Suicide Prevention: Increasing Education and Awareness

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Suicide is a serious and complex public health problem. Health care providers, including both psychiatrists and primary care physicians, are just beginning to understand the intricacies involved in suicide and its prevention. Suicide rates continue to rise, making the education of the public and physicians regarding awareness and prevention, recognition of a wide range of risk factors, and research into suicide prevention strategies very important.

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Suicide is a serious, growing,[1,2] and complex public health problem. While thousands of people take their own lives each year, and hundreds of thousands more come dangerously close, health care providers are only beginning to understand the intricacies involved in suicide prevention.[3] Public education, physician education, and further research into specific suicide prevention strategies are desperately needed now, since more adolescents and young adults die of suicide than of cancer, heart disease, acquired immunodeficiency syndrome, and chronic lung disease combined[4] and suicide rates are increasing in virtually every demographic category.[1,2]

THE PROBLEM OF SUICIDE

Public health organizations recently recognized the significant and growing problem of suicide. The World Health Organization,[5] the Centers for Disease Control and Prevention (CDC), and the U.S. Surgeon General have all called upon public health services to address suicide in the United States and worldwide.[4]

Each year, more than 30,000 Americans take their own lives, making suicide the eighth leading cause of death. This is more than 50% higher than the number of homicides annually in the United States.[1] Additionally, it is estimated that each year more than half a million Americans make suicide attempts that are serious enough to warrant medical attention.[1]

Not only are the raw numbers staggeringly high, but the rates are generally increasing, particularly in the younger populations. According to the CDC, from 1980 to 1997, the rate of suicide increased 109% for 10- to 14-year-olds and 11% for 15- to 19-year-olds.[2] Suicide was found to be the third leading cause of death in individuals aged 15 to 24 years and the second leading cause of death for 25- to 34-year-olds in 1997.[2]

Thoughts about committing suicide also appear at high rates in young age groups. A 1995 CDC survey of 4600 college students in the United States revealed that 1 in 10 students said that they have seriously considered attempting suicide, and 7% had actively drawn up a plan to do so. Among high school students, these numbers are even higher, with 20% reporting having seriously considered suicide and 16% having had a plan.[6,7]

Suicide also continues to be a serious problem in adults who are 65 years and older. Since 1933, they have had the highest rates of suicide of all age groups; they account for roughly 20% of all suicides, yet represent only 13% of the total population.[2] (Risk factors for suicide in older adults appear to be different than in the younger population, although depression is central to both groups.) The elderly are more likely to present with depression and they generally use more lethal methods than young adults. This results in a high completed suicide–to–attempted suicide ratio.[1,2]

The suicide death rate among males is especially problematic. Although females attempt suicide more often, males are at least 4 times as likely to die from suicide. They account for approximately 80% of all suicides in the United States.[2,4] Although white males have historically had the highest rates, suicide among African American males has been sharply rising over the last 2 decades, increasing 105% between 1980 and 1996 among younger

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African American males.[2,4] Physicians are far from immune to suicide; male doctors are up to 3 times, and female doctors, 2 to 5 times, as likely to die by their own hands as the general population.[7,8]

While gender, age, and social surroundings clearly influence suicide rates, the presence of psychiatric disorders is by far the most important risk factor. It is estimated that 90% of suicide victims have diagnosable psychiatric illnesses.[9,10]

Psychiatric illness, particularly mood disorders, places individuals at greatly increased risk of suicide,[11] and the National Institute of Mental Health has declared that the first line of defense against suicide is to recognize and treat mood disorders.[10] Individuals with depression or bipolar illness are more likely to attempt or complete suicide than are persons in any other group.[12]

Recently, Brown and colleagues[13] published data from a 20-year prospective study of 6891 psychiatric outpatients, approximately 1% of whom committed suicide. Logistic regression revealed that bipolar disorder and major depression contributed unique risk for eventual suicide in these patients, with hazard ratios of 3.57 and 3.19, respectively. More recently, Inskip et al.[14] have used mathematical modeling techniques to determine that the overall risk of completed suicide in mood disorders may actually be closer to 6%.

