REVIEW ARTICLE

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Clinical Approaches to the Prevention of Firearm-Related Injury

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CME

Firearm-related injuries are an urgent health crisis in the United States, with firearm-related deaths surpassing deaths from motor vehicle crashes in 2017.[1] In contrast to other conditions for which clinicians have evidence-based solutions to reduce harm, the 25-year gap in federal research funding[2,3] halted substantial advances in the science of firearm-related injury prevention. Yet renewed funding and emerging science continue to highlight the critical role clinicians have in prevention efforts.[2,3] Similar to other complex health issues, firearm-related injury is heterogeneous, with multiple causes (Fig. 1). Each of these causes has entry points within clinical encounters that represent opportunities to interact, interrupt, and prevent negative outcomes.

The lack of research has resulted in a generation of clinicians currently lacking the training necessary to implement the solutions generated by recent science. As a result, despite clinicians recognizing the need for prevention and agreeing that prevention of firearm-related injury is within their scope of practice,[13] few deliver evidence-based interventions even though their patients find such measures acceptable within the context of clinical care.[14] This lack of training is compounded by a shortage of adequate health care infrastructure necessary to support the integration of useful approaches into practice. Clinicians note multiple barriers, including a lack of knowledge, guidelines, time, clinical support, and reimbursement, as well as a fear of offending patients or encountering legal trouble.[15-17]

Clinicians routinely provide harm-reduction measures and anticipatory guidance for a range of complex health issues (e.g., substance use and vaccination), capitalizing on available evidence, their relationships with patients, and their community standing to promote health and safety. Although gaps exist, there remain opportunities to improve the current standard of care for the prevention of firearm-related injury. In this article, we review clinical approaches to prevention, ranging from ones implemented within individual clinical encounters to ones advanced by health care leaders within the systems and communities they serve.

Prevention Framework

Similar to other behavioral-health issues, the primary clinical approach to patients at an increased risk for firearm-related injury is prevention counseling to increase safety behaviors. This approach may take the form of universal counseling for all patients regardless of their individual risk, selective counseling that is tailored to populations known to be at heightened risk (e.g., older adults), or indicated approaches that assess a patient's risk (i.e., screening) and provide tailored counseling.[18] In the absence of guidelines from health authorities, researchers[14,19-22] have advocated for pragmatic approaches that embed anticipatory guidance regarding secure storage and safety practices within routine primary care encounters (e.g., wellness examinations)

KEY POINTS

CLINICAL APPROACHES TO PREVENTION OF FIREARM-RELATED INJURY

- Injury by firearm is preventable. Clinicians can reduce patients' risks of firearm-related injury and death using evidence-based clinical strategies in everyday practice.
- Clinicians should provide anticipatory guidance about firearm safety and storage in the context of routine clinical encounters, with tailored counseling for populations at elevated risk for specific firearm-related outcomes.
- Discussions should be normalized, tailored to specific clinical issues, and respectful of patients' firearm-ownership decisions. Clinicians should be knowledgeable about a range of locked firearm-storage options and tailor discussions to the patient. Repeated discussions with a patient and multiple small changes over time may be required to ensure that all firearms in the household are locked and unloaded.
- Ideally, firearms should be kept unloaded and locked in a storage device or container, with the ammunition stored and locked separately. Storage options include cable locks, trigger or clamshell locks, lock boxes, and safes. Locking may involve keys, keypads, or biometric (e.g., fingerprint) devices, depending on the patient's preferences and motivations for ownership.
- Temporary storage away from the patient's household or where firearms cannot be easily accessed should be discussed in times of elevated or imminent risk of injury.
- Validated screening tools and evidence-based clinical strategies should be implemented in clinical settings in which patients at elevated risk for community and intimate partner violence are treated.
- Tailored counseling should be provided to patients at risk for suicide, cognitive decline, intimate partner violence, or community violence and those caring for children.
- Health system leaders should advance prevention programs by supporting the implementation of evidence-based counseling and training of the clinical workforce.

while reserving more intensive prevention efforts (e.g., lethal-means counseling) for patients at increased risk for specific outcomes (e.g., firearm-related suicide). This approach also recognizes that risks are not static and may change as a patient's clinical, household, or firearm-ownership status changes.[19]

Although defining the most effective prevention strategies remains an active research area,[3,20] consensus recommendations have emerged[2,14,19,20,23] to guide clinical practice. First, national organizations[2,24] have advocated that clinicians integrate firearm safety discussions into their practice in ways that parallel the anticipatory guidance they provide regarding other risk behaviors (e.g., smoking). Incorporating firearm safety as a routine component of clinical care normalizes the topic for patients and the health care team, thereby reducing stigma around having such discussions in a clinical setting.

Second, as is true of other sensitive behavioral issues about which clinicians provide guidance, patients are more receptive to safety counseling — and clinicians are more likely to deliver such counseling — when the clinicians have technical knowledge about firearms, use language tailored to the patient's cultural norms, show respect for the patient's firearm-ownership decisions, and discuss safety within the context of relevant clinical concerns.[14,16,19,25,26] In line with this approach, patient-centered counseling methods (e.g., motivational interviewing) that emphasize nonjudgmental, nonconfrontational, and apolitical discussions have greater acceptability and efficacy than directive counseling methods.[17,27-29]

