Mood Disorders and the Outcome of Suicidal Thoughts and Attempts

Steven L. Dubovsky, MD\textsuperscript{a,b,*},
Amelia N. Dubovsky, MD\textsuperscript{c}

\textsuperscript{a}Department of Psychiatry, University at Buffalo, 462 Grider Street, Room 1182, Buffalo, NY 14215–3098, USA
\textsuperscript{b}Psychiatry and Medicine, University of Colorado School of Medicine, 4200 E. 9 Avenue, Denver, CO, USA
\textsuperscript{c}Harvard University, 55 Fruit Street, Bullfinch 440 and 441, Boston, MA 02215, USA

Suicidal ideation and attempts are common reasons for visits to the emergency department and critical care hospitalizations and a common public health problem. Most patients who make a suicide attempt have a psychiatric disorder, most frequently a mood, psychotic, substance use, or personality disorder. Demographic factors are not reliable predictors of a repeat attempt in an individual patient, but regret at having survived, a viable plan that the patient has rehearsed, severe depression with anxiety, command hallucinations, and ongoing substance use increase the risk substantially, as do a past and family history of depression. Patients who are at high risk of another attempt and cannot be transferred promptly to a psychiatric service should be managed jointly by the psychiatric and critical care teams with an emphasis on protection of the patient, identification of substance intoxication and withdrawal, making the environment safe, and instituting treatment of the psychiatric disorder. Antidepressants reduce suicide risk but their slow onset of action may make electroconvulsive therapy a desirable alternative for severely depressed patients. Parenteral treatment is possible with benzodiazepines and antipsychotic drugs but not antidepressants.

Suicidality in adults

In 2003 (the latest year for which figures are available), more than 400,000 episodes of deliberate self-harm, about 60% of which are believed...
to be suicide attempts, were treated in emergency departments in the United States [1]. In the general population, the incidence of suicide attempts is estimated at 67 to 151 per 100,000 [2]. The actual number of suicides and suicide attempts is undoubtedly underestimated, however, because many are reported as accidents or undetermined deaths [3]. Suicidal ideation can be identified in as many as 7% of primary care patients [4].

The lifetime prevalence of nonfatal suicide attempts has been estimated at 3% to 5% of the general United States population and as much as 16% of community samples with a diagnosis of major depressive disorder [1]. Suicide attempts tend to be repeated throughout the patient’s life, especially in the presence of substance abuse and impulsivity [1]. In community samples, about 5% of people who develop depression commit suicide [5], whereas the suicide rate is as high as 15% in depressed patients treated in clinical settings. Another study found that only 3% of depressed patients who committed suicide had received adequate pharmacotherapy and only 7% received weekly psychotherapy [6].

Most people who commit suicide have a psychiatric illness, the most common diagnoses being depression, schizophrenia, substance abuse, and personality disorders, often in combination [7,8]. Over a third of patients who receive treatment in the emergency department for a suicide attempt carry a diagnosis of major depressive disorder at the time of the attempt [1]. More severe depression is associated with more suicide attempts [1]. Most suicide attempts occur early in the course of a depressive episode and are associated with escalating hopelessness and isolation [1]. Comorbid anxiety seems to increase the risk of suicide in depressed patients [9].

Suicide is frequently thought to be limited to more severely ill patients in psychiatric settings. Nevertheless, the federally sponsored Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study found that depressed patients in primary care practice had the same level of severity as a sample of patients (N = 2541) with nonpsychotic major depressive disorder [10]. In the same sample, a history of attempted suicide was reported by 13% of depressed patients in primary care and 18% of those in specialty care. Similarly, 43% of depressed primary care patients and 51% of specialty care patients reported feeling that “life was not worth living” the week before the assessment. A family history of suicide was reported in 3% of depressed patients in each setting [10].

