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## Suicide, Guns, and Public Policy

Suicide is a serious public health concern that is responsible for almost 1 million deaths each year worldwide. It is commonly an impulsive act by a vulnerable individual. The impulsivity of suicide provides opportunities to reduce the risk of suicide by restricting access to lethal means.

In the United States, firearms, particularly handguns, are the most common means of suicide. Despite strong empirical evidence that restriction of access to firearms reduces suicides, access to firearms in the United States is generally subject to few restrictions.

Implementation and evaluation of measures such as waiting periods and permit requirements that restrict access to handguns should be a top priority for reducing deaths from impulsive suicide in the United States. (*Am J Public Health*. 2013; 103:27–31. doi:10.2105/AJPH.2012.300964)

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“Knowing is not enough; we must apply. Willing is not enough; we must do.”<sup>1a</sup>

—Johann Wolfgang von Goethe

### SUICIDE IS A COMPLEX

behavior involving the intentional termination of one’s own life. The prevalence, causes, means, and prevention of suicide have been extensively studied and widely reported.<sup>1b–4</sup> The World Health Organization (WHO) has identified suicide as a serious public health concern that is responsible for more deaths worldwide each year than homicide and war combined,<sup>5</sup> with almost 1 million suicides now occurring annually. In 2007, the Centers for Disease Control and Prevention (CDC) reported that 34 598 Americans died by suicide, far more than the 18 361 murders during the same period.<sup>6</sup> Among Americans younger than 40 years, suicide claimed more lives (n = 13 315) than any other single cause except motor vehicle accidents (n = 23 471).<sup>6</sup>

Psychiatric disorders are present in at least 90% of suicide victims, but untreated in more than 80% of these at the time of death.<sup>7</sup> Treatment of depression and other mood disorders is therefore a central component of suicide prevention. Other factors associated with suicidal behavior include physical illness, alcohol and drug abuse, access to lethal means, and impulsivity. All of these are potentially amenable to modification or treatment if recognized and addressed. It is important to distinguish between impulsivity as a personality trait and the impulsivity of the act of suicide itself. It is not generally appreciated that suicide is often an impulsive final act by a vulnerable individual<sup>8</sup> who may or may not exhibit the features of an impulsive personality.<sup>9</sup>

The impulsivity of suicide provides opportunities to reduce suicide risk by restriction of access to lethal means of suicide (“means restriction”). Numerous medical

organizations and governmental agencies, including the WHO,<sup>5</sup> the European Union,<sup>10</sup> the Department of Health in England,<sup>11</sup> the American College of Physicians,<sup>12</sup> the CDC,<sup>4,13</sup> and the Institute of Medicine,<sup>14</sup> have recommended that means restriction be included in suicide prevention strategies. In the United States, firearms are the most common means of suicide,<sup>15</sup> with a suicide attempt with a firearm more likely to be fatal than most other means.<sup>16</sup> In a study of case fatality rates in the northeastern United States, it was found that 91% of suicide attempts by firearms resulted in death.<sup>17</sup> By comparison, the mortality rate was 84% by drowning and 82% by hanging; poisoning with drugs accounted for 74% of acts but only 14% of fatalities. Many studies have shown that the vast majority of those who survive a suicide attempt do not go on to die by suicide. A systematic review of 90 studies following patients after an event of self-harm found

that only two percent went on to die by suicide in the following year and that seven percent had died by suicide after more than nine years.<sup>18</sup>

The availability of guns in the community is an important determinant of suicide attempts by gun.<sup>19</sup> Given the public health importance of suicide and what is known about the role of guns in suicide, strategies that keep guns out of the hands of individuals who intend self-harm are worthy of careful scrutiny. Since a handgun (revolver or pistol) is far more likely to be used for suicide than a long gun (shotgun or rifle),<sup>20</sup> it may be particularly beneficial to focus suicide prevention efforts on this type of weapon. Only a small minority of states restrict access to handguns by methods such as a waiting period, a permit requiring gun safety training, or safe storage of guns in the home. In 2010, US Department of Justice reported that only 15 states had a waiting period for purchasing a handgun.<sup>21</sup> Although federal law prohibits the sale of handguns to persons younger than 21 years, in the absence of federal preemption (i.e., the removal of legislative authority from a lower level of government), some states and municipalities allow the sale of handguns to younger individuals.<sup>21</sup>