Studies have found high rates of suicide attempts among individuals with major depression or bipolar disorder. The Epidemiologic Catchment Area study[15] reported that 25% to 50% of bipolar patients attempt suicide at least once in their lifetime, and a small sampling of bipolar I individuals by Kessler et al.[16] reported a 48% suicide attempt rate. Clearly, as Goodwin and Jamison[12] emphasize, the severity of depression or bipolar illness is a critical factor in any estimate of suicide risk. A recent review[17] determined that the risk of suicide in affectively ill patients hospitalized for suicidality was higher than in those who had been hospitalized without a history of suicidality (8.6% vs. 4%).

Despite the strong link between psychiatric illnesses and suicidal behavior, recognition and treatment remain startlingly mediocre. Studies suggest that as many as one half to three quarters of all cases of major depression and bipolar disorder may go undiagnosed.[18,19] Further data on specific interventions for suicide prevention are limited. One exception is lithium, for which there are considerable data on its suicide prevention capabilities.[20,21] Additionally, moderate to strong evidence suggests a link between increasing rates of antidepressant prescribing and decreasing population suicide rates.[22]

Suicide prevention data for anticonvulsant therapies, such as valproate and carbamazepine, are far fewer, yielding little evidence to date that these somatic treatments are effective at reducing suicidal tendencies. Newer anticonvulsant medications, such as gabapentin and lamotrigine, have demonstrated mood-stabilizing effects in bipolar disorder, but their impact on suicide is not yet clear. Combinations of lithium and anticonvulsant medications may prove to be beneficial to individuals who may be in high-risk suicide groups (see Goodwin[23] for a review).

Along with somatic treatments, psychosocial interventions may be effective in the prevention of suicide. Unfortunately, relatively few randomized, controlled trials examining various psychosocial treatments have been carried out. Linehan and colleagues[24,25] have been successful at decreasing parasuicidal behaviors in women with borderline personality disorder by using a yearlong treatment derived from cognitive-behavioral therapy. A number of studies[26,27] in which patients were taught problem-solving skills over a shorter period of time also found that those skills appear to be moderately effective at reducing repetition rates of suicide attempts. However, a majority of the psychosocial intervention studies have yielded negative results because of methodological weaknesses, such as small sample sizes and low-reliability measures, thus highlighting the need for further research in this area. Psychotherapy does improve medication compliance and outcome in mood disorders[7] and, although difficult to prove, almost certainly has a positive impact on suicidal behaviors.

The U.S. Surgeon General has called for a national strategy for suicide prevention in the hopes that such a program "will achieve a significant, measurable, and sustained reduction in suicidal behaviors."[4] This call to action focuses on increasing public awareness of suicide, enhancing intervention services and programs, and advancing the science of suicide prevention methodology. The following sections outline detailed strategies for achieving realistic and consequential goals in the area of suicide prevention.

GEOGRAPHY AND SUICIDE

Suicide is a universal mental health issue in the United States, but certain geographic regions of the country have higher rates than others.[28] In the United States between 1990 and 1994, the suicide rates (based on a 100,000 population and adjusted to age, sex, and race/ethnicity distribution in 1980) per state varied considerably between states. The Western states consistently ranked above the median at 13.4 to 24.1 per 100,000, whereas the states in the Northeast repeatedly have among the lowest suicide rates, 7.0 to 14.2 per 100,000.[29] Population density proves to be a key element in these findings. A simple linear regression comparing population density figures from the U.S. Census Bureau[30] to suicide rates reveals a highly significant inverse relationship ($r = -0.62$, $p < .01$). Additionally, Rost and colleagues[31] have found that rural depressed individuals are significantly more likely to attempt suicide than are depressed people from urban settings. These findings suggest that living in isolated locations, removed from friends, relatives, and health care

facilities, is a significant risk factor for suicide. There may be selective migration patterns, substance abuse, access to firearms, and/or differences in attitudes and behaviors as well. Social isolation has often been cited as a risk factor for suicide.[31,32] The mean population density in the United States is 77.1 people per square mile and the mean suicide rate is 10.4 per 100,000.[33] As stated above, a significant correlation exists between population density and suicide rate per state in the United States, strongly suggesting that isolation is a risk factor in suicide. This association is most clearly illustrated in the state of Alaska, where population density is the nation's lowest, 1.1,[30] and suicide rate is the nation's highest, 22.1.[29] In contrast, New Jersey has the highest population density in the country, 1097.7,[30] and maintains the lowest rate of suicide, 6.4.[29] While population density obviously remains a relatively static variable, other risk factors and interventions must be addressed, particularly within regions where rates are high.