Among 4037 enrollees in the STAR*D study, 16.5% reported previous suicide attempts [1]. Controlling for age, gender, and depressive symptom severity, previous attempters had more current general medical conditions (P < .0001), more current alcohol and substance abuse (P < .0001), more work hours missed in the past week (26.2% versus 18.2%, P < .0001), and more current suicidal ideation (61.3% versus 45.5%, P < .0001) than nonattempters. The results suggest that depression with suicidal behavior is a more severe form of illness that requires more aggressive treatment, and they support observations that suicidal behavior is often repeated until it is successful.
Among mood disorders, the risk of suicide is highest in bipolar illness [11]. Patients with mixed states (coexisting manic and depressive symptoms) are at particular risk because of the combination of suicidal thoughts and high levels of energy and impulsivity. For this reason, manic patients are also at high risk of suicide. A family history of suicide doubles the risk of suicide attempts in this and probably in other populations [12].

It is estimated that 5% to 13% of schizophrenia patients commit suicide [13]. A Spanish study of 83 patients with first-episode psychosis found that 14.5% made a suicide attempt and 2.4% committed suicide over the 5 years following the initial hospitalization [14]. Depressive symptoms accompanying psychosis predicted later suicide, and abuse of cocaine and amphetamines increased the risk of suicide eightfold. Suicide attempts in schizophrenia are more likely to be lethal and violent [13]. The introduction of neuroleptics as treatments for schizophrenia did not seem to lower the suicide risk from the era before medications were available [15].

Substance abuse, either as a primary disorder or a condition that is comorbid with other psychiatric disorders, increases the risk of attempted and completed suicide [7,8]. In a cohort of heroin abusers (N = 387), nearly 12% attempted suicide over the 3-year follow-up period [16]. Those with a history of a previous suicide attempt were at increased risk (five times) of another attempt. One fourth of those with suicidal ideation at study enrollment (ie, baseline) made an actual attempt over the next 3 years. Alcohol is involved in 25% to 35% of all suicides [17,18]. Furthermore, the risk for suicide associated with alcohol dependence increases with age [19]. Similarly, Preuss and colleagues [20], in a cohort of patients (N = 371) with a history of suicidal attempts, found a greater incidence of suicidal attempts among patients with depression and alcohol abuse (61%) compared with those suffering from depression alone (39%). Compared with nondrinking teenagers, adolescents who use alcohol, especially if they began drinking in their preteenage years, had almost a threefold increased risk of suicide attempts [21]. Alcohol use is associated with more dangerous attempts. For example, a review of 406 self-inflicted gunshot wounds to the head found alcohol in the blood of 40% of cases [22].

Because alcohol is the most frequently used and readily available substance, it is a common factor in suicide attempts. There are several reasons why alcohol use increases the risk of suicide attempts and completed suicide [23]. Alcohol not only reduces impulse control, but it provides a potentially fatal substance on which to overdose. Alcohol directly causes depression, and alcoholism is often comorbid with mood disorders. A family history of alcoholism also increases the risk of suicidality, possibly because alcoholic families are more likely to abuse their children (childhood abuse is a risk factor for suicide), and possibly because of familial clustering of alcoholism, depression, and suicide. It is important to evaluate patients who have made a suicide attempt for the presence of alcohol and for alcoholism.
Suicidality in children and adolescents

Suicidal ideation in children is a serious symptom, with a strong association with childhood depression and bipolar illness [24]. In a Dutch study, childhood (≤11 years) suicidal ideation (reported by parents) persisted into adulthood (odds ratio, 10.7) and predicted a lifetime history of suicide attempts (odds ratio, 5.8) [24]. Children with suicidal thoughts had an increased risk of developing a mood or anxiety disorder in adulthood. Suicidal ideation that starts in preadolescence predicts later negative outcomes more strongly than adolescent onset suicidal thoughts. Adolescent suicidality, however, still predicts adult suicide attempts, depression, anxiety, and substance abuse. Suicidal ideation in childhood should not be dismissed as a passing phase.

Suicide is the third leading cause of death in adolescents [8], and 3% of adolescents make medically serious suicide attempts [25]. Suicide rates per 100,000 for children aged 5 to 14 are 0.6 in the United States, 0.5 in the Netherlands, and 0.1 in the United Kingdom; for individuals aged 15 to 24, rates increase to 9.9, 5, and 5.2, respectively [24]. In 2003, there were 3988 reported suicides among people 15 to 24 years old in the United States, with 1487 occurring among those 15 to 19 years old [8]. From 1950 to 1990, the suicide rate for adolescents 15 to 19 years old increased by 300% [26], although it decreased by 35% between 1990 and 2003 [27]. The ratio of attempted to completed suicide in adolescents is 50 to 100:1 [8,28–30]. A 2003 survey of students in grades 9 to 12 in the United States found that 16.5% of students had planned a suicide attempt, 8.5% had made a suicide attempt, and 2.9% had made an attempt that required medical intervention [31].