## IMPULSIVITY OF SUICIDE

Impulsive suicide attempts are “acts of self-harm involving little preparation or premeditation,” whereas nonimpulsive suicide attempts are characterized by preparation and forethought.<sup>22(p98)</sup> Impulsive suicide is a response to extreme fluctuations in an individual’s psychological state, often with a triggering event that others would consider trivial.<sup>8</sup> Impulsivity has been measured in

different ways, including the amount of planning (measured through use of the Suicide Intent Scale<sup>23</sup>) and time criteria (the time between the decision to attempt suicide and the actual attempt).<sup>22</sup> In a study using the Suicide Intent Scale that involved 478 individuals who had attempted suicide, it was reported that 55% of the attempts were impulsive, 28% had an intermediate level of impulsivity, and 17% were nonimpulsive.<sup>23</sup> Examples of time criteria for defining the impulsivity of the suicide attempt in clinical studies include five minutes,<sup>24</sup> 10 minutes,<sup>25</sup> 20 minutes,<sup>26</sup> one hour,<sup>27</sup> two hours,<sup>28</sup> and 24 hours.<sup>29</sup>

Williams et al. found that 40% of suicide attempt survivors in two large consecutive series contemplated suicide for less than five minutes before the attempt.<sup>24</sup> In a study of 82 patients referred to a psychiatric hospital following a suicide attempt, almost half reported that the time between the first current thought of suicide and the actual attempt was 10 minutes or less.<sup>25</sup> Another study, based on interviews with suicide attempt survivors, found that two thirds considered suicide for less than an hour before the attempt.<sup>27</sup> In a study of 30 survivors of self-inflicted gunshot wounds treated at an urban trauma center, most or all of whom would have died without treatment, more than half reported having suicidal thoughts for less than 24 hours.<sup>30</sup> The National Violent Injury Statistics System reported that 61% of suicide victims had not previously disclosed an intent to commit suicide and that a precipitating event occurred within two weeks of the suicide for 36% of them.<sup>31</sup> The impulsivity of suicide is sometimes so intense and so fleeting that it has been called an “accident of the mind,”<sup>32</sup> one that may take a life

as quickly and unexpectedly as a motor vehicle accident.

## RESTRICTION OF ACCESS TO LETHAL MEANS OF SUICIDE

Suicidal ideation may quickly pass and remain unfulfilled if the means of suicide is not easily available. For a person in a suicidal state of mind, problem-solving skills are likely to be poor,<sup>33</sup> rendering it difficult to process a detailed consideration of alternative means of suicide when the initial choice is unavailable. Examples of means restriction followed by declines in suicide rates include pesticide restriction in Asian countries,<sup>7</sup> barbiturate restriction in Australia,<sup>34</sup> reduced availability of coal gas in the United Kingdom,<sup>35</sup> limits on access to analgesics in the United Kingdom,<sup>36</sup> installation of safety fences at high-risk jump sites (e.g., the Empire State Building, Eiffel Tower, and Sydney Harbor Bridge),<sup>37</sup> and restriction of access to firearms in many countries.<sup>8</sup> A systematic review of the evidence in suicide prevention studies concluded that means restriction prevented suicides.<sup>7</sup> A more recent review concluded that “limiting access to methods is one of the suicide prevention efforts with the most robust supporting evidence.”<sup>8(p1631)</sup>

There appears to be a prevailing belief in the inevitability of suicide that would argue against the effectiveness of means restriction. According to this view, a person determined to commit suicide is likely to substitute one method for another (“means substitution”) or delay suicide until a time when a means is readily available.<sup>38</sup> However, there is now a large body of evidence suggesting that means restriction not only reduces suicides by that method but also reduces overall suicide rates.<sup>39,40</sup>

Means substitution, when it does occur, does not seem to overwhelm the benefits of means restriction. When a highly lethal method (e.g., firearms) is not easily available, the substituted method (e.g., drug overdose) may be far less lethal, thereby increasing chances for survival.

## GUNS AND SUICIDE

In a survey of 36 wealthy nations, the United States was unique in having the highest overall firearm mortality rate and the highest proportion of suicides by firearms.<sup>41</sup> Guns are used for more suicides in the United States each year than for homicides (17 352 vs 12 632, respectively, in 2007).<sup>6</sup> There is strong evidence that access to firearms, whether from household availability or a new purchase, is associated with increased risk of suicide.<sup>8,42–45</sup> The risk of suicide by guns is far higher in states with high rates of gun ownership than in those with low ownership rates.<sup>46</sup> The increased risk of suicide applies not only to the gun owner but to others living in a household with guns. One study<sup>47</sup> found that adults who have recently purchased a handgun are at increased risk of suicide by gun within a week of gun purchase, with the increase in risk persisting for at least six years. That study<sup>47</sup> and others<sup>48</sup> suggest that some gun purchases are made specifically with the intent of suicide.