The prevalence of mental health care providers may help explain why certain geographic areas have higher rates of suicide than other areas. Nearly 1 of 2 bipolar patients attempts suicide at least once during the course of their disease.[34] Several studies have researched the relationship between the availability of mental health care providers and a region's rate of suicide. Appleby and colleagues[35] have shown that 24% of suicide victims (N = 6682) had been in contact with mental health services within the 12 months prior to their act. These rates confirm the need for physician involvement in the prevention and intervention of suicide in their patients.

While people in rural areas are no less likely to seek treatment for psychiatric symptoms, they are more likely to receive psychiatric care from a general practitioner than from a mental health care provider.[31] Rural geographic regions have higher rates of suicide attempts and fewer per capita providers of mental health services. In Arkansas, for example, nonmetropolitan regions have half as many general practitioners and a third the number of mental health providers as metropolitan areas in the same state.[31] The specialized training of mental health care providers to recognize the warning signs for suicide, coupled with the limited access to their services in rural regions, may account for a portion of the variance in suicide rates across the country. The education of existing mental health care providers and general practitioners in depression recognition and treatment may also help decrease rural suicide rates.

In an effort to implement cost-effective strategies of suicide prevention across the nation, it is essential that the risk factors in these states with higher rates be examined. Once identified, programs incorporating increased education and awareness about suicide and its prevention can be utilized to lower overall rates of suicide. Targeting specific risk factors can potentially help to ensure that suicide rates decrease nationwide.

CLINICIANS AND SUICIDE PREVENTION

As mentioned previously, considerable evidence indicates that most individuals who commit suicide were in contact with health care providers prior to their deaths.[33,35–37] Appleby et al.[35] found that 50% of the patients (N = 2370) who had completed suicide and been in contact with mental health services 12 months prior to the act were also in contact with mental health services 1 week prior to their death, and nearly 20% (N = 422) of these people, in the previous 24 hours. Anderson and coworkers[37] report that 71% (N = 472) of the suicide cases in Funen County, Denmark, had contact with their inpatient or outpatient physician in the month before completing suicide. These numbers are striking illustrations that something is not happening in the doctor's office that might keep these patients from harming themselves. This section reviews some efforts to educate doctors and clinicians on the prevention of suicide.

Rihmer et al.[38] implemented a program to educate clinicians about the diagnosis and treatment of depression during the early 1980s on the small island of Gotland off the coast of Sweden. The Swedish Committee for the Prevention and Treatment of Depression (PTD) conducted the 2-day program, which was given twice, in 1983 and 1984. The investigators found that, 2½ years after the PTD program, the rates of suicides for patients suffering from primary major depression, or "depressive suicides," decreased from 42% to 12%.[38] However, the number of "nondepressive suicides," or suicidal patients with other DSM-III-R Axis I diagnoses, remained the same throughout the program.[38]

Recently, physicians (N = 167) in South Lancashire, England, entered the Skills Training on Risk Management (STORM) program aimed at training health care providers to assess and manage people at risk for suicide.[39] STORM's training methods consisted of written handouts, oral presentations, discussions, videotaped presentations, and role playing with feedback over a period of 6 months. The raters assessed the skills of the trainees using methods similar to those of Morriss and colleagues.[40] In addition, the rater was required to reach a consensus on at least 70% of the scoring items with a more experienced rater to reduce bias. Overall, there was significant improvement in the total scores, particularly in the 3 main sections: assessment, clinical management, and problem solving. Additionally, non–mental health professionals showed extensive improvement on their scores, indicating that such education interventions may indeed be beneficial in preparing to care for suicidal patients.[39]

In summary, these pilot studies provide some evidence to illustrate the importance of clinician education and training for suicide prevention. Each of these studies must be understood in light of its self-described limitations. For instance, Morriss et al. realized that "the training period

was probably too brief to produce improvements in general interview skills and the more subtle cognitive skills of combating hopelessness and bolstering self-esteem."[40(p82)] The Gotland study[38] has also been criticized for its extremely small sample size. In addition, role-play situations will never yield results as accurately as if the trainees were to interview real suicidal patients.[39] Further, many of the trainees involved in this research were volunteers and thus monetary compensation for their time and energy may have yielded better results.[39]