A mother’s report of depression in a child is usually accurate; however, mothers are frequently unaware of suicidal thoughts in their adolescent children, with such thoughts being reported much more frequently by the adolescents themselves than the parents [32]. Risk factors for adolescent suicide include family history of suicide, past history of an attempt, living outside the home, homosexual or bisexual orientation, and history of abuse. Firearms in the home, even if they are locked, are associated with an increased risk of adolescent suicide.

In June 2003, the Food and Drug Administration (FDA) recommended that paroxetine not be used in juvenile patients because of an increased risk of suicide. In October 2004, a black box warning was added to all antidepressants package inserts [33,34]. The FDA black box warning was prompted by analysis of aggregate data from 24 clinical trials that found a doubling in suicidality (defined as new-onset or increased suicidal thinking or new suicide attempts) among pediatric patients on active drug (4%) compared with placebo (2%). The data on which the FDA based their advisory were extracted from 24 trials (23 trials conducted in nine drug company–supported programs evaluating the effectiveness of antidepressants in
pediatric patients and one National Institutes of Mental Health–sponsored multicenter trial (the TADS trial) lasting 4 to 16 weeks and involving 4582 children and adolescents. The antidepressants involved included fluoxetine, sertraline, paroxetine, fluvoxamine, citalopram, bupropion, venlafaxine, nefazodone, and mirtazapine. The trials were intended to assess the effectiveness of the medications in the treatment of major depression (16 trials); obsessive-compulsive disorder (4 trials); generalized anxiety disorder (2 trials); and social anxiety disorder (1 trial). Analysis of the data revealed there were 89 cases of suicidal behavior or ideation and 120 cases of possible suicidal behavior or ideation. In addition, 11 cases were classified as self-injury with nonsuicidal intent and an additional 47 events occurred in 21 patients who had more than one event. Of note, no completed suicides occurred in any of the trials [35].

It is important to bear in mind that none of the pediatric studies was designed to evaluate suicide risk; the data were obtained only from events that researchers happened to notice or report; the studies had different designs and durations and in general were too short adequately to evaluate risks in actual clinical practice; and multiple statistical tests were performed, increasing the likelihood of a spurious result [35]. It is also possible that placebo patients dropped out of studies sooner than patients in active treatment because of lack of benefit, and before they exhibited suicidality, artificially elevating the apparent risk in patients given antidepressants. Given that early onset depression is associated with an increased likelihood of a bipolar disorder, it is possible that some cases of bipolar mood disorders were missed in the initial evaluations and the condition was exacerbated by antidepressants, leading to increased agitation and impulsivity. Rates of suicidality were found to decrease in patients on active antidepressant therapy [8]. Furthermore, a reanalysis of data including seven more studies and a more conservative statistical model found only a 0.7% greater incidence of suicidality with active drug versus placebo [8]. Only the National Institutes of Mental Health–sponsored TADS trial reported statistically significantly increased suicidality in subjects taking antidepressants versus placebo. For these patients, it may be that increased energy or comfort with the clinician made it easier to reveal thoughts that were concealed previously, something that was less likely to occur with placebo [36]. The fact that no suicides occurred is not entirely reassuring, however, in a relatively small sample. The FDA warning that juvenile patients taking antidepressants be evaluated and followed carefully makes clinical sense. Similarly, there is no reason to deny the use of antidepressants in adolescents in need when administered by competent clinicians.