Third, counseling is most effective when clinicians align safety recommendations with patients' motivations for firearm ownership and carriage (e.g., self-defense), as well as their goals and values. Although disposal of firearms provides the greatest level of risk reduction, this step may not fit within a patient's values, and discussions in which clinicians recommend removing household firearms as the only safety recommendation evoke the most resistance[30,31] and are largely ineffective.[30,31] Consistent with principles regarding behavior change, routine discussions should emphasize multiple harm-reduction strategies that maintain patient autonomy. This approach should mirror substance-use counseling, in which attaining long-term behavior modification frequently builds from small, pragmatic changes that patients identify as ones they are capable of enacting to reduce risks. Similarly, changing firearm-related risk behaviors may involve multiple discussions, with

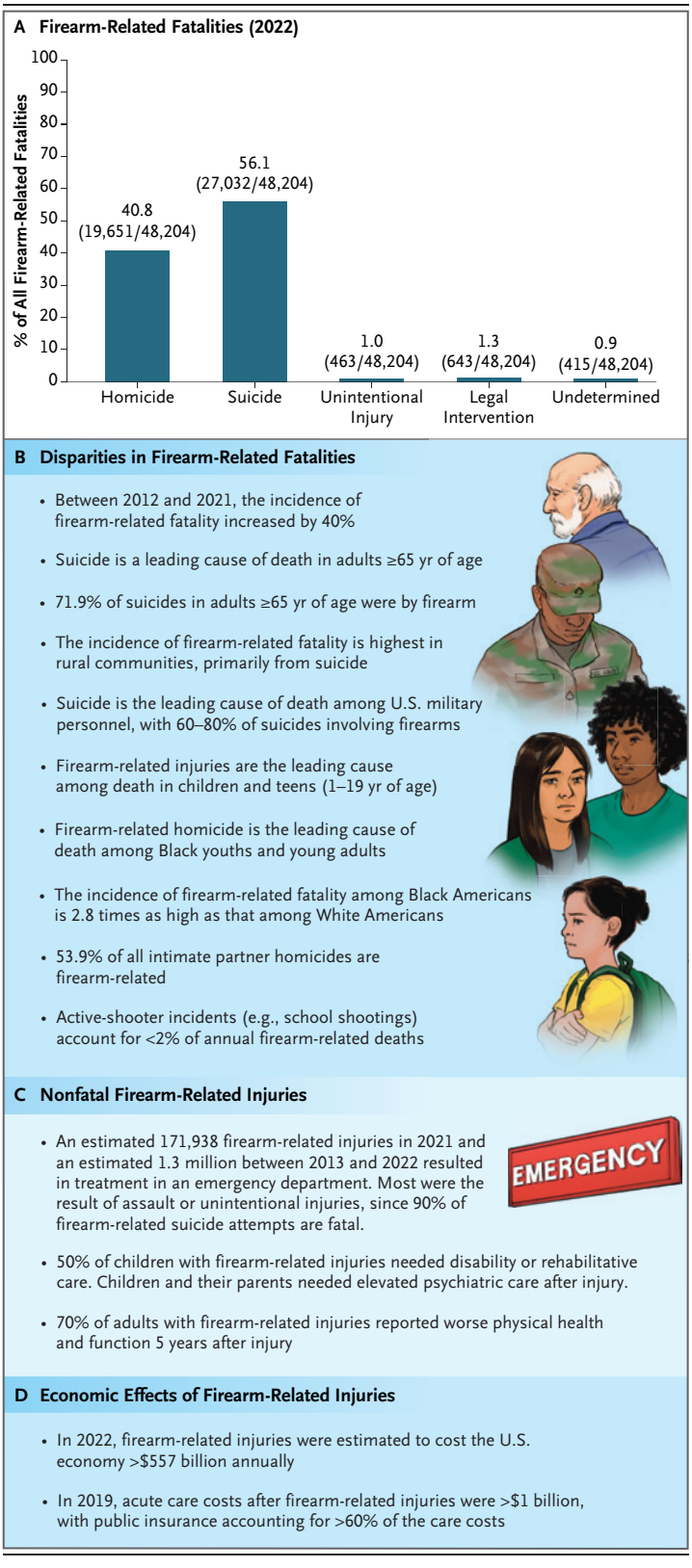


Figure 1. U.S. Firearm-Related Injuries.

Panel A shows categories of firearm-related fatality according to intent.[1] Undetermined indicates that intent is not known. Legal intervention included firearm-related injuries inflicted by police or other law enforcement agents acting in the line of duty. Demographic characteristics and disparities among firearm-related fatalities are shown in Panel B,[1,4-7] Panel C shows data relative to nonfatal firearm-related injuries,[1,8-10] and some of the economic effects of firearm-related injuries are listed in Panel D.[5,11,12]

clinicians supporting any positive actions that the patient feels empowered to implement to reduce risks. Although this approach may not achieve all the recommended safety outcomes initially, it avoids evoking patient resistance and eliminating future opportunities for discussion. As with other health issues, in the absence of imminent risk, clinicians encountering resistance should modify their approach by identifying barriers to counseling, establishing patient safety goals, and attempting to reengage the discussion at a subsequent visit.

