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Risk assessment and psychosocial interventions for suicidal patients

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Abstract

Objectives—Suicide is a leading cause of death in the US. Although factors elevating long-term risk for suicide are known and include bipolar disorder, signs of imminent suicide risk are difficult to study and not well-specified. Acute risk determinations must be made to determine the appropriate level of care to safeguard patients. To increase safety among at-risk patients in the short term and to decrease risk over time, psychosocial interventions to prevent suicide have been developed and tested in acute care and outpatient settings.

Methods—A narrative review of studies of imminent risk factors for suicide, suicide risk decision making, and psychosocial suicide prevention interventions was conducted.

Results—While some long-term risk factors of suicide have been established, accurate identification of individuals at imminent risk for suicide is difficult. Therefore, prevention efforts targeting individuals at high suicide behavior risk discharging from acute care settings tend to be generic and focus on psychoeducation and supportive follow-up contact. Data regarding the effectiveness of brief interventions (i.e., those not requiring more than one individualized treatment session) is mixed, showing better outcomes in the shorter term and when incidence of suicidal behavior or ideation is the outcome. With respect to longer term suicide prevention interventions (i.e., those with a minimum of 10 sessions), Dialectical Behavior Therapy has the largest evidence base.

Conclusions—To improve suicide prevention efforts, more rigorous study of imminent risk factors and psychosocial interventions is needed. Adaptations specific to individuals with bipolar disorder are possible and needed.

Keywords

suicide; suicide prevention interventions; suicide risk assessment

In the US, suicide is the 10th leading cause of death, claiming more than 38,000 lives annually (1). Worldwide, almost one million people die by suicide each year (2). Suicide attempts are estimated to occur up to 25 times more frequently than suicides (3). Psychiatric disorder is a potent risk factor for suicidal behavior. Ninety percent of individuals who die by suicide have at least one mental disorder (4), with individuals with bipolar disorder at uniquely high risk for suicide among psychiatric populations (5). Specialized treatments

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targeting suicidality, including brief, focused interventions, are indicated. The purpose of this paper is to review risk factors and proximal warning signs for suicide, to discuss considerations in clinical suicide risk assessment, and to provide information about psychosocial suicide crisis interventions as well as longer-term psychosocial interventions to reduce suicide risk. The goal is to aide practitioners in making suicide risk determinations, to provide information about acceptable and effective psychosocial suicide prevention interventions, and to suggest areas where further research is indicated. Although no brief crisis interventions to prevent suicide have been designed and tested specifically for bipolar disorder, potential strategies for working with patients with this disorder at suicide risk are offered based on what is known about acute risk factors for suicide among patients with bipolar disorder and suicide prevention.

Methods

We conducted a review of the literature and synthesized information on long-term and imminent risk factors for suicide, clinical and actuarial suicide risk assessment, practice guidelines for suicide risk assessment, and suicide prevention interventions. To more systematically capture psychosocial suicide prevention interventions, we also searched bibliographies of articles identified during the narrative review and searched PubMed using the keywords suicide and intervention and brief or acute or emergency department or outpatient. Our review was limited to studies of adult and adolescent populations.

Results

Assessing long-term and imminent suicide risk

Long-term factors that confer risk for suicide, including those in the bipolar population (6), are well-studied and known (7). Unfortunately, because these factors do not always or even often signal imminent risk for suicide for one individual, our ability to predict suicide, and thus intervene to prevent it, remains poor (6, 8).

Long-term risk factors for suicide, as distinguished from imminent warning signs, are variables, biological, social, or psychological in nature, that predispose individuals to increased suicide risk either over the life time or over a long period of time (9). Examples of long term risk factors for suicide include male gender, psychiatric disorder, and serotonergic system abnormality (7, 10). Signs of imminent risk or warning signs are ‘the earliest detectable signs that indicate heightened risk for suicide in the near-term’ (i.e., within minutes, hours, or days). Awareness of warning signs, compared to long term risk factors, is thus arguably more useful for clinical suicide risk and intervention determinations (9). Empirical studies that have been successful in identifying risk have almost exclusively focused on long term risk factors for suicidal behavior (9). The inherent difficulty studying transitory, often short and infrequent states, the low base rate of suicide, definitional non-specificity or subjectivity regarding both the concept of warning sign and specific warning signs (e.g., preparatory behavior), and the clinical importance of constellations of warning signs as opposed to any one warning sign make empirical study and, thus, identification of warning signs difficult (9). Nonetheless, tasked with identifying warning signs, a group of experts convened by the American Association of Suicidology agreed on the following warning signs for emergent imminent risk of suicidal behavior (Table 1): hopelessness, rage, anger, recklessness, feeling trapped, increased substance use, social withdrawal, anxiety, agitation, hypo- or hypersomnia, mood change, and lack of purpose or reasons for living (9). The group identified a need for research exploring the predictive validity of these warning signs, some of which are known risk factors for suicide, over a short time frame (i.e., hours or days) so that their utility in informing imminent risk determination could be quantified (9).