The warning by the FDA had a distinct impact on prescribing practices. Before the FDA’s first public health advisory, there had been a 36% per year increase in antidepressant prescriptions for youth aged 6 to 17. Similarly, from 1985 to 1999 there was a fourfold increase in per capita
antidepressant prescriptions for this population [37]. Following the 2004 warning, antidepressant prescriptions for this population decreased by 0.8% per year, with paroxetine use in juvenile patients decreasing by 44%. After the FDA’s second warning prescriptions decreased by 10% per year. Antidepressant prescriptions for adults also decreased, although to a lesser degree during this period, whereas antidepressant prescriptions for the elderly increased by 8%.

Did the decrease in antidepressant prescriptions for children and adolescents improve treatment and reduce suicide rates in this population? Between 1950 and 1990, before antidepressants were widely prescribed for juvenile patients, the rate of adolescent suicide had increased by 300%. Between 1990 and 2003, however, suicide rates decreased by 35% in association with an increase in antidepressant prescriptions. Then, from 2003 to 2004, after the black box warning was introduced and antidepressant prescriptions for children declined, the suicide rate increased by 18% [8]. Similarly, a claims database study involving 65,349 newly diagnosed cases of pediatric depression found that between 1999 and 2004, the rate of diagnosis of depression in this population increased from 3 per 1000 to 5 per 1000. Following the FDA advisory, the rate decreased back to pre-1999 levels, primarily as a function of decreased diagnosis of pediatric depression by pediatricians and family physicians [38]. Before the FDA 2004 advisory, 59% of depressed children received a prescription for a selective serotonin reuptake inhibitor. The trend toward increasing selective serotonin reuptake inhibitor prescriptions was reversed after the advisory such that only 28% of depressive episodes were treated with a selective serotonin reuptake inhibitor [38]. The reduction in antidepressant prescribing was not matched by an increase in nonpharmacologic therapies. A study comparing adolescent suicide rates in 588 zip code zones found a 0.23 per 100,000 decrease in adolescent suicide for every 1% increase in antidepressant prescriptions [37]. Of note, if suicidal thinking in adolescents does increase after starting an antidepressant, it usually occurs within the first month of treatment and most frequently within the first 7 to 10 days [36].

In addition to the decrease in the diagnosis and treatment of childhood depression after the FDA advisory, there was a halo effect on the diagnosis and treatment of adult depression. An analysis of managed care claims from 1998 to 2005 involving 475,838 different depressive episodes found that the percentage of depressed adults who did not receive an antidepressant increased from 20% to 30% after the FDA warning, without any parallel increase in the use of other medications or psychotherapy [39]. In adults and children, the FDA recommendation that depressed patients be seen seven times in the first 3 months of treatment was adhered to less than 5% of the time, and the frequency of monitoring did not increase after the warning [40]. Only 60% of children and 40% of adults were seen three times in the first 3 months of treatment (a more liberal guideline) both before and after the FDA warning [40].
Neurobiology of suicide

The most robust neurobiologic finding in suicide has involved multiple dimensions of serotonergic dysfunction, including reduced central serotonin turnover and a polymorphism of the serotonin transporter [41,42]. The association of serotonergic dysfunction is particularly strong for violent and impulsive suicide, but it is not specific to any diagnosis. Similar findings have been reported for other forms of violent and impulsive behavior, such as firesetting [43]. The association is understandable in that serotonin modulates impulsivity and aggression, whether it is directed outward or toward the self [44].

In the STAR*D study, patients in 18 primary care and 23 psychiatry centers (N = 1879) began treatment with citalopram. Of these, 124 (9%) developed new-onset suicidal thoughts after starting the antidepressant. Among the men in the study, two single nucleotide polymorphisms that flanked the transcription factor cyclic AMP response binding element protein gene (CREB1) were significantly associated with treatment-emergent suicidal thoughts [45]. In a previous study conducted by these investigators the same single nucleotide polymorphisms were associated with difficulty with anger expression in depressed men [45]. No neurobiologic finding has yet proved useful for predicting suicide risk.

Outcome following a suicide attempt

Following a suicide attempt, the risk of another attempt is 12% to 30% and the risk of completed suicide in the next year is 1% to 3% [46]. In a study of 1573 attempted suicides evaluated in the psychiatric emergency room of the Karolinska Hospital between 1981 and 1988, 11% died and 6% committed suicide over an average of 5 years of follow-up [47]. The risk of successful suicide after an attempt was 8.3% for men and 4.3% for women and was greatest during the first year following an attempt. In a study involving 925 patients admitted to psychiatric units following a suicide attempt, expression of a wish to die was the best predictor of later successful suicide [48].