Finally, it is important to note that despite previous challenges, counseling is protected by the First Amendment, and no current state or federal laws prohibit clinicians from discussing firearm safety when it is relevant to the health of their patients or others.[15] Although this protection extends to clinical documentation, patients may be resistant to safety discussions if information about their firearm ownership or access is recorded in the medical record.[25] Given that this information is not critical to counseling, omitting ownership status and details (e.g., number and type or firearms) from documentation may lessen resistance.[32] Of note, although the Affordable Care Act includes language prohibiting organizations from requiring the collection of patient firearm data for health and wellness programs, the Department of Health and Human Services has noted that this prohibition does not preclude clinicians from screening or counseling with regard to firearm safety.[33]

SCREENING FOR FIREARM AVAILABILITY AND ACCESS

Firearm availability is closely linked to multiple firearm-injury outcomes.[34-36] In 2022, 45% of U.S. households reported owning firearms, and

two thirds of those reported having multiple firearms.[37] Household firearm ownership is associated with increased risk of firearm-related adult homicide and suicide,[35,38-40] adolescent firearm suicide,[41] and unintentional firearm-related injury regardless of age.[36] Analogous to risks presented by secondhand smoke, the risks associated with firearms in a household extend to others, particularly intimate partners,[42] children, and teens.[43] Almost 60% of homicides involving intimate partners are firearm-related,[44] with the risk of femicide increasing by a factor of five when the male perpetrators have firearms.[42] In addition, in 80 to 90% of teen suicides by firearm, unintentional firearm-related deaths in children, and school shootings perpetrated by teens, the firearms were obtained from the home of the child or teen or from a relative's home.[4,43]

Although there is consensus about clinicians providing safety counseling, debate remains about whether screening all patients to identify the presence and availability of firearms in the household represents the best possible approach for initiating such conversations.[3] Some clinicians advocate screening all patients for the presence of firearms, with safety counseling provided if screening reveals that firearms are present.[45] This approach is based on the potential benefits of locked firearm storage with regard to multiple injury outcomes,[35,40,46,47] the inability of clinicians to reliably judge which patients own or keep firearms,[48] and the likelihood that screening will identify patients in need of more intensive or tailored counseling strategies. Because some patients may be resistant to questions about firearm ownership,[32] other clinicians advocate counseling all patients about secure storage and safety behaviors without screening for the presence of firearms. In the absence of consensus, validated screening questions,[3] or guidelines from the U.S. Preventive Services Task Force (USPSTF), clinicians should adopt approaches that align best with their practice settings, considering such factors as community firearm ownership rates, the feasibility of providing counseling to every patient (as opposed to screening to identify at-risk patients), and their own previous experience.

Regardless, principles[14,19] for engaging in discussions around firearm safety should be adopted (Fig. 2 and Table S1 in the Supplementary Appendix, available with the full text of this article at NEJM.org). First,[51] establishing trust between the clinician and patient and focusing on the goals of such conversations are essential for initiating the conversation and providing safety recommendations.[19] Second, whether discussions are initiated with a screening question or a conversation about safety practices, they should begin with a normalizing statement and proceed with the use of open-ended questions. Alternatively, patients may find the integration of initial screening questions about firearms with other health and safety issues to be more acceptable, because this approach normalizes the topic of firearm safety by interspersing it with other topics and allows for the use of electronic administration of questions to enhance privacy and autonomy and streamline implementation.[26,32] Discussions should explore storage and safety behaviors, associated motivations, whether all firearms are stored securely, and whether imminent risks exist at the time of the discussion. When possible, discussions should involve the firearm owner who maintains control and access to the weapon. When discussions involve families that do not own firearms, clinicians should explore potential access in homes where the family's children and teenagers spend time, noting that more than half of adolescents with depression or suicidality indicate that they can access firearms at locations other than their own homes.[52] Answers to these questions will help guide clinicians in tailoring counseling for their patients.

COUNSELING ABOUT FIREARM SAFETY AND LOCKED STORAGE

Irrespective of the approach, routine clinical encounters provide opportunities for clinicians to promote locked storage (traditionally called "safe storage"). Firearms should be kept unloaded and locked in a storage device or container, with the ammunition stored and locked separately (Fig. 3). Households with locked firearms have a lower risk of firearm-related fatality than those in which firearms are stored unlocked and loaded, a finding that is consistent across populations, firearm types, and type of injury

Changing firearm-related behaviors may involve multiple discussions, whereby locked-storage practices would result from the patient making small, pragmatic changes over time. Conversations should be revisited regularly to maintain trust and address new issues as they arise.

	Sample Counseling Language
A Initiating Discussions (Screening)	
• **Integrate safety discussions into practice similar to other anticipatory guidance** • **Begin with normalizing statements** • **Ask open-ended questions**	*I talk with all my patients (parents) about home safety (things like water heaters, medicines). Tell me a little about what firearm safety looks like in your home.*
B Exploring Risk and Safety Behaviors	
• **Explore risk, safety, and motivations** – Explore key motivations underlying risk and safety behaviors – Discuss safety within the context of relevant clinical concerns – When possible, engage the person who maintains control of firearm access – Demonstrate technical knowledge about firearms and use culturally tailored language – Show respect for the patient's decisions regarding firearm ownership	*In a typical day, what does firearm storage look like for you? How often do you lock the firearm up in that way?* *Which firearms do you store that way? Tell me a little bit about the firearms you don't lock up.* *When might you not lock up firearms? Tell me a little about what is happening on those days.*
• **Explore potential consequences** – Raise the topic of potential consequences associated with risky behaviors – If patient is resistant, avoid argumentative language (revisit the discussion at a later time)	*What, if any, negative experiences might you have had by storing firearms that way? Any close calls?* *You haven't had any close calls with storing your firearms that way. That's really great. I'm curious, where might things go wrong if your child was playing and found the loaded gun stored under the bed?*
• **Explore benefits of change** – Elicit potential positive outcomes of changing risky behaviors (e.g., storing firearms locked away)	*Seems like keeping your family safe and out of danger is really important to you. I'm curious, what benefits might there be, if any, to keeping firearm(s) locked up (in the safe)?*
C Providing Guidance Around Safety Options	
• **Ask permission to share information about safety after eliciting the patient's ideas** • **Avoid discussing only firearm removal and provide multiple safety options that enhance patient autonomy** • **Align safety recommendations with patient's goals and values and motivations for firearm behaviors** • **If the patient is resistant, avoid directive instructions (revisit the discussion at a later visit)**	*I'm curious, what ideas do you have about ways to increase safety at home with firearms?* *Would it be OK if we discussed some other ways to increase safety regarding your firearms?*
D Sample Tailoring Language	
• **Tailor language to be relevant to the patient**	**Firearms Kept at Home** *Many of my patients have firearms for hunting, target shooting, or home defense. Can you tell me a little bit about the safety measures you have in place?* **No Firearms in Home** *Sounds like you don't have firearms, so you don't have to worry about your teen finding a gun at home. That's great. I'm curious, what about places where your teen spends time? What does firearm safety look like there?*

