

Testimony on Suicide Prevention and Treatment

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## Executive summary

**Mental disorder and suicide.** Mental disorder is intimately related to suicide risk, since 90% of people who die by suicide have at least one major psychiatric illness. The most common illnesses associated with suicide are mood disorders, anxiety disorders, alcohol and substance abuse, disorders of impulsive aggression, and psychotic disorders, especially in combination.

**Imminent suicidal risk.** However, psychiatric illness alone does not explain why a person chooses to engage in suicide behavior at a particular time. Imminent suicidal risk is determined by a balance between distress driving a person towards suicide, and restraint. A person with high distress, with depression, thoughts of suicide with a plan and intent, and at point of low restraint, such as being intoxicated, is someone who is at high suicidal risk. Insomnia is the single most significant predictive symptom for suicide, and yet there are very few studies that have examined whether improvements in sleep can reduce suicidal risk.

**Access to good quality mental health treatment can reduce suicidal risk.** Regional improvements in primary care physicians' ability to treat and manage depression are accompanied by declines in completed suicide. Integrated delivery of mental health services, called collaborative care, has been shown to be superior to usual care for depression and reduction in suicidal risk across the lifespan. The Black Box Warning on the use of antidepressants in children and adolescents may have inadvertently decreased not only the use of antidepressants, but even the diagnosis of adolescent depression, and possibly the suicide rate as well.

**Elements of treatment that prevent suicidal behavior.** Psychotherapies have been shown to reduce suicidal ideation or attempts. Common elements of effective treatments are: a clear model of suicidal behavior; a collaborative approach between the patient and therapist; implementation of a safety plan, that is, a structured response to suicidal urges; plans to integrate the treatment with other aspects of patient care (e.g., pharmacotherapy); when appropriate, emphasis on sobriety, and mobilization of family and peer social support as protective factors against suicidal behavior.

**A role for prevention.** An overall national strategy for suicide prevention should also consider the impact of cost-effective prevention programs that may reduce common and significant risk factors for suicide such as maltreatment, aggression, and substance abuse.

**Safe storage of firearms.** Guns are much more commonly found in the homes of suicide victims, and if a gun is available in the home, a suicide victim is likely to use it. Primary care interventions that have been shown to improve the safety of firearms storage, may help to reduce the suicide rate, especially in the young and impulsive potential suicide victims.

**Coordinated and assertive care.** Based on studies in the UK, the type and manner in which mental health care is delivered can drop the suicide rate, such as: having assertive follow-up on non-adherent patients, provision of 24 hour crisis beds, availability of dual diagnosis services, and multidisciplinary review of any suicides.

**Research to improve our ability to reduce suicide** would include development and testing of new compounds to rapidly reduce depression and suicidal ideation, testing treatments for insomnia to reduce suicidal risk, identifying biomarkers for the rapid identification of likely treatment responders, testing large scale applications of the role of safety counseling, collaborative care, dissemination of evidence based treatments, and of prevention programs on suicide.

## Presentation

Thank you for the opportunity to share some thoughts about how we can better care for individuals with mental disorders and reduce the suicide rate.

**Mental disorder and suicide.** Mental illness and suicide are intimately related, as around 90% of all individuals who die by suicide have at least one major psychiatric disorder. There is an age gradient insofar as younger individuals more often have impulsive aggression and substance abuse are prominent characteristics, whereas older suicide victims are more likely to have issues related to depression.<sup>1,2</sup> Pain and chronic illness also play important roles in suicide in older individuals.

**Imminent suicidal risk.** Suicide ensues due to an imbalance between distress and restraint. Some disorders primarily increase distress, such as depression and anxiety; others mainly decrease restraint, such as impulsive aggression and alcohol or substance abuse. Some conditions do both, such as bipolar disorder, insomnia, or PTSD. The goal of the treatment of an acutely suicidal person is to find things that will decrease distress and increase restraint. Distress may be relieved by emotion regulation, distress tolerance, or distraction techniques. Augmentation of restraint can include reviewing reasons for living and securing potentially lethal agents of suicide. Insomnia is one of the most prominent symptoms that is associated with suicide; insomnia predicts suicide in depressed individuals for example even controlling for the severity of depression.<sup>3</sup> Hypnotics and benzodiazepines may not be appropriate for the treatment of suicidal individuals with sleep difficulties, at least in the long run since there are associations between use of these agents and suicide. There are excellent brief psychosocial interventions for insomnia.