A 12-month study conducted in the north of France [46] followed 605 adult patients who were discharged from the emergency department after having been evaluated by a psychiatrist following a suicide attempt by overdose. Patients were randomized to one of three groups: (1) telephone contact 1 month after discharge; (2) telephone contact at 3 months after discharge; or (3) usual care (ie, no contact, which constituted the control group). The principle of contacting participants was to go back over the treatment recommended in the emergency department: if treatment was difficult to follow a new one was suggested, or if patients were considered at high risk of suicide an urgent appointment was made at the emergency department in which they had originally been treated. The psychotherapeutic approach used was psychologic support. The
experimental intervention included an attempt to enhance compliance with treatment and to provide brief crisis intervention when needed. Of the 107 participants contacted at 1 month, 72 were ordinary calls (lasting 5–10 minutes); 22 concerned crisis intervention (15–45 minutes); and 13 detected participants at high risk of suicide. Seven of the 72 participants who seemed alright at the time of contact attempted suicide during the following year. Of the 22 participants who required crisis intervention, 5 attempted suicide within a year. Thirteen participants were sent to the emergency department; 10 were considered by the psychiatrist as being at risk and 8 of these were admitted to hospital. Only 1 of these 13 patients reattempted suicide, 6 months later. The authors conclude that contacting patients a month after an overdose has the potential to reduce further attempts and identify those at immediate risk.

**Predicting suicide and suicide attempts**

A substantial number of individuals who die by suicide see their primary care physician shortly before their death [7,8,49], most within 1 month of dying [4]. Yet, physicians have not been very effective at recognizing and preventing its occurrence. Several studies have demonstrated that patients who commit suicide by overdose often obtain the medication of the agent used in the attempt from their primary care physician.

Feldman and associates [4] conducted a study to assess physician characteristics associated with exploring suicidality in patients with depressive symptoms and whether a patient’s request of antidepressant influenced physician’s behavior. The study used standardized patients portraying two conditions (ie, major depression and adjustment disorder) who made unannounced visits to 152 primary care physicians. The study revealed that suicide was explored in only 36% of 298 encounters. Exploration of suicidality was more common when the patient portrayed major depression (versus adjustment disorder; \( P = .03 \)); when subjects requested an antidepressant (versus no request; \( P = .02 \)); in academic settings (\( P < .01 \)); and among physicians with personal experience with depression (\( P < .01 \)).

The intervention consisted of a depression screening of randomly sampled patients. It showed a decrease in rates of suicidal ideation from 29% to 17% in the intervention group as expected; patients in the intervention group had a more favorable course of depression in both degree and speed of symptom reduction [49]. It is not true that patients who talk about suicide do not go on to kill themselves. Patients who communicate suicidal intention should always be taken seriously, especially in an acute care setting.

Some demographic risk factors for suicide that have been reported in population studies, including male gender, older age, unmarried, unemployed, and recent loss, are not particularly helpful in an individual patient. Careful application of general risk factors may not predict exactly who will
commit suicide. For example, a Danish population registry study found that the risk of suicide was higher in patients with a psychiatric history who were employed and married [50]. Hopelessness, however, is a consistent predictor of suicide risk [51]. One study showed that all-or-nothing thinking that creates the belief that if a problem cannot be solved perfectly it cannot be solved at all, leading to hopelessness when one’s efforts are not completely successful, predicted later suicide attempts and suicide [52,53]. In adolescent girls, a history of date rape increases the risk of a suicide attempt [52].

A history of violence against others predicts violence against the self. A follow-up study of 550 patients who had been in a secure psychiatric setting because of violent behavior found that 3.2% eventually committed suicide, a rate more than 300 times higher than in the general population [54]. In the United States, about 4% of people who kill someone else go on to commit suicide. Occasionally, a depressed patient commits “suicide by police” by engaging in a violent confrontation with strangers, but most violence by suicidal people involves domestic partners, with most murderers being men. The risk that a man who has made a suicide attempt may go on to kill a partner is increased by a history of domestic violence in the relationship and the presence of firearms in the home [55]. All patients who have made a suicide attempt should be evaluated for a risk of violence to others, and vice versa.