However, these studies have encouraged other projects aimed at improving health care services. Rihmer hopes to address the 60% higher-than-national suicide rate in the Kiskunhalas province of Hungary (population of 100,000) by implementing a suicide prevention program.[41] The Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD), funded by the National Institute of Mental Health (NIMH), is training clinicians to treat bipolar patients at high risk of suicide. The training of STEP-BP clinicians consists of watching and assessing a series of videotaped sessions of clinicians with their patients. The trainees' assessment must match the "gold standard" or the consensus assessment of a group of STEP-BD–trained clinicians. All STEP-BD clinicians are required to continue to train and recertify throughout the life of the study.

Other recent efforts to educate physicians are conferences, such as the one given in March 1999 on "Treatment Projects Aimed at Suicide Reduction" hosted by the American Foundation for Suicide Prevention (AFSP) and NIMH. Another conference in May 2000 titled "National Suicide Prevention Conference 2000" and also hosted by the AFSP, had prominent speakers in the field discuss the issues of suicide and drug abuse, hospitalization, bipolar disorder, media, treatment, and guns.[41] Lastly, the National Center for Injury Prevention and Control (NCIPC) has put together a series of clinician education programs aimed at preventing suicide. These efforts, among many others, will help develop suicide prevention skills among health care providers.

REDUCING THE VIOLENCE AND LETHALITY OF SUICIDE

Lastly, some studies have identified the role of firearms, not only in homicides, but also in suicides. In 1997, Cummings et al.[42] conducted a study looking at the purchases of handguns from licensed dealers in the state of Washington who were listed with the Department of Licensing between 1940 and 1992 and the background or demographics of the purchaser and his or her family. These families were then compared with a control group of subjects from the Group Health Cooperative of Puget Sound. There were 366 suicides and 117 deaths by homicide by those who bought guns by licensed dealers in Washington. The study concluded that individuals in families with a history of handgun purchases were more likely than the control subjects to commit suicide, 24.6% versus 15.1%.[42]

In a similar study, Wintemute and colleagues[43] searched the deaths listed in California between 1991 and 1996 to see if they matched (according to last name and date of birth) the California Department of Justice's roster of all persons (N = 238,292) who had purchased a handgun from licensed firearm dealers in California in 1991. By determining the number of deaths among handgun purchasers, they were able to calculate (by dividing the number of deaths by firearms during a given period by the number of person-years at risk during that period) the crude rates of suicide among them by means of firearms. Thus, the authors concluded that there were 1822 suicides by firearms annually in California in 1991 and 1992 and that suicide accounted for 54.2% of all deaths by firearms nationwide.[43] In addition, handguns accounted for 24.5% of all deaths of those adults who owned one, and suicide was the leading cause of death among handgun purchasers in the first year after purchase. For example, over a third (37%) of the women between the ages of 21 and 44 (who comprise 75% of the sample) committed suicide with a gun within the first year of purchasing the gun. Additionally, researchers have found that a family that purchases a gun increases its chance of having a member die of suicide by as much as 5 times and that having a handgun in the house significantly contributes to suicide risk.[43,44]

These results reflect the impulsivity of suicidal behavior. Clearly, some victims buy a gun with the intent of committing suicide, but the increased incidence of suicide in families that own handguns suggests that the availability of a gun may in itself confer lethality to what would otherwise be a transient self-destructive impulse.[43] Wintemute et al.[43] found that screening tests for handgun purchasers is not particularly useful since only 10.3% of those who committed suicide in California in the year after the purchase (and this number declined in the following years) were handgun purchasers. Thus, it is not the handgun purchaser who is at the highest risk for suicide but the friends or family of this handgun owner. In addition, Wintemute and coworkers[43] suggest that increasing the waiting period in which a gun purchaser receives his or her gun may reduce the number of suicides by firearms. In Tasmania, Australia, for example, when a 21-day waiting period was implemented, the proportion of suicides involving recently acquired firearms was cut in half.[43] This finding provides evidence for legislation to reduce the risk of gun use in suicide. However, there is still debate among researchers as to how to decrease the number of suicides by firearms.