Gun availability in the household is associated with risks and benefits. The risks include accidental or intentional injury to one’s self or family members, whereas the benefits include protection against home intruders and deterrence of crime.<sup>49</sup> A recent review of the scientific literature concluded that in contemporary American society, the health risk of having a gun in the household outweighs the benefits, with compelling evidence linking gun availability to

violent crime, accidental injury and death, and suicide.<sup>49</sup>

## RESTRICTION OF ACCESS TO FIREARMS

Restriction of lethal means in the United States has focused on firearms because of their ease of access, common usage, and high mortality rate in suicide attempts. Strategies to reduce the risk of impulsive suicides by firearms have included at least two approaches: safe gun storage and regulations for purchasing guns. Storing unloaded guns in a locked place and storing ammunition separately in a locked place have been associated with a protective effect for suicide among children, adolescents, and adults.<sup>50,51</sup> Bans on firearm purchases for individuals at high risk for suicide, such as those with mental illness, substance abuse, or history of domestic violence, are desirable and might reduce suicides. However, criteria for identifying “prohibited persons” vary by state and are often limited to those with documented serious incidents (e.g., enforced hospitalization, felony conviction). Bans of this type, while helpful, are likely to identify only a small portion of those at risk.<sup>45</sup> Uniform restrictions preventing immediate access to a gun can allow time for a “cooling off” period during which the suicidal impulse may pass.

A requirement for firearm safety training can delay access to a weapon for non-gun owners intending to harm themselves or others, and at the same time provide an opportunity for those who are not themselves at risk to learn about safe gun storage, thereby protecting vulnerable individuals.

Legislation restricting firearm ownership has been associated with a reduction in firearm suicide rates in many countries, including

Austria,<sup>52</sup> Brazil,<sup>53</sup> Canada,<sup>54</sup> Australia,<sup>55</sup> New Zealand,<sup>56</sup> the United Kingdom,<sup>57</sup> and the United States.<sup>58</sup> In the United States, overall suicide rates are lower in states with restrictive firearm laws (e.g., waiting periods, safe storage requirements, minimum age of 21 years for handgun purchase) than in those with few restrictions.<sup>59</sup> The potential benefit of restricting access to firearms has been evaluated in models that estimate the effect on mortality rates.<sup>60,61</sup> In the United States, such a model predicted that 8551 lives might have been saved from suicides avoided each year during the study period 1999 through 2004, assuming that suicide rates in each of four national regions (Northeast, South, Midwest, and West) matched that of the region (Northeast) with the lowest rate.<sup>61</sup> The Northeast was the region with the most restrictive firearm legislation and lowest availability of firearms. One study used a binomial regression model to empirically assess the impact of firearm regulation on male suicides in the United States, using state-level data for the years 1995 through 2004.<sup>45</sup> The study found that firearm regulations that reduced overall gun availability had a significant deterrent effect on male suicide, with permit requirements and bans on sales to minors being the most effective of the regulations analyzed.

There are limitations in interpreting data on means restriction. Establishing causality between an intervention and outcomes is challenging because of factors that include the complexity of suicidal behavior, heterogeneity of study designs, methodological constraints, confounder effects, variability in statistical analysis, and limited funding for large, well-designed prospective studies. There is no guarantee that measures

that work in Massachusetts (suicide rate = 11.56 per 100 000) will be effective in Wyoming (suicide rate = 32.29 per 100 000).<sup>45</sup> Differences in regional cultures and demographics (e.g., rural vs urban) might be important to suicidality and the choice of means. Firearm restrictions might be expected to have a greater impact on male suicides than female, since a gun is the means of suicide for more men than women.<sup>62</sup> A waiting period of seven days could be life-saving when an urge to commit suicide passes within one hour and a gun is not available in the household, but might not be helpful if the suicidal impulse continues for two weeks. Secure household storage of guns might be effective in preventing suicide by a child but not for the adult gun owner.

## PREVENTION OF SUICIDE: A CALL TO ACTION

Suicide is an extraordinarily complex and counterintuitive human behavior. Suicide prevention strategies involve the identification and modification of known risk factors. Considering the impulsive nature of many suicides, the strong association of guns and suicide in the United States, and compelling empirical evidence that restriction of access to firearms reduces suicide risk, suicide prevention strategies should include restriction of access to firearms, especially handguns.