While knowledge of distal risk factors identified in population-based studies is likely not sufficient to determine imminent individual suicide risk, it is, nonetheless, important. In many situations, assessment of risk factors is an ethical and legal standard when increased suicide risk is suspected (11). A full review of risk factors for suicide and suicidal behavior is beyond the scope of this article and available elsewhere [see, for instance, (7) or (10)]. Instead, we focus on risk factors for suicide in bipolar disorder and factors that indicate shorter-term suicide risk (e.g., within one to a few years).

Risk factors for suicide in bipolar disorder are a subset of those factors associated with suicide risk across populations and include prior suicide attempt, a treatment-refractory or non-remitting course of illness, co-morbid alcohol use disorder, and suicidal ideation coupled with agitation or anxiety (6, 12). Interestingly, known risk factors for suicide (7), including being single, a family history of suicide, and psychoses, do not increase risk of suicide in individuals with bipolar disorder (12). Further, suicidal ideation in isolation appears to be a risk factor, but not a short-term signal, of suicide among individuals with bipolar disorder (6, 12, 13). Suicidal ideation coupled with anxiety and agitation is a combination indicative of elevated imminent suicide risk (6, 14). Additionally, while it has been noted that ‘the time factor in suicidality seems almost random’ (15), there are some epochs during which short-term suicide risk is elevated. The weeks to months following hospitalization or emergency room (ER) presentation for suicidal behavior are a period of elevated risk for suicide (16), including among patients with bipolar disorder (6). Individuals with bipolar disorder are also at elevated risk for suicide during mixed and depressed episodes (17, 18), early in the course of the illness (17), and in the year after lithium is discontinued (18).

Actuarial methods versus clinical judgment in suicide risk assessment

While certain types of risk determinations, e.g., violence risk, are made using actuarial methods (i.e., purely statistical methods) (19), suicide risk determinations do not currently rely on these methods. Cooper et al. (20) attempted to derive an actuarial measure of suicide risk [i.e., The Manchester Self Harm Rule (MSHR)] but concluded that more actuarial models of suicide risk needed to be proposed and tested and that this method should not replace clinical judgment. The MSHR had high sensitivity (correct identification of individuals who subsequently self-harmed) but low specificity (correct identification of individuals who did not repeat self-harm).

Deriving actuarial methods to predict suicide risk is, in fact, complicated. What is needed to maximize the predictive power of a model, e.g., largely orthogonal constructs, contrasts with what we know about suicide, i.e., it results from overlapping, interacting factors (15, 21). In the American Psychiatric Association Practice Guidelines for the Treatment of Patients with Suicidal Behavior (10), limits to current actuarial methods are acknowledged and a recommendation to use suicide rating scales to open lines of communication about suicidal behavior and collect comprehensive data to aid clinical judgment is offered. In practice, a slim majority of clinicians [66% (22)] supplement their clinical judgment of suicide risk with scores from rating scales.

When practitioners use suicide rating scale scores to inform clinical suicide risk judgments, they most often use The Beck Scale for Suicide Ideation (BSS) (23), Adult Suicidal Ideation Questionnaire (24), and the Modified SAD PERSONS score (25) (22, 26). Although these scales were not designed as actuarial instruments, the accuracy of these scales in predicting hospitalization to prevent self-harm has been tested. The BSS, when a cut-off score of greater than 23 was used, was the most sensitive and specific (100% and 90%, respectively), leading Cochrane-Brink et al. (27) to conclude, “... the BSS would be the clinical scale of choice at present.” (p. 450). Another newer suicide behavior rating scale is the Columbia-

Suicide Severity Rating Scale (C-SSRS) (28). The C-SSRS has demonstrated near perfect specificity and sensitivity when used with adolescent and adult patients at risk for suicidal behavior and thus provides another clinically useful rating scale for suicide risk assessments (29).