Brent and colleagues[44] argue that the best way to reduce suicides among adolescents is to lobby for arms-free homes. They noted that the rate of suicide was 27% lower among 15- to 24-year-olds in Vancouver, British Columbia (where individuals are not allowed to own guns), than in comparably aged Seattle residents.[44] Additionally, the

firearm suicide rate was 10 times as high in Seattle as in Vancouver. The researchers addressed these disparities by examining the availability of guns and the legislation surrounding guns in the 2 cities. Not surprisingly, their investigation uncovered less restrictive gun laws and an increased accessibility to guns in Seattle when contrasted with Vancouver. Overall, researchers agree that either increasing gun control or reducing gun accessibility will reduce suicide attempts.[42–44]

In summary, clinician awareness about the risk associated with suicide has risen in the last few years. However, from the Surgeon General's Call to Action[4] to the Morbidity Weekly Report[29] to the AFSP[44] and the NIMH (STEP-BD), it is becoming clear that clinicians need to play a larger role in suicide prevention through education and awareness.

Drug names: carbamazepine (Tegretol and others), gabapentin (Neurontin), lamotrigine (Lamictal).

Disclosure of off-label usage: The authors of this article have determined that, to the best of their knowledge, carbamazepine, gabapentin, lithium, and valproate are not approved by the U.S. Food and Drug Administration for the treatment of suicidal ideation.