**Improved access to care and reduction in suicidal risk.** There is some evidence that improved access and treatment of depression can reduce suicide. Improvement in recognition and management of depressed individuals in primary has been associated with regional declines in suicide rates.<sup>4,5</sup> An inverse relationship between antidepressant use and suicide has been reported across multiple countries. Collaborative care, which increases access and quality of care for depression, has been shown to reduce depression and suicidal ideation to a greater extent than usual care for depressed elders.<sup>6</sup>

**The Black Box Warning, adolescent depression, and antidepressants.** Antidepressant treatment of child and adolescent depression has been supported by several studies. The FDA has approved escitalopram and fluoxetine for adolescent depression, and just the latter for child depression. Randomized clinical trials show that there is about a 0.9% higher risk for suicidal events in patients randomized to drug vs. placebo. Suicidal events are mostly increases in suicidal ideation, some attempts, and no completions in over 4300 patients. This finding caused the FDA to issue a Black Box Warning for the use of antidepressants in individuals under the age of 25. One unintended consequence of this warning has been a decline in the use of antidepressants and even in the rate of diagnosis of depression,<sup>7</sup> raising the concern that some adolescents are not receiving any kind of treatment for their depression. The risk benefit ratio appears to still be favorable for the use of antidepressants in adolescents, since 11 times more adolescents will respond to an antidepressant than will experience a suicidal event.<sup>8</sup>

Pharmacoepidemiological studies showing an inverse relationship between sales or prescriptions of antidepressants and suicide show this effect even in the under 25 age group.<sup>9</sup>

**Treatments that reduce the risk of suicidal behavior.** Although there has been some research in the pharmacological treatment of suicidal risk, the majority of treatment studies have involved psychotherapeutic interventions. There are some common elements across efficacious and promising treatments: collaborative, clear model of suicidal behavior, use of an explicit safety plan, use of emotion regulation to target distress, emphasis, when relevant, on sobriety, augmentation of familial and non-familial sources of support, and integration of treatment with other interventions (e.g., pharmacotherapy).

Among the best studied treatments is Dialectic Behavior Therapy (DBT), which is an intensive treatment that combines individual and group training in emotion regulation, mindfulness, distress tolerance, and interpersonal effectiveness. Its efficacy has been replicated several times and has been used successfully in a variety of disorders and age groups. The main disadvantage of the treatment is the intensity, cost, and length of training. Cognitive Behavior Therapy for Suicidal Behavior is a much briefer intervention that shows similar efficacy, but it has not been replicated. Integrated Cognitive Behavior Therapy for depressed, substance abusing suicidal adolescents has been shown to decrease substance abuse and suicide attempts over an 18 month follow up. Attachment-based family therapy has been shown to reduce suicidal ideation in depressed suicidal adolescents.<sup>10</sup> Other smaller studies have suggested other approaches that may be helpful, such as augmentation of positive parenting, and mentalization.<sup>11</sup> In adults, problem-solving therapy, and brief, home-based interpersonal therapy have also shown promise for reduction of repetition of suicide attempts. Sending letters or post cards to patients letting them know that the clinical staff are concerned about their well-being in three out of four studies also showed a reduction in the risk for suicidal behavior.

There are also some pharmacological treatment studies that suggest efficacy against suicide and suicidal behavior. Clozapine was superior to olanzapine in schizophrenics at high risk for suicide in reducing suicidal ideation and behavior.<sup>12</sup> Lithium has been shown to reduce suicide attempts and completions in both clinical trials and propensity matched pharmacoepidemiological samples.<sup>13,14</sup> Although experimental, use of IV ketamine has been reported to result in rapid, short-term reductions in depression and suicidal ideation.<sup>15</sup>

**Prevention of suicide by prevention of substance abuse, aggression, and risk behaviors.** Substance abuse, aggression, and health risk behaviors are common precursors and accompaniments of suicidal behavior and completed suicide, particularly in adolescents and young adults. There are now cost effective prevention programs that can reduce the incidence of maltreatment, which is a strong predictor of suicidal behavior, as well as of substance abuse, aggression, criminal involvement, and, in one study, even suicidal behavior.<sup>16</sup> (See Table 1). These interventions appear to return a high yield on their investment and should, in theory, by reducing the burden of significant risk factors for completed suicide, also result in declines in suicide in addition to having a salutary effect on intermediate targets like substance abuse and delinquency.

Table 1. Cost effective prevention that reduce risk factors for suicide

Program	Target	Cost	Effects	Return on \$1.00 investment
<b>Parent Child Interaction Therapy</b>	Parents and young children disordant relationships	\$1589	Reduction in maltreatment	\$11.55
<b>Good Behavior Game</b>	First-graders	\$159	Reduction in crime, substance abuse, suicide attempts, anxiety	\$56.34
<b>Communities that Care</b>	10-14 year olds	\$542	Reduction in delinquency, alcohol and substance abuse through 12 <sup>th</sup> grade	\$2.77

Washington State Institute for Public Policy, cost/meta-analytic results, Olympia, WA, August, 2014

**Lethal agents and suicide.** In the United States, firearms are the most common method for suicide. In countries that use other methods, availability of lethal agents, such as pesticides is also related to risk for suicide, and encouraging safer storage, or detoxification of pesticides has been accompanied by a decline in suicide in Sri Lanka.<sup>17</sup> Guns are 2-10 times more likely to be found in the homes of suicide victims than controls, even adjusting for rates of psychiatric disorder.<sup>18</sup> If a gun is available in a home where a suicide takes place, it is likely to be the method of choice.<sup>19</sup> Risk for completed suicide is proportional to ease of availability, with locked firearm and ammunition separately being much safer than storing a gun loaded. In fact, in young for whom no clear psychiatric disorder was present, the only factor that differentiated suicides and controls was the presence of a loaded gun in the home of the suicides.<sup>19</sup> Since primary care interventions have been shown to be acceptable and efficacious in encouraging families to store guns with a trigger lock and with ammunition locked in a lockbox, it seems likely that if safety promotion was initiated on a wide scale, one could detect declines in completed suicide as well.