Similarly limited information exists to evaluate clinician accuracy in predicting suicidal behavior, with a few studies showing ER and mental health staff display low to moderate sensitivity and high specificity in predicting self-harm behavior within 12 months of ER presentation for self harm [e.g., (30)]. A direct comparison of clinical judgment to the MSHR showed the MSHR was more sensitive to identifying individuals at risk for self-harm (94% versus 85% sensitivity for clinicians) (31). Thus, it appears from the limited data that using suicide rating scales is important and increases accuracy in identifying individuals at risk for suicidal behavior. Sole reliance on suicide rating scales to determine risk is, however, not the standard of practice, and Randall et al. (26) warn “... the available tools remain clinically unhelpful in determining self harm risk in isolation.” (p. 353).

Brief interventions to reduce suicide risk (see Table 2)

The standard of practice is to, “... treat in the setting that is least restrictive yet most likely to prove safe and effective.” (10). Thus, clinicians in acute care settings are continually faced with discharging patients who may be at some suicide risk. Further, logistical constraints also limit the amount of treatment that can be provided in acute care settings. Summarized below are very brief suicide prevention interventions, followed by a detailing of The Safety Planning Intervention (SPI) (32). To date, brief crisis interventions to prevent suicidal behavior have used contact, psychoeducation about warning signs and coping strategies, and/or strategies from cognitive therapy (CT) to treat patients at high risk for suicidal behavior. Interventions have been conducted during or after patient presentation to acute care settings for suicidal behavior, and family members or social supports, especially for adolescent patients, have also received education and training in responding to suicidal crisis. Taken together, findings are mixed and seem to suggest either contact interventions or targeted, brief individualized intervention provided during hospital stays or ER visits may reduce subsequent suicidal behavior in the short-term. Firm conclusions require more rigorous study, including analysis of third variables to illuminate which interventions work for whom.

Motto and Bostrom (33) developed a stand-alone, cost-effective suicide prevention intervention involving low-level contact between treatment providers and individuals at high-risk for suicide. Over five years, individuals who refused follow-up care post-inpatient discharge for suicidal behavior or depression received 24 personalized and unique letters from inpatient treatment staff. Letters simply offered well wishes and an opportunity for patient communication, should the recipient wish to write back. Letters were sent on a regular schedule of decreasing frequency. Motto and Bostrom (33) found the contact intervention was efficacious in reducing suicide rates for two years post-discharge. Carter et al. (34) partially replicated these findings. They found that sending monthly and then bi-monthly postcards to individuals after presentation at the ER for self-poisoning, regardless of suicide intent, significantly reduced the incidence of subsequent self-harm acts among female participants during the year post-discharge per hospital records. Findings from a study by Beautrais et al. (35), meanwhile, contrast with findings from prior studies of contact or *postcard* interventions. Differences in rates of representation to acute care services for self-harm were not different among individuals receiving versus not receiving postcards once presentations for self-harm in the year prior to the index event were considered. Beautrais et al. (35) concluded that the post card intervention may only work for certain subgroups of individuals at risk for suicide. This conclusion, in fact, aligns with findings

from Carter et al. (34) in which observed decreases in the repetition of self-harm among post card recipients was driven by decreased self-harm among women.

Despite recent findings which somewhat question the robustness of conclusions about the efficacy of postcard interventions for preventing suicide, contact interventions continue to be implemented and tested. Chen et al. (36) found that weekly supportive text messages were acceptable and largely perceived as helpful among patients who were discharged for self-harm from ERs or inpatient units in China. Also, In a multi-national, randomized, controlled trial, Fleischmann et al. (37) combined a contact intervention with a brief one-hour intervention conducted pre-ER discharge. The brief intervention provided education on risk factors and coping skills for suicidal crises. They found suicide attempters who received the brief intervention and follow-up contacts were significantly less likely to die by suicide in the 18-months following ER discharge.

Other existing brief, stand-alone crisis interventions focus on psychoeducation [e.g., (38-40)] and treatment motivation enhancement [e.g., (41)]. Means Restriction Education (42) is a stand-alone, brief intervention for parents of children and adolescents presenting at ERs with mental health concerns. Parents are informed of their child's suicide risk, provided education on the protective effect of means restriction, and aided in determining how to limit access to lethal means in their household. At two months follow-up, Kruesi et al. (38) found receipt of means restriction education was associated with parental restriction of firearms, prescription drugs and over-the-counter medications. Rotheram-Borus et al. (43) designed a three-part intervention to increase adherence to outpatient, follow-up care among female adolescent suicide attempters post-discharge from the ER. Staff education, a 20-minute video aimed at orienting the adolescent and her family to ER practices and the importance of aftercare, and a structured family session to problem-solve potential crisis situations and gain commitment to follow-up care comprised the *specialized ER care* intervention. Using a quasi-experimental design, the treatment developers found individuals who received specialized ER care were more likely to attend outpatient psychotherapy. Individuals receiving specialized care also trended towards attending more sessions and towards being more likely to complete the full course of psychotherapy than those who received usual ER care (43).