Figure 2 (facing page). Clinical Approach to Firearm-Related Safety Discussions.

Shown are general principles to consider when discussing firearm-related safety issues with patients in a clinical setting and sample open-ended screening questions and follow-up probes for discussions of household firearm storage.[14,17,19,20,22,24,26,29,49,50,72] A similar framework may be used for discussions that address other high-risk behaviors (e.g., carrying a firearm) or specific clinical concerns related to safety (e.g., cognitive decline). These principles and examples represent one of several potential approaches to such conversations and are consistent with a patient-centered counseling approach.

(i.e., intentional or unintentional injury).[35,40,46,47] However, only one quarter of firearm owners regularly store all their firearms locked and unloaded.[46] Clinician-delivered counseling to promote locked storage has support in population-based studies, has been shown to be acceptable across patient populations,[23,51] has efficacy in improving locked-storage practices,[53,54] and is consistent with messaging from advocacy organizations about responsible firearm ownership. Important considerations with regard to counseling include the use of either a motivational interviewing approach[53] or messaging that balances firearm removal with other safety options.[54] The use of locked-storage practices increases when free locking devices are provided alongside counseling and written materials, with the best available storage outcomes achieved when enough devices are provided to secure each firearm.[54] Clinicians can frequently access free firearm-storage devices from their local police or sheriff's office or firearm-safety organizations.

Gaps remain in our knowledge about counseling with regard to firearm storage.[54] First, research has focused mostly within pediatric and family practices,[54] and messaging emphasizes reducing the access children and teenagers have to firearms. Identification of appropriate messaging for adults without children is needed, particularly because locked storage benefits additional populations and is associated with lower suicide risk among adults.[35,40] This includes identifying whether messaging about the public-safety benefits of locked storage may resonate with firearm owners, especially given that unlocked household or vehicular storage is a risk factor for firearm theft and stolen firearms are a primary category of firearms used in subsequent firearm-related crime and assault.[55] Second, studies focus primarily on firearm owners[54] and do not sufficiently address risks for non–firearm-owning families whose children may encounter firearms in other locations.[51] Although the American Academy of Pediatrics disseminates messaging (i.e., the ASK [Asking Saves Kids] campaign) to guide parents in having safety discussions with neighbors and relatives, this approach has not been empirically tested.[3] Finally, firearm owners note a preference for using locked boxes or firearm safes over less expensive cable or trigger-lock devices owing to concerns about the potential for delay in accessing firearms during a home invasion or potential damage to the firearm.[56] They also note concerns about newer technology-based storage devices with regard to potential failure and high costs.[57] Research is needed to identify storage mechanisms that overcome such barriers and effective messaging that addresses the key reservations that gun owners have about using these devices as means to increase safety within their household.[3]

TAILORED SCREENING AND INTERVENTION STRATEGIES

In addition to integrating counseling regarding firearm safety and storage into routine encounters, clinicians should consider selective or indicated strategies for at-risk patients who may benefit from more intensive or tailored counseling approaches that address specific health risks (e.g., suicide). In this section, we review evidence-based strategies for the prevention of suicide, community violence, and intimate partner violence. We also address firearm safety concerns specific to older adults. Although this review focuses on firearm-specific safety interventions, it should be noted that these interventions are one aspect of a comprehensive treatment plan necessary to address such health risks.

SUICIDE: LETHAL-MEANS ASSESSMENT AND SAFETY COUNSELING

Firearms are the most commonly used means for death by suicide, regardless of sex.[1] Prevention strategies[58] originate from data showing that most suicidal crises are brief, with 30% of persons who had seriously contemplated suicide indicating that the period in which they had suicidal ideations lasted for less than an hour.[59,60]