Nonsuicidal self-injurious behavior, such as cutting, burning, hitting, or less frequently biting or abrading parts of the body in ways that may be obvious or covert, is usually associated with personality disorders. In these cases, it serves as a mechanism for expiating guilt, creating a concrete physical sensation that distracts from mental disorganization, or manipulative behavior. Nonsuicidal self-injurious behavior is not uncommon, however, in depression and psychosis. Although patients usually do not intend nonsuicidal self-injurious behavior itself to have a fatal outcome, the occurrence increases the risk of subsequent actual suicide attempts sixfold [56]. Patients treated for nonsuicidal self-injurious behavior should be evaluated for suicidal intention.

Given that suicide is a rare event (average rate in American adults 11 per 100,000), it is impossible to design a prospective study of absolute predictive factors that involves fewer than 1 million subjects [57]. Although it remains impossible to predict suicide precisely, it is possible to assess risk in a clinically relevant manner [58,59]. Suicide risk assessment, which is not only possible but clinically necessary, is not the same as suicide prediction. In addition to hopelessness, the presence of a plan, especially if the patient has the means to carry it out, greatly increases suicide risk. The risk is even higher if the patient has practiced the plan (eg, by taking a few extra pills) and the patient cannot think of any reason not to die. Psychosis, especially if it includes hallucinated voices telling the patient to commit suicide (command hallucinations), increases the risk even further. In hospitalized patients with painful injuries or medical illnesses, the severity of pain at discharge predicts the persistence of significant suicidal ideation [60].
Some clinicians believe that suicidal patients who endorse a “no-suicide contract” and promise not to kill themselves are at decreased risk. There is no empiric support at all, however, for this approach [61]. Patients with the features just outlined who cannot give a cogent reason why they would not act on suicidal thoughts beyond a promise to the clinician should still be considered to be suicidal.

Treatment

Suicide prevention centers are relied on in some communities as a first-line treatment for suicidal individuals. Data over the past 30 years indicate, however, that callers to these centers generally do not present a high risk [62] and that the centers have not had a significant impact on local suicide rates [63,64]. Clinically meaningful detection and treatment of suicide risk occurs most frequently in the primary care setting and in the emergency department. The Centers for Disease Control and Prevention has published lists of risk factors and protective factors for suicide (Boxes 1 and 2) [65], although these are based on population studies and are not always predictive in the individual patient. When the risk of suicide is high, or when the

---

**Box 1. Risk factors for suicide**

- Family history of suicide
- Family history of child maltreatment
- Previous suicide attempts
- History of mental disorders, particularly depression
- History of alcohol and substance abuse
- Feelings of hopelessness
- Impulsive or aggressive tendencies
- Cultural and religious beliefs (eg, belief that suicide is noble resolution of a personal dilemma)
- Local epidemics of suicide
- Isolation, a feeling of being cut off from other people
- Barriers to accessing mental health treatment
- Loss (relational, social, work, or financial)
- Physical illness
- Easy access to lethal methods
- Unwillingness to seek help because of the stigma attached to mental health and substance abuse disorders or to suicidal thoughts

patient refuses to divulge enough information to assess risk, the most prudent approach is to hospitalize the patient to a psychiatric ward. One must keep in mind that 15% of suicides occur after a patient has refused voluntary hospitalization [66]. The most immediate concern is actively preventing the patient from acting on suicidal intention. Although patients may ruminate about suicide for years, the acute risk lasts only hours to days. Physically containing the patient until the acute impulse abates is the cornerstone of suicide prevention in the short-term. Close observation may be necessary, because attempts and even successful suicide have been known to occur in the hospital. The period of highest risk after discharge from the hospital is the first 2 to 4 weeks postdischarge [66].