King et al. (40) developed and manualized an intervention for the prevention of suicidal behavior among high suicide-risk adolescents post-hospitalization called the Youth Nominated Support Team–Version II (YST-II). The intervention consisted of educating youth-nominated adults (who were mostly family members) on the at-risk adolescent's warning signs of suicide risk, his or her psychiatric disorder(s), and the adolescent's treatment plan. Information about available emergency services and effective communication with adolescents was also provided to adults. Adult supports, in turn, were directed to inquire weekly with the adolescent about involvement in healthy activities, psychosocial and other difficulties, and treatment engagement. Supports were encouraged to explicitly maintain a hopeful stance about the likelihood of improvement. In a randomized controlled trial comparing YST-II + treatment-as-usual (TAU) to TAU, adolescents with multiple attempts realized quicker decreases in their suicidal ideation post-hospitalization. After six weeks, however, suicidal ideation was not different between those who had and had not received YST + TAU. King et al. (40) concluded, "... the effect sizes for the benefits were small and inconsistent with a recommendation for widespread clinical application ... it is recommended that further research ... consider carefully the importance of a multi-faceted approach." (p. 891).

The SPI

The SPI is a very brief but comprehensive intervention developed from evidenced-based strategies (20–45 minutes) and identified as a best practice by the American Foundation for Suicide Prevention and Suicide Prevention Resource Center Registry for Suicide Prevention (www.sprc.org). It is rooted in CT in which the patient and provider collaboratively develop a written, personalized safety plan for patient reference in future suicidal crisis. SPI was developed as a stand-alone suicide prevention intervention to treat patients discharging from acute care settings who remained at suicide risk. The written safety plan, which is given to the patient at the end of the session, has six components. Included are warning signs of an impending suicidal crisis, a list of distraction activities, social contacts to distract from suicidal thoughts, a list of family members or friends to call for help, and a personalized list of available mental health professionals or agencies. A plan for limiting access to means is also made and documented in collaboration with the patient and his or her family members or friends. The hierarchy of the presentation of coping skills on the safety plan aims to enhance patient self-efficacy to manage crises. Internal resources, i.e., awareness of warning signs and distraction activities, are first steps. The patient is, however, instructed to skip initial steps and reach out for help should he or she feel imminently suicidal (44). The six steps of the SPI are detailed below.

Warning signs of suicidal crisis—The first step of the SPI presupposes detailed understanding of the suicide-related event that preceded presentation for acute services. Thus, this step is facilitated by detailed assessment of the index event. Warning signs may be thoughts, feelings, behaviors, images, events, or situations encountered by the patient. Stanley and Brown (44) highlight the need for warning signs to be specific and personal.

Internal coping strategies—Skills listed here should be readily available to the individual in isolation and should primarily serve to distract, though additional benefits such as feelings of mastery or pleasure are possible (44). Inquiries into the likelihood of engaging in listed activities and potential obstacles to completing the activities are undertaken. Should a patient suggest he or she is unlikely to do a specific activity when in-crisis, additional activities may be added to the list and/or obstacles to distracting may be problem-solved. Stanley and Brown (44) also suggest activities should be presented in an order that is naturally reinforcing; those skills that the patient identifies as most feasible and engaging should be listed first.

Social contacts that may distract from suicidal thoughts and urges—The next line of defense against suicidality in the SPI is social situations and support-system members who may distract the patient from his or her current distress. Questions which may help patients identify such resources include, “Who helps you take your mind off your problems at least for a little while?” and “Where can you go where you’ll have the opportunity to be around people in a safe environment?” (32). Examples of places where socialization naturally occurs include coffee shops, parks, and Alcoholics Anonymous (AA) meetings. Stanley and Brown (32) note patients should be encouraged to list a number of alternatives as any one individual or gathering may not be available during an individual’s time of need.

Family members or friends that may offer help—In this step, individuals list family members, friends, and trusted community members (e.g., AA sponsors or clergymen) who they can ask for help when in crisis. Individuals trusted to assist patients in crisis may be different than those who can distract the patient, and patients are encouraged to carefully consider who they would feel comfortable asking