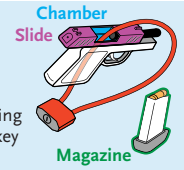
In-Home Options	Pros	Cons
Cable Lock Braided steel threaded through firearm to prevent chambering a round, engaging the slide, or loading a magazine; secured with key or combination lock. 	• Low cost • Single or multigun configurations • Compatible with most firearms • Cannot be installed on a loaded firearm	• Cable can be cut with tools • Some patients may be concerned about the potential of damage to the firearm
Trigger or Clamshell Lock Two-part (or one-part clamshell) device that attaches behind the trigger or over the trigger guard to prevent the trigger from being pulled. Secured with combination lock, key, or biometrics. 	• Low cost • Compatible with most firearms • Secured with combination lock, key, or biometrics	• Blocks trigger but increases the risk of injury if placed on a loaded firearm
Lock Box Stores one or more handguns using a key, combination lock, keypad, or biometric security (e.g., fingerprint) to restrict access. 	• Can be used in multiple settings (e.g., car) • Smaller than a gun safe • Biometric versions allow rapid access	• More expensive than cable or trigger locks • Electronic versions require batteries • If portable, it could be stolen
Gun Safe or Cabinet Stores one or more firearms using a key, combination lock, keypad, or biometric security (e.g., fingerprint) to restrict access. 	• Can store multiple firearms • Fits long guns and handguns • Frequently changing lock combination or storing keys outside of the home further reduces household risk • Uses key, combination lock, or biometric devices	• Expensive • Large size may limit use in small homes or spaces
Smart Guns Uses biometrics (e.g., fingerprint) or other technology (e.g., RFID) to ensure only authorized users can discharge the firearm. 	• No keys or codes • Prevents use of firearm by nonauthorized user • Prevents theft	• Does not limit an owner's access; consider risk of self-harm • Limited availability • High cost • If the purpose of ownership is self-defense, the patient may be resistant owing to concerns about technology failure
Firearm Disassembly Disassembly into component parts; removal of key elements (e.g., firing pin) prevents use. 	• Increases the time before the firearm can be used (i.e., requires reassembly) • The risk of the firearm being used is further reduced when disassembly is paired with the removal of key parts	• If not paired with removal of key parts, the firearm can be reassembled • If the purpose of ownership is self-defense, the patient may be resistant to practice disassembly because it limits immediate use
Out-of-Home Options		
Storage Locker at a Business (Shooting Range, Sports Club, Firearm Seller) Many allow locker storage for a fee. Background check requirements vary by state, by type of storage, and on whether ownership is transferred.	• Several states have maps detailing potential storage locations • In some states, a background check is not required for locker access when the owner holds the key	• Costs may be high for regular storage • Not available everywhere • Some states require a background check to store or retrieve firearm
Self-Storage Rental Units Many allow firearm storage. Most require rental of entire unit, although some have storage drawers or bins available.	• Depending on the state, a background check may not be required for firearm storage • Firearm owners may prefer this option because facilities often have 24-hour access	• Renting the entire storage unit may be required • Opportunity for self-harm is not limited for an owner at increased risk who has 24-hour access to the storage facility
Existing Armories Some will provide temporary storage for safety. Options include law enforcement, armories (e.g., National Guard).	• Some will offer free storage services and will pick up firearms at the home for storage • May offer firearm-disposal services	• Patients should be advised not to arrive unannounced with their firearms • Patient may not trust law enforcement • Background-check requirements and disposal services vary
Pawn Shops Some provide monetary loan in exchange for the firearm. The owner may retrieve the firearm by paying back the loan with interest and passing a background check.	• Owner maintains control over retrieval time frame • Cost may be lower depending on interest fees	• Depending on the contract, the owner may forfeit the firearm after a period of time

Figure 3 (facing page). Firearm Storage.

Shown are storage options, including in-home (e.g., locking devices) and out-of-home (e.g., shooting ranges) options, that are available in some states.[14,21,24,49,50] Storage options may be combined (e.g., cable locks plus a gun safe) to provide extra layers of safety, especially if imminent clinical concerns exist (e.g., a teen with depression). Several states maintain maps indicating locations for firearm storage outside the home. Storage options discussed during counseling should be tailored to a patient's motivation for firearm ownership, safety goals, and the level of risk. RFID denotes radiofrequency identification.

The means chosen for a suicide attempt during a crisis are also strongly associated with their immediate availability,[59,60] suggesting that reducing access to lethal means may delay an attempt long enough for patients to seek help or for the crisis to pass.[59] In addition, as compared with other methods (e.g., medications) that have overall fatality of approximately 1 to 2%, firearms are highly lethal, with 85 to 90% of suicide attempts resulting in death.[59] Thus, reducing firearm access has a benefit even in circumstances in which a person who cannot access a firearm attempts suicide by other means, since other means are less likely to result in a fatal outcome. Furthermore, persons who survive a suicide attempt do not invariably go on to die by suicide, with less than 10% dying from a subsequent suicide attempt.[59,60] Reducing access to lethal means for suicide such as a firearm is therefore a critical component of prevention and one for which clinicians are well positioned to intervene with prevention efforts.[24,61]

The USPSTF recommends regularly screening all patients for depression, with national organizations,[24,61] including the Joint Commission,[62] also recommending suicide-risk screening. Patients found to be at elevated or imminent risk by routine screening for depression or suicide or because of a worrisome clinical presentation (e.g., a suicide attempt) should receive safety counseling about lethal means.[61] Because firearm availability is associated with suicide even in persons without a history of psychiatric illness,[34-36,38,39,41,63] if universal screening is not feasible, researchers advocate for selective screening in which clinicians ask and counsel about firearm safety during encounters with patients who are struggling with life events (e.g., divorce) or who are within demographic groups (e.g., older adults, adolescents, and rural populations) or occupations (e.g., law enforcement) that are at heightened risk for firearm-related suicide.[14]

Although a validated screening question for patients at risk of firearm suicide and in need of lethal-means counseling does not exist, the framework outlined in Figure 2 remains applicable for selective and indicated screening of at-risk patients. Because the intent is to counsel patients about reducing the availability of firearms, some researchers[49,50] suggest initiating discussions by bringing up potential safety changes patients might enact (Table 1) rather than asking about access, especially if this approach evokes resistance. As noted, households with locked firearms have a lower risk of death by suicide. Lethal-means safety counseling has been shown to improve locked-storage practices when provided to National Guard members[68] and is associated in preliminary studies with reductions in firearm access among suicidal adolescents.[69-71] In addition to the counseling principles previously mentioned, clinicians should avoid words that may be perceived as threatening (e.g., "restrict" and "confiscate") and instead emphasize the temporary nature of reducing access.[19,59] Patients' safety concerns in the context of their suicidal thoughts should be explored, as should their reasons for or against reducing firearm availability and specific actions they are willing to enact to enhance safety.[72] Discussion of actions to improve safety with regard to other potential lethal means (e.g., medications) may lessen patients' resistance to discussing firearm safety. When possible, clinicians should include family members in the discussion[19] and focus initially on out-of-home firearm storage, followed by in-home options for patients who are resistant to removal of the firearm from the household. Finally, because screening may identify at-risk populations who are not at imminent risk, counseling should focus on enhancing locked-storage measures and planning for how to address risks if they emerge. Clinical resources and decision aids[21] to help guide counseling conversations are shown in Table S3.