In the longer-term, almost any form of treatment that engages the patient in a constructive relationship can reduce the risk of suicide [67]. Dialectical behavior therapy (DBT), however, a specialized form of cognitive psychotherapy usually conducted in a group setting, has been shown to reduce suicidal and self-injurious behavior and the tendency to drop out of treatment in patients with personality disorders [68]. Although there is less research on DBT for mood disorders, there is reason to believe that it may also be effective for self-injurious behavior in major depression. A total of 101 clinically referred women with recent suicidal and self-injurious behaviors were randomized to 1 year of DBT or 1 year of community treatment by experts. DBT was associated with better outcomes in the intent-to-treat analysis than community treatment by experts in most target areas during the 2-year treatment and follow-up period. Subjects receiving DBT were half as likely to make a suicide attempt (hazard ratio, 2.66; \( P = .005 \)), required less hospitalization for suicide ideation (\( F[1,92] = 7.3; \ P = .004 \)), and had

---

**Box 2. Protective factors for suicide**

- Effective clinical care for mental, physical, and substance abuse disorders
- Easy access to a variety of clinical interventions and support for help seeking
- Family and community support
- Support from ongoing medical and mental health care relationships
- Skills in problem solving, conflict resolution, and nonviolent way of handling disputes
- Cultural and religious beliefs that discourage suicide and support instincts for self-preservation

lower medical risk ($F[1,50] = 3.2; P = .04$) across all suicide attempts and self-injurious acts combined. Subjects receiving DBT were less likely to drop out of treatment (hazard ratio, 3.2; $P < .001$) and had fewer psychiatric hospitalizations ($F[1,92] = 6; P = .007$) and psychiatric emergency department visits ($F[1,92] = 2.9; P = .04$) [69].

A study of patients with borderline personality disorder ($N = 20$) treated with a 6-month course of DBT found significant reductions in nonsuicidal self-injury urges, nonsuicidal self-injury, suicide ideation, subjective distress, depression, and hopelessness between baseline and 6 months. The authors concluded that the use of DBT in a 6-month treatment format may be sufficient to target suicidal behavior and ideation [17–20,70–72].

Because suicidality is usually a symptom of a major psychiatric illness, effective treatment of the primary disorder usually eliminates the risk of suicide. Relapse and recurrence are common in both mood and psychotic disorders, however, so ongoing treatment and monitoring is necessary. Somatic therapies (medications and electroconvulsive therapy) are selected based on the features of the specific psychiatric disorder. When selecting antidepressant agents, consider the fact that tricyclic antidepressants are more dangerous in overdose than the selective serotonin reuptake inhibitors. Only lithium [73] and clozapine have been shown to reduce suicide risk independent of their effect on the primary disorder, the latter by more than 80% in one study [15].

**Management in the critical care setting**

The goals of treatment for patients who are in a critical care setting because they have made a suicide attempt are to keep the patient safe, treat the injuries, assess ongoing suicide risk, and begin or arrange definitive psychiatric therapy. Many overdoses involve alcohol and other central nervous system depressants, such as tranquilizers and sleeping pills, and these substances are often ingested before violent suicide attempts. Early toxicology screening, and a history obtained promptly from significant others and the patient can identify patients at risk of withdrawal syndromes and can clarify the cause of continued confusion or agitation. Substance withdrawal should be suspected whenever any acute unexplained change in behavior or mental status occurs in a patient who is hospitalized after a suicide attempt after an initial period of apparent stability. In this case, however, blood levels are likely to be zero. Withdrawal from any combination of central nervous system depressants can be diagnosed by challenge with phenobarbital or pentobarbital [74]. Similarly, acute changes in mental status could also represent an overdose taking place in the hospital setting, as in the case of patients who ingest medications brought into the hospital during admission.

Many patients feel temporarily better after a suicide attempt because the escalating dysphoria that led to the attempt has decreased. This does not mean, however, that the patient is safe. It is necessary to assess the ongoing
risk of suicide or gross noncompliance with medical or surgical therapy. Patients who openly express disappointment at having survived are at particularly increased risk, especially if they continue to express a wish to die or to leave the hospital immediately. Patients who made an obvious suicide attempt but deny that they were trying to kill themselves, and patients who say that they would never repeat the attempt but who cannot describe any coherent reason why they would have changed their minds, are also at high risk. Also at high risk are patients with ongoing confusion or psychosis, patients who made a violent or very dangerous attempt with little chance of rescue, and those with no available support system. Conversely, if a suicide attempt has solved a problem temporarily (eg, by convincing a spouse not to leave or by mobilizing family support), the risk during the acute hospital stay is lower.