**Service system changes.** Louis Appleby in the United Kingdom has devoted his career to identifying mental health service variables associated with patient deaths due to suicide and from this work, has generated a list of recommendations for locales to provide mental health care in a way that reduces the risk for suicide. These recommendations include availability of 24-hour crisis beds, availability of dual diagnosis services, assertive outreach for non-adherent patients, and multidisciplinary team to review all patient suicides. By region, implementation of these recommendations was associated with a significant reduction in suicide rate between 8.4 and 18%.<sup>20</sup> Thus, presumably, in the US, fairly simple system change could make substantial reductions in the suicide rate here as well.

**Services for Teens at Risk.** The Commonwealth of Pennsylvania has generously supported the STAR program since 1986. We have treated 9,300 patients and trained 86,000 professionals since that time. Despite our management of very high risk patients, we have not lost a patient to suicide. Although some

of this may be due to simple good fortune, there are elements of our program that we believe contribute to the safety and survival of our patients:

- Integration of research and research orientation to clinical care results in a sense of shared discovery and mission
- Team approach to promote collaboration, communication, and coordination
- Continuity of care from intensive outpatient, acute treatment, continuation treatment, and transition to adulthood
- Strong emphasis on training and supervision on use of evidence-based treatments

The STAR clinic has been a laboratory for developing and testing novel interventions and assessments, including cognitive behavior therapy for depressed and suicidal adolescents, psychoeducation for parents of depressed teens, and therapeutic approaches to treatment-resistant depression.<sup>21-25</sup> (see also [www.starcenter.pitt.edu](http://www.starcenter.pitt.edu)). This setting was also where we initiated studies of suicidal contagion,<sup>26</sup> familial influences on suicidal risk,<sup>27-30</sup> risk factors for completed suicide,<sup>18,19,31-33</sup> and studies in adolescent bereavement.<sup>34-37</sup>

**Practice changes that could reduce the suicide rate now.** These would include provision of collaborative care in primary care in order to improve quality and access to care for treatment of depression and other disorders, implementation of Appleby's service recommendations, and training and implementation of elements of evidence based treatments to reduce suicidal behavior. Widespread safety counseling with regard to firearms storage in primary care, and dissemination of cost-effective, evidence based prevention programs can substantially reduce the rate of risk factors for suicidal behavior.

**Important areas for further investigation.** First, while all of the above recommendations have the weight of evidence behind them, they should be implemented in a way that their effects can be critically evaluated to see if the proposed beneficial effects really emerge.

Second, research that is likely to pay off quickly would include studying the impact of improved detection and treatment of insomnia on suicidal behavior, effects of safety counseling with regard to firearms storage on firearms injuries and deaths, including suicide, and impact of evidence-based prevention programs on premature mortality including suicide.

Third are studies with a longer timespan but are needed. There is a need to develop and test agents that rapidly reduce depression and suicidal ideation. We need biomarkers that can identify which patients will respond to which treatments, so that we can speed up the process of matching effective treatments to patients. Since maltreatment is an important risk factor for suicidal behavior, and also predicts non-response to treatment, we need to understand why treatments don't work for these patients and what treatments should be offered instead.

## Summary and conclusions

1. Suicide is intimately related to psychiatric disorder
2. Suicide ensues when there is an imbalance between distress and restraint.
3. Given the prominent role of insomnia in suicidal risk, interventions that target insomnia should be tested to see if this is a method for rapidly reducing suicidal risk.
4. Improvement in access and quality of treatment for depression in primary care can reduce the risk for suicide and suicidal behavior.
5. The Black Box Warning may have had negative, unintended consequences on the identification and treatment of depressed adolescents in the community.
6. Evidence-based prevention that has been shown to have robust effects on risk factors for suicide, may be a cost-effective method for lowering the population rate of suicide over time.
7. Safety counseling with regard to firearms storage should be implemented and tested to see if it can help to reduce the suicide rate.
8. Better coordination of care, assertive outreach, availability of 24 hour beds, dual diagnosis programs, and multidisciplinary review of all patient suicides have been shown in England to reduce suicides when these changes were implemented.
9. Research on more rapidly acting agents for depression, biomarkers that can personalize treatment, and identifying ways to treat those with refractory disorders are likely to help reduce the burden of suicide in the long run

Thank you for the opportunity to share these thoughts with you today.

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