When patients are at elevated or imminent risk and unwilling to enact safety changes, extreme risk protection orders (ERPOs, also known as "red flag" laws) exist in many states to help clinicians and family members manage firearm risk.[73,74] An ERPO is a civil court order that temporarily

Table 1. Sample Prompts for Initiating Discussions around Firearm Safety with Older Adults, Youth, and Patients at Risk for Intimate Partner Violence or Suicide.*

Patients at risk for firearm suicide with known household firearm access

"Lots of people have guns at home. Some will store their guns outside of their home temporarily, such as at a relative's house or gun shop, until they are feeling better. What do you think about a strategy like that?"[24]

"When people are feeling depressed or down, sometimes they temporarily store their firearms outside of the home. What would your plan for temporary storage look like if you or someone else felt down or was struggling?"[64]

"What ideas do you have about ways to increase your safety in case you have suicidal thoughts?"

Older adults with firearm availability or access

The "5 Ls" tool provides a framework for asking about factors specific to older adults when screening for firearm availability.[65]

1. Is it LOADED?
2. Is it LOCKED?
3. Are LITTLE children present?
4. Is the operator feeling LOW?
5. Is the operator LEARNED? (i.e., is the person knowledgeable about how to use the weapon, or does the person possibly have dementia)

Identifying risk of firearm violence among youth (14–24 yr of age)

The SaFETy score predicts the 2-year risk of being an aggressor or victim in an incident of firearm violence.[66]

In the past 6 months:

Serious fighting: "How often did you get into a serious fight?"
Friend carrying a weapon: "How many of your friends have carried a knife, razor, or gun?"
Community **E**nvironment: "How often have you heard guns being shot?"
Firearm **T**hreats: "How often has someone pulled a gun on you?"

Identifying risks of intimate partner violence

The five-item Danger Assessment Screen is used to predict intimate partner homicide or the risk of severe injury from intimate partner violence.[96,97]

"Has the physical violence increased in severity or frequency over the past year?"
"Has your partner (or ex) ever used a weapon against you or threatened you with a weapon? If yes, was the weapon a gun?"
"Do you believe your partner (or ex) is capable of killing you?"
"Has your partner (or ex) ever tried to choke/strangle you/cut off your breathing?"
"Is your partner (or ex) violently and constantly jealous of you?"

* Prompts can be used to initiate a screening discussion or as part of a general discussion of firearm safety with patients in a clinical setting. See Tables S3 through S5 in the Supplementary Appendix, available at NEJM.org, for additional information regarding screening tools, including the use, scoring, derivation, and performance characteristics of the tools described as well as an additional firearm-specific screening tool (FIGHTS score)[67] to assess the risk of adolescent firearm carriage.

prohibits persons considered to be at risk of firearm-related violence against themselves or someone else from possessing or purchasing firearms; these orders have been associated with decreased population-level firearm suicide rates and individual-level suicide risk.[73,74] Depending on state law, a clinician can file a petition for an ERPO or can counsel family members or caregivers about how to file a petition themselves or how to approach a member of law enforcement for help in filing. In circumstances in which there is an imminent threat to the health or safety (or both) of a person or the public, clinicians may also disclose relevant information directly to law enforcement, allowing them to act on the safety risk, including filing an ERPO.[75] State filing procedures, evidentiary standards, durations of ERPOs, and renewal and termination processes vary considerably. Regardless, in light of the heterogeneity in state requirements, mechanisms, and timelines for reporting involuntary psychiatric hospitalizations for evaluation (e.g., a short-term hold) or treatment (e.g., court-adjudicated hospitalization) to the federal background-check system, it is important for clinicians to consider ERPOs as an option for managing elevated and imminent risk among outpatients and postdischarge risk among patients hospitalized in a psychiatric facility.[76]

Older Adults: Anticipatory Guidance and Firearm-Retirement Counseling

Adults older than 65 years of age are also a priority for safety counseling[14,27,65] when universal screening is not feasible. Among older adults, rates of firearm-related suicides are higher than those among younger adults, one third own or keep firearms,[23] and 80% lack plans for what to

do with their firearms should they become a risk to themselves or others.[27] Older adults face unique issues that increase their risk of suicide, including high prevalences of depression, illness, stressful life events, and isolation and loneliness.[23,27,65] Cognitive decline[65] and dementia are also independent risk factors for suicide, even before the development of prominent symptoms,[77] and symptoms that occur with disease progression (e.g., paranoia) may also increase the risk of aggression toward family members and caregivers, as well as risks related to the victimization of older persons.[78] Although validated screening tools are lacking to assess firearm-related risks among older adults specifically,[27] approaches to screening and counseling mirror those for other populations,[14] with follow-up probes to explore factors specific to older adults (Table 1).[65,79,80] As with other populations, it is important to consider older adults' access to firearms that are kept in the household by other family members or caregivers.