In accordance with the medical evidence, we recommend a waiting period for purchasing handguns with a requirement for a permit or license that includes firearm safety training. For a suicidal person who does not already own a handgun, a delay in the purchase of one allows time for suicidal impulses to pass or diminish. Safe gun storage for all

households delays or prevents access to a gun for a suicidal person living with a gun owner. Federal laws restricting the sale of handguns and handgun ammunition to minors should be implemented and enforced in all states. Firearms should not be sold to “prohibited persons” at high risk of harming themselves and others. Some states already mandate such measures. An opportunity to survive a transient suicidal impulse should be provided to individuals in all states.

The political, philosophical, and constitutional objections to firearm regulations, even those as modest as suggested here, cannot be minimized. Some would like to remove all firearm restrictions. We believe that reasonable people with diverse perspectives on firearm regulations have an imperative to discuss the benefits, risks, and responsibilities of firearm ownership, and to take action to minimize the risks. Different lengths of waiting periods and variations of permit or license requirements may have different levels of effectiveness depending on the locality and the population at risk. Well-designed long-term studies can evaluate these requirements so that appropriate regulatory modifications can be made in the future. However, meaningful regulations to restrict access to handguns are needed now, before more lives are unnecessarily lost. The public health benefit of preventing deaths due to impulsive suicide far outweighs the minimal inconvenience to those who do not intend to harm themselves or others. ■

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E. M. Lewiecki and S. A. Miller were both responsible for conceptualizing, writing, and editing this commentary.

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## Using Science to Improve Communications About Suicide Among Military and Veteran Populations: Looking for a Few Good Messages

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Concern about suicide in US military and veteran populations has prompted efforts to identify more effective prevention measures.

Recent expert panel reports have recommended public communications as one component of a comprehensive effort. Messaging about military and veteran suicide originates from many sources and often does not support suicide prevention goals or adhere to principles for developing effective communications.

There is an urgent need for strategic, science-based, consistent messaging guidance in this area. Although literature on the effectiveness of suicide prevention communications for these populations is lacking, this article summarizes key findings from several bodies of research that offer lessons for creating safe and effective messages that support and enhance military and veteran suicide prevention efforts. (*Am J Public Health*. 2013;103:31–38. doi:10.2105/AJPH.2012.300905)

**FROM 2006 TO 2010, THERE** were more than 1300 suicide deaths among members of the United States military, with increasing rates in the Marines and Army.<sup>1,2</sup> Some studies also suggest that suicide rates are higher among veterans than among the general population, although findings are mixed.<sup>3,4</sup> In response, various expert panels have conducted reviews and released reports with recommendations for strengthening suicide prevention efforts among military and veteran populations.<sup>1,5,6</sup> Citing the multifactorial causality of suicidal behavior and the evidence that comprehensive interventions can successfully reduce suicide,<sup>7,8</sup> these reports advocate for multiple, coordinated interventions to reduce risk, promote protective factors, and enhance overall wellness, skills, and resiliency.

Each of these reports emphasizes the importance of public communications (i.e., messaging). For example, two of the 18

recommendations issued in the 2010 report of the Department of Defense (DoD) Task Force on the Prevention of Suicide by Members of the Armed Forces include messaging components: “develop strategic communications that promote life, normalize help-seeking behaviors, and support DoD suicide prevention strategies” and “reduce stigma and overcome military and cultural leadership barriers to seeking help.”<sup>1</sup> Similarly, one of the eight findings outlined in the 2008 report of the US Department of Veterans Affairs (VA) Blue Ribbon Work Group on Suicide Prevention in the Veteran Population is as follows: “The VA should continue to pursue opportunities for outreach to enrolled and eligible veterans, and to disseminate messages to reduce risk behavior associated with suicidality.”<sup>6</sup>

These reports also describe deficiencies in communications efforts. The DoD report revealed that messaging often fails to

promote effective solutions and may contribute to the problem:

Messages from senior leaders regarding suicide, suicide prevention, resilience, health, and readiness frequently do not sufficiently support—and sometimes significantly detract from—suicide prevention efforts. The news media commonly report on suicide in ways that contribute to suicide risk.<sup>1</sup>

Specific problems include using talking points that suggest military suicides are more common than they actually are, that reflect a sense of hopelessness about solutions, and that miss opportunities to promote positive prevention messages.

According to the VA report, “Efforts to improve accurate media coverage and disseminate universal messages to shift normative behaviors to reduce population suicide risk behavior are not being fully pursued.”<sup>6</sup> Specifically, the authors noted that media coverage may unintentionally discourage veterans from seeking services. Although little research has analyzed this message content