REFERENCES

1. Koplan JP, Thacker SB. Fact Book for the Year 2000: Working to Prevent and Control Injury in the United States. Atlanta, Ga: National Center for Injury Prevention and Control; 2000
2. Murphy SL. Deaths: final data for 1998. In: National Vital Statistics Report for the Centers for Disease Control and Prevention, vol 48, no. 11. Hyattsville, Md: National Center for Health Statistics: 2000
3. World Health Organization. Preventing Suicide: A Resource for General Physicians. Geneva, Switzerland: World Health Organization; 2000
4. Mental Health: A Report of the Surgeon General. Rockville, Md: US Dept Health Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. National Institutes of Health, National Institute of Mental Health; 1999
5. World Health Organization. Prevention of Suicide: Guidelines for the Formulation and Implementation of National Strategies. Geneva, Switzerland: World Health Organization; 1996
6. Youth Risk Behavior Surveillance: National College Health Risk Behavior Survey—United States, 1995. Morb Mortal Wkly Rep CDC Surveill Summ 1997;46:1–56
7. Jamison K. Night Falls Fast: Understanding Suicide. New York, NY: Knopf; 1999
8. Hawton K, Clements A, Simkin S, et al. Doctors who kill themselves: a study of the methods used for suicide. QJM 2000;93:351–357
9. Shaffer D, Craft L. Methods of adolescent suicide prevention. J Clin Psychiatry 1999;60(suppl 2):70–74
10. NIMH: Suicide Facts. Bethesda, Md: National Institute of Mental Health; 1999. Available at: http://www.nimh.nih.gov/publicat/suicidefacts.cfm. Accessed August 29, 2001
11. Henriksson M, Marttunen M, Heikkinen M, et al. Mental disorders and comorbidity in suicide. Am J Psychiatry 1993;150:935–940
12. Goodwin F, Jamison K. Manic-Depressive Illness. New York, NY: Oxford University Press; 1990
13. Brown G, Beck A, Steer R, et al. Risk factors for suicide in psychiatric outpatients: a 20-year prospective study. J Consult Clin Psychol 2000;68: 371–377
14. Inskip HM, Harris EC, Barraclough B. Lifetime risk of suicide for affective disorder, alcoholism, and schizophrenia. Br J Psychiatry 1998;172:35–37
15. Robins LN, Regier DA. Psychiatric Disorders in America: The Epidemiologic Catchment Area Study. National Institute of Mental Health. New York, NY: Free Press; 1991
16. Kessler R, Rubinow D, Holmes C, et al. The epidemiology of DSM-III-R bipolar I disorder in a general population survey. Psychol Med 1997;27: 1079–1089
17. Bostwick J, Pankratz V. Affective disorders and suicide risk: a reexamination. Am J Psychiatry 2000;157:1925–1932
18. Mann JJ, Oquendo M, Underwood MD, et al. The neurobiology of suicide risk: a review for the clinician. J Clin Psychiatry 1999;60(suppl 2):7–11
19. Keller M, Lavori P, Klerman G, et al. Low levels and lack of predictors of somatotherapy and psychotherapy received by depressed patients. Arch Gen Psychiatry 1986;43:458–466
20. Crundwell J. Lithium and its potential benefit in reducing increased mortality rates due to suicide. Lithium 1994;5:193–204
21. Tondo L, Jamison K, Baldessarini R. Effect of lithium maintenance on suicidal behavior in major mood disorders. Ann N Y Acad Sci 1997;836: 339–351
22. Isacsson G, Bergman U, Rich C. Epidemiological data suggest antidepressants reduce suicide risk among depressives. J Affect Disord 1996;41:1–8
23. Goodwin FK. Anticonvulsant therapy and suicide risk in affective disorders. J Clin Psychiatry 1999;60(suppl 2):89–93
24. Linehan M, Armstrong H, Suarez A, et al. Cognitive-behavioral treatment of chronically parasuicidal borderline patients. Arch Gen Psychiatry 1991; 48:1061–1064
25. Linehan M, Heard H, Armstrong H. Naturalistic follow-up of a behavioral treatment for chronically parasuicidal borderline patients. Arch Gen Psychiatry 1993;50:971–974
26. Salkovskis P, Atha C, Storer D. Cognitive-behavioural problem solving in the treatment of patients who repeatedly attempt suicide: a controlled trial. Br J Psychiatry 1990;157:871–876
27. McLeavey BC, Daly RJ, Ludgate JW, et al. Interpersonal problem-solving skills training in the treatment of self-poisoning patients. Suicide Life Threat Behav 1994;24:382–394
28. Centers for Disease Control and Prevention. Regional variations in suicide rates—United States, 1990–1994. JAMA 1997;278:974–975
29. Regional variations in suicide rates—United States, 1990–1994. MMWR Morb Mortal Wkly Rep 1997;46:789–793
30. US Census Bureau Quickfacts. Washington, DC: US Census Bureau; 2000. Avaliable at: http://www.census.gov. Accessed August 29, 2001
31. Rost K, Zhang M, Fortney J, et al. Rural-urban differences in depression treatment and suicidality. Med Care 1998;36:1098–1107
32. Kennedy HG, Iveson RC, Hill O. Violence, homicide, and suicide: strong correlation and wide variation across districts. Br J Psychiatry 1999;175: 462–466
33. Appleby L, Dennehy J, Thomas C, et al. Aftercare and clinical characteristics of people with mental illness who commit suicide: a case-control study. Lancet 1999;353:1397–1400
34. Jamison KR. Suicide and bipolar disorder. J Clin Psychiatry 2000;61 (suppl 9):47–51
35. Appleby L, Shaw J, Amos T, et al. Suicide within 12 months of contact with mental health services: national clinical survey. BMJ 1999;318:1235–1239
36. Pirkis J, Burgess P. Suicide and recency of health care contacts: a systematic review. Br J Psychiatry 1998;173:462–474
37. Anderson U, Anderson M, Rosholm J, et al. Contacts to the health care system prior to suicide: a comprehensive analysis using registers for general and psychiatric hospital admissions, contacts to general practitioners and practicing specialists and drug prescriptions. Acta Psychiatr Scand 2000; 102:126–134
38. Rihmer Z, Rutz W, Pihlgren H. Depression and suicide on Gotland: an intensive study of all suicides before and after a depression-training programme for general practitioners. J Affect Disord 1995;35:147–152
39. Appleby L, Morriss R, Gask L, et al. An educational intervention for front-line health professionals in the assessment and management of suicidal patients (The STORM Project). Psychol Med 2000;30:805–812
40. Morriss R, Gask L, Battersby L, et al. Teaching front-line health and voluntary workers to assess and manage suicidal patients. J Affect Disord 1999; 52:77–83
41. American Foundation of Suicide Prevention. Available at: http://www.afsp.org/research/hungaryproj.htm. Accessed August 29, 2001
42. Cummings P, Koepsell TD, Grossman DC, et al. The association between the purchase of a handgun and homicide and suicide. Am J Public Health 1997;87:974–978
43. Wintemute GJ, Parham CA, Beaumont JJ, et al. Mortality among recent purchasers of handguns. N Engl J Med 1999;341:1583–1589
44. Brent DA, Perper J, Allman CJ, et al. The presence and accessibility of firearms in the homes of adolescent suicides. JAMA 1991;266:2989–2995