Patients at high risk of suicide while in a nonpsychiatric setting need continued close observation. If a sitter is used, the sitter should have experience working with psychiatric patients. Patients who actively resist treatment or try to leave the hospital are best treated on inpatient units that can provide both medical and psychiatric care, but if such a unit is not available, chemical or physical restraint may be necessary. The use of emergency tranquilization is a complicated issue, but controlled studies of antipsychotic drugs with or without benzodiazepines or antihistamines have only been performed in the emergency department and recommendations have to be extrapolated to the inpatient setting. The American College of Emergency Physicians, after an extensive literature review, found no class I studies of the emergency treatment of nonpsychotic agitation [75]. The safest and most rapidly effective approach is probably with intramuscular benzodiazepines, such as midazolam [75]. Atypical antipsychotic drugs are often used for nonpsychotic agitation but the evidence of their efficacy is not strong [76,77]. Agitation in psychotic patients can be treated effectively with antipsychotic drugs.

There are multiple potential means of suicide in the hospital that should be addressed for patients with ongoing suicidal intention. Such patients should not be in a bed near a window, even if the glass is unbreakable, because they attempt to jump through it if they do not know this is not possible. Blocking electrical outlets that the patient can reach easily and minimizing access to means of strangulation may be necessary. Most critical care units are not as “suicide proof” as psychiatric units (eg, breakaway shower heads and sloping doors to prevent hanging), necessitating close observation until transfer is possible. When the patient is to remain on a nonpsychiatric service, the psychiatric consultant should see the patient daily.

All states have provisions for involuntary hospitalization and treatment of patients who present a danger to themselves or others or who are gravely disabled or disorganized. These laws usually involve certification by one or more physicians of the need for hospitalization. Permission for involuntary administration of medications in patients who are refusing treatment may have to be obtained separately from permission to keep the patient in the
hospital. The psychiatric consultant can assist with these interventions, which may require a physician to petition the court in person if a judge does not come to the hospital for such proceedings.

When patients need prolonged care in a critical care setting, as may occur with multiple severe injuries, treatment of the underlying psychiatric disorder should be instituted by the psychiatric consultant. It is very important to consider potential interactions between psychiatric medications and other medicines the patient may be taking. Whereas psychosis can be reduced fairly rapidly with antipsychotic drugs, antidepressants take a month or more to be effective. Patients who are severely depressed should be considered candidates for electroconvulsive therapy, which is rapidly effective and has fewer interactions than antidepressants. The only contraindications to electroconvulsive therapy are space-occupying lesion and recent myocardial infarction [66].

On rare occasions, such injuries as esophageal damage from ingestion of lye or a gunshot or stab wound may interfere with the use of oral medications. Agitation can be treated with parenteral benzodiazepines, such as midazolam or lorazepam, but there are no clinically practical parenteral antidepressants. If it is not possible to administer medications by a feeding tube, parenteral benzodiazepines may at least reduce distress and improve sleep until an antidepressant can be administered.

Summary

The risk of completed suicide is high in patients treated in a critical care setting for a suicide attempt, especially if the attempt had high risk (eg, shooting, hanging, large overdose) and a low chance of rescue. One should keep in mind that some patients practice suicide with a mild attempt that may seem to be just a gesture. Severe depression, psychosis, substance abuse, hopelessness, expression of regret at being saved, a continued desire to die, or a family history of suicide substantially increase the risk of suicide in the near future. The lack of prospective data predicting exactly who will eventually carry out a plan after expressing suicidal thoughts or making a suicide attempt should in no way impede clinicians from asking patients about a plan, the means to carry out the plan, and factors that might prevent the patient from acting on the plan. Early transfer to a psychiatric unit is desirable, but if continued treatment in the critical care setting is necessary, collaboration with the consulting psychiatrist can reduce the ongoing immediate suicide risk and manage agitation and nonadherence.

References

Mood Disorders and the Outcome of Suicidal Thoughts


