ Voting is a critically important action. As a low-effort task, physicians should consider voting for candidates who support common-sense gun reforms. As a next step, physicians and other health care

providers can organize voter registration drives on campus. This can be done in partnership with national organizations doing this work (eg, the League of Women Voters) or in a more grassroots fashion. Voter registration tables should provide nonpartisan information on local elections and candidates and encourage people to #VoteKids and for common-sense gun reforms.

EDUCATION

A 2007 publication revealed that only 3% of children presenting to a psychiatric ED had documentation of access to a firearm by the psychiatry resident despite firearm access being a leading cause of homicide and suicide.³⁹ A study published in 2019 revealed that children in a pediatric ED with a diagnosis of suicidal or homicidal ideation had screening for firearm access documented only 5% of the time by a pediatric resident.⁴⁰ Twenty-five percent of all patients in this study with a diagnosis of suicidal or homicidal ideation lacked documentation by any clinician about screening for firearm access, including 5 patients who were discharged from the ED.⁴⁰ These studies, spanning more than a decade, highlight the importance of educating pediatric health care providers about the necessity of screening for firearm access and safe storage.³

However, there are few published educational programs on firearm safety for health care providers. A review of the literature between 1960 and 2014 using multiple databases revealed only 4 published articles in which curricula for health care providers and trainees with measurable outcomes were described,⁴¹ although, just this year, a pilot study of an asynchronous Web-based video curriculum for residents to improve counseling was published.⁴² Data suggest that physicians who receive training on firearm safety are more likely to provide firearm safety counseling to their patients.^{43,44}

The 2012 AAP policy statement on firearm-related injuries calls us to educate the next generation of pediatricians.³ Opportunities for firearm safety counseling training in the hospital setting are numerous. Being informed is the first step to being an

educator. Pediatricians must learn how firearms operate, the statistics of violence due to firearms, how to safely store and secure firearms, how to screen for mental health concerns in patients and parents, and how to encourage families to remove firearms when mental health risks are present. Informed clinicians can then educate trainees and other providers as well as patients and families. Partnering with local law enforcement can be an effective way to gain additional insight into firearms and safety devices and to provide unique educational sessions for providers and families alike.

Community members can also become great partners in education. Inviting a speaker from the community who has experienced firearm violence can help the educational message become more relevant for the educational audience. Local advocacy groups, such as the Everytown Survivor Network (one of the subgroup organizations part of the Everytown for Gun Safety organization), can connect pediatric hospitalists with gun violence survivors in their communities interested in sharing their stories to help end firearm violence. In any educational setting, the emphasis should always be on disseminating information without judgment to keep lines of communication open. When teaching trainees and providers, it is important to teach that screening for access to firearms, firearm storage, and mental health concerns can be built into any screening questions that providers ask families. By normalizing the practice of asking about firearms and mental health, clinicians continue the therapeutic relationship with families, and we present ourselves as advocates for safety in many domains.

Educational sessions about preventing firearm violence can be given in many ways: grand rounds, journal club, morning report, noon conference, or case-based discussions or sessions can all be used to discuss how to prevent firearm violence in young children, in teenagers, and in different community settings. Educators can also mentor students and trainees in advocacy projects, research, and curriculum design. Planning education sessions about firearm

violence prevention can include collaboration with other divisions and departments to disseminate the message. A multifaceted, interdisciplinary, community-connected educational plan at one's institution has the greatest potential to yield more screening and less firearm violence.

RESEARCH

Firearm safety and gun violence prevention research is crucial because "in the absence of this research, policy makers will be left to debate controversial policies without scientifically sound evidence about their potential effects."⁴⁵ In the past, research around topics of gun violence and gun violence prevention has been difficult because of limitations imposed by the provision commonly referred to as "the Dickey amendment."⁴⁶ This Congressional appropriations bill, introduced by Representative Jay Dickey in 1996, stipulated that no Centers for Disease Control and Prevention (CDC) funding for injury control or prevention research could be used to advocate for or promote gun control, which was eventually extended to include funding from the National Institutes of Health as well. Despite a momentous decision to repeal the Dickey amendment in March 2018 to allow federal funding to be used to research gun violence prevention, in practical terms, no funding was appropriated to this research objective until a nonpartisan bill allocating \$25 million in federal funding to gun violence prevention research passed in December 2019.

A recent analysis using CDC mortality statistics, publication numbers from a Medline query, and research funding accessed from Federal RePORTER revealed that compared with other leading causes of death (eg, cancer, heart disease, and lung disease), gun violence was associated with substantially less funding and fewer publications than predicted on the basis of mortality.⁴⁷ This striking discrepancy in publications is paralleled by the lack of funding for gun safety and gun violence prevention research when examined along a similar continuum of causes of mortality.⁴⁷ Although federal funding has been limited, there are private sources of funding that aim to address firearm-related violence and

injuries. Although this list is growing, current examples include the National Collaborative for Gun Violence Research and the American Foundation for Firearm Injury Reduction in Medicine (which also offers additional funding opportunities cosponsored with the Emergency Medicine Foundation and the Emergency Medicine Residents Association) as well as local or regional prospects, including the Joyce Foundation.