At-risk patients should receive counseling to enhance their locked-storage practices and address their risk of suicide.[23] In discussions, clinicians should address motivations and barriers specific to older adults, bearing in mind that, for example, one third of older adults provide care to children or teenagers (or both)[23] who may gain access to unsecured firearms in the older adult's home. It is also important for clinicians to note age-specific issues that may impede safety recommendations and tailor guidance to address key barriers. For example, adults with arthritis may have more difficulty using locking devices that demand a high degree of physical dexterity to secure or may not have the technological skills to navigate a computerized lockbox.[23] Although not empirically tested, recommendations[23,27,81] for assessing the ability of older adults with cognitive impairment to safely handle firearms parallel those for assessing their ability to safely drive a vehicle. This process includes both an assessment of overall cognition and the patient's ability to perform complex tasks (e.g., locking firearms) required for safety.[27]

Repeated assessments and discussions over time are important. As age-related or cognitive impairment worsens, clinical interventions may evolve from counseling with regard to storage to supervised access to more intensive measures, such as reducing weapon lethality (e.g., removing the firearm's firing pin), transferring ownership, or removal of firearms from the household.[23,27,81] Although a universally appropriate time at which to intervene has not been established,[27] routine anticipatory guidance with firearm owners and their families and caregivers about how firearm risks may evolve as persons age and their cognition changes is recommended.[23] Older adult firearm owners find such conversations acceptable,[23] which allows for shared decision making about safety plans and allows an older person to identify trusted decision makers (e.g., family) who will be empowered to monitor and assess risks and enact firearm-retirement plans should the patient become unable to appropriately care for them.[23] A decision aid for such discussions is currently undergoing efficacy testing.[82]

COMMUNITY FIREARM-RELATED VIOLENCE: YOUTH VIOLENCE PREVENTION COUNSELING

Among youth (14 to 24 years of age), 62% of firearm-related deaths are attributable to interpersonal violence.[1] Firearm carriage and risky firearm behaviors, including carriage while under the influence of alcohol or drugs, and threats or use of a firearm toward others increases the likelihood of violent outcomes, both fatal and nonfatal.[83,84] Youth engaging in such risky firearm behaviors are five times more likely than those not engaged in such behaviors to have been recently victimized and are more likely to have perpetrated a violent injury, a fact that highlights the cyclical nature of violence.[84] Once youth sustain a violent injury, they are also at increased risk, with one third returning to an emergency department with another violent injury within 2 years after the first injury[85] and approximately 60% engaging in firearm-related violence,[86] the majority of which is motivated by retaliatory violence.[86,87] Recent data indicate that the prevalence of firearm carriage may be greater among youth living in rural environments than in urban settings, with similar associated outcomes of violence.[88] These data underscore the need for clinicians to consider a broad range of firearm behaviors (i.e., carriage, threats, and firearms use by teens or their peers) in addition to firearm availability and access when screening young patients for risky behaviors.

Validated clinical screening tools are available to help identify adolescents at risk for violent injury, violence perpetration, retaliatory violence

after an assault with injury, firearm carriage, and firearm violence.[66,67,89] Firearm-specific screening tools, such as the FiGHTS (Fighting, Gender, Hurt while fighting, Threatened, Smoker) and SaFETy (Serious fighting, Friend weapon-carrying, community Environment and firearm Threats) scales,[66,67] were developed primarily as behavioral-health questionnaires for use among youth who are seen in urban emergency departments rather than in primary-care settings owing to lower primary-care attendance by late adolescence (Table 1).[17,29,89] Prospective validation of these findings among broader samples or adaptation for other relevant (e.g., rural) contexts is needed.

Clinical strategies to reduce the risk of firearm violence include primary prevention to reduce fighting, violence, and firearm-related risk behaviors; secondary prevention to reduce firearm-related violence after a violent injury; and tertiary prevention to reduce the sequelae of exposure to violence (e.g., post-traumatic stress disorder). Despite limited data from a few rigorously conducted clinical trials,[28,29,90,91] evidence-based programs (e.g., SafERteens[28,29]) and programs that show promise currently undergoing large-scale efficacy testing have similar elements. First, most provide behavioral therapy[28] or use trauma-informed approaches[89,90] that recognize that patients have substantial physiologic and psychological consequences from repeated exposure to violence. The "scared safe" approach (e.g., tours of a hospital trauma bay) used in earlier programs has been identified as harmful or ineffective and should be avoided.[89,90] Second, most effective programs include a focus on retaliatory violence, using cognitive and behavioral therapy to enhance coping, anger management, violence avoidance, and nonviolent conflict-resolution skills to interrupt trajectories of violence.[28,90] Third, programs address key risk factors (e.g., substance use and firearm carriage) while emphasizing promotive factors (e.g., prosocial peers and mentors) that enhance resilience.[92] Fourth, several programs provide case management to help patients navigate medical, social, and psychological services.[89,90] They also recognize a spectrum of dose intensities from single sessions[28,29] for primary prevention to multiple sessions for youth further along a risk trajectory. Logistics vary considerably, ranging from approaches embedded entirely in clinical care and delivered by clinical staff to community programs initiated through worker outreach at the bedside after a violent injury.[17,89,90] Information on violence-related screening tools, evidence-based programs, and available training resources for integrating programs into clinical settings are provided in Table S4.

FIREARM-RELATED INTIMATE PARTNER VIOLENCE PREVENTION

The USPSTF recommends universal screening for intimate partner violence among female patients of reproductive age,[93] in light of data showing that severe intimate partner violence disproportionately affects females, especially in early adulthood (18 to 34 years of age), and is the leading cause of death in pregnancy.[44,94] Perpetrator access to firearms remains the greatest risk factor for fatal outcomes in intimate partner violence,[42] and firearm use in commission of intimate partner violence additionally increases the risks of perpetrator suicide and bystander homicide (e.g., children and police).[44] Firearms are also frequently used to intimidate or exert coercive control, with approximately 40% of victims of intimate partner violence reporting that they have been threatened or assaulted with a firearm.[95] The risk of firearm-related homicide substantially escalates when the partner being victimized attempts to leave or leaves the perpetrator.[42]

Assessing firearm access by a perpetrator among patients who screen positive for intimate partner violence is essential to guide safety planning. Assessments should include questions about previous firearm use or threats of use, including use or threats of use for coercion.[95] The Danger Assessment tool is the only validated screening tool for assessing homicide risk among patients who screen positive for intimate partner violence (Table 1).[96,97] In addition, although clinical strategies exist to manage intimate partner violence victimization, including trauma-informed counseling, safety planning, and resource referral (e.g., shelters), there are currently no firearm-specific programs (Table S5).[98] Promising mobile-health tools exist to facilitate the clinical use of the Danger Assessment tool in evaluating risk and guiding safety planning.[99] Safety plans may also include providing support and assistance to persons at risk for intimate partner violence with regard to filing civil restraining orders (i.e., domestic-violence restraining orders) against the perpetrator that preclude contact, prohibit the

perpetrator from possessing or purchasing a firearm, and in many states also require firearm relinquishment to a law enforcement agency. ERPOs are an adjunctive tool that may be used in addition to domestic-violence restraining orders to limit access to firearms, depending on state laws regarding firearm relinquishment. An active area of research need is for upstream clinical interventions addressing perpetration of intimate partner violence, since many such programs are accessible only once a perpetrator is engaged in the justice system.[3]

STRATEGIES FOR HEALTH SYSTEMS

Leaders of health systems can take tangible steps to reduce the incidence of firearm injuries in the communities they serve. These measures include ensuring the time and resources needed for front-line clinician training, the availability of necessary safety programs (e.g., the availability of firearm-locking devices for distribution at the point of care), and ready access to mental-health and social-work services when needed, as well as supporting local, regional, and national evidence-based efforts to reduce death and injury from firearms.

Although this review focuses on prevention within clinical encounters, it is vital that health care systems support and coordinate such efforts, as well as advance broader agendas across their clinical, educational, and research missions.[2,3,100] Systemwide prevention is needed not only to reduce death and injury but also to address health-system costs. Cumulative hospital costs for treating firearm-related injuries amount to more than $1 billion per year, with average per-patient costs associated with those injuries more than double those for other hospitalized patients.[11] Similar to other health issues (e.g., vaccination), increased screening, risk detection, and prevention require clinical practice guidelines, infrastructure support, and quality-improvement initiatives to ensure adequate implementation. In light of resource constraints,[17] infrastructure investments need to account for how implementation can be supported by expanding the clinical workforce (e.g., social workers and care managers), centralizing prevention services (e.g., telehealth hubs), and using technology (e.g., smartphone apps and text messaging) to extend clinical capacity. This support includes expanding patient access to essential health services (e.g., mental-health and substance-use treatment) and providing care-management support to help navigate barriers to accessing social services (e.g., housing and state victim-compensation funds) that are integral to primary and secondary prevention efforts. Regardless, fundamental to reducing the risk of firearm-related injuries is a tangible commitment from health systems to improve the current standard of care, including investment in the infrastructure needed to integrate prevention services within routine care.

Health systems also have a role in advancing prevention by means of training the active and developing clinical workforce. Lack of knowledge about firearms and effective prevention strategies remain substantial barriers to clinicians being able to use evidence-based prevention strategies. Of note, less than 20% of medical schools include instruction on the prevention of firearm-related injury within core training at the graduate or postgraduate level.[13] Given that educational competencies exist[101] and multiple Web-based courses[24,50] have been created, health-system leadership can enhance knowledge translation and service delivery by prioritizing workforce training. Defining appropriate prevention strategies also requires research to generate new knowledge and identify the best methods for translating advances into practice.[3] Avenues by which health systems can support research training, pilot funding to advance scientific inquiry, and multisite clinical-trial participation are also needed.[102]

Recognition that health care is only one component of a multifaceted approach to reduce firearm-related injuries is important.[3] Preventive efforts are needed at multiple levels (e.g., individual, community, and policy) and across settings (e.g., health care, schools, and community) — in particular, efforts that address underlying structural factors (e.g., poverty and racism) that contribute to disparities in health outcomes related to firearm injury.[3] Health care systems, as well as the professional societies supporting health care providers, play a role in such efforts by advocating for change at the local, state, and federal levels. This includes supporting community efforts (e.g., gun-lock programs) that extend prevention initiated in clinical encounters and advocating for evidence-based community-level interventions (e.g., remediation of vacant lots)

and policies (e.g., permit-to-purchase licensing) with downstream clinical effects. On the federal level, support includes advocating for improved injury surveillance, research funding, and reimbursement for prevention services.

CONCLUSION

The science of firearm-injury prevention has advanced to a stage at which multiple evidence-informed and evidence-based strategies are now available to help decrease the devastating incidents of death and injury related to firearms. Rapid implementation of best practices, continued research to define additional prevention efforts, and education of current and future clinicians are urgently needed to address this leading preventable cause of death.

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