Although many organizations, including the AAP, have long-standing policy statements to address firearm-related injuries,³ over recent years, several societies and journals within the scientific community have put forth yet another call to action for physicians, other health care professionals, and researchers to address what is now acknowledged as a public health crisis.^{4,5,7} As with any other public health crisis, research is a critical component of any

meaningful solution. The National Academy of Medicine published a set of general research objectives to address firearm-related injuries.⁴⁵ More recently, the Firearm Safety Among Children and Teens Consortium published a research agenda intended to address the main research priorities specific to the pediatric community regarding prevention of firearm injuries and to guide the next 5 years or research in this field. The consortium identified specific prioritized research questions within each of the following main themes: epidemiology, surveillance, and risk and protective factors; primary, secondary, sequelae, and cross-cutting prevention; policy-related issues; and data enhancement.⁴⁸

Pediatric hospitalists are well positioned to research a variety of topics related to gun safety and gun violence prevention. Parents

or caregivers of children who are hospitalized can be a captive audience and may represent an appropriate population to determine knowledge, beliefs, and attitudes about firearm ownership as it relates to children's health. Similar to previous efforts to reduce secondhand tobacco smoke exposure, the inpatient setting may be an appropriate setting to implement safe storage counseling programs to reduce risk.¹⁵ In addition, hospitalists may be caring for children and adolescents with intentional or unintentional firearm injury or with suicide attempts, for which lethal-means counseling could be lifesaving. Furthermore, various data sets are available that provide additional opportunities for research inquiry. In Table 1, we show a few recently published studies with the corresponding data sets highlighting the opportunity for firearm violence prevention research.

TABLE 1 Sample of Research Publications and Data Sets Used

Author Team	Data Set Used	Selected Findings
Okoro et al ⁴⁹	Behavioral Risk Factor Surveillance System survey	32.6% of adults report firearms in or around their home; 1.69 million children and youth (<18 y) were living with loaded and unlocked household firearms
Kalesan et al ⁵⁰	CDC WISQARS	31 672 firearm-related deaths occurred in 2010; 3 state laws most strongly associated with reduced overall firearm mortality were universal background checks for firearm purchase (multivariable incidence rate ratio 0.39 [95% CI 0.23–0.67]; <i>P</i> = .001), ammunition background checks (multivariable incidence rate ratio 0.18 [95% CI 0.09–0.36]; <i>P</i> < .0001), and identification requirement for firearms (multivariable incidence rate ratio 0.16 [95% CI 0.09–0.29]; <i>P</i> < .0001)
Goyal et al ³⁸	CDC WISQARS, Brady gun score	21 241 children died of firearm-related injuries during the 5-y period; states with stricter gun laws had lower rates of firearm-related pediatric mortality (adjusted incident rate ratio 0.96 [95% CI 0.93–0.99])
Patel et al ⁵¹	Nationwide Emergency Department Sample	111 839 ED visits for pediatric firearm-related injuries; rates of visits varied by region: lowest rate in the Northeast and highest rate in the South (40.0 [95% CI 34–45] and 70.8 [95% CI 63.7–76.9] per 100 000 ED visits, respectively); compared with the Northeast, odds of firearm-related ED visits were higher in the Midwest (aOR, 1.8; 95% CI 1.4–2.3), West (aOR, 2.5; 95% CI 2.0–3.2), and South (aOR, 1.9; 95% CI 1.5–2.4)
Fowler et al ²⁰	National Vital Statistics System, National Electronic Injury Surveillance System, and National Violent Death Reporting System	Nearly 1300 children died, and 5790 were treated for gunshot wounds each year; rates of firearm homicide among children were higher in many Southern states and parts of the Midwest relative to other parts of the country; firearm suicides were more dispersed across the United States, with some of the highest rates occurring in Western states
Joudi et al ⁵²	Kids' Inpatient Database	275 cases identified with a 7.5% mortality rate; incidence peaked at 1.0 per 100 000 admissions in 2006, which is significantly increased from a low 0.2 per 100 000 admissions in 1997 (<i>P</i> < .001)
Srinivasan et al ⁵³	National Hospital Ambulatory Medical Care Survey	198 969 visits (0.06%; 95% CI 120 727–277 211) were for firearm injuries; fatal firearm injuries accounted for 2% of these visits; 36% were intentionally inflicted; there were increased odds of firearm injuries to men (OR 10.2; 95% CI 5.1–20.5), black children and adolescents (0–19 y) (OR 3.2; 95% CI 1.5–6.7), and adolescents 12–19 y old (all races) (OR 16.6; 95% CI 6.3–44.3) on multivariable analysis

aOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; WISQARS, Web-Based Injury Statistics Query and Reporting System.

CONCLUSIONS

As hospitalists, we must be part of the solution to address this public health epidemic. We have the opportunity to do so in a variety of ways and through a variety of perspectives, via our clinical care of patients, advocacy, education of trainees and each other, and research. Each of us must commit to joining this effort in at least one way, even if that is as simple as committing to ask the parent of every patient we see with a mental health concern if the child has access to any unsecured firearms or deciding to make a phone call to our local representative's office to advocate for common-sense gun laws. Every day, we help and counsel our patients about how they can optimize their health and best protect themselves and their families from harm; this narrative should include gun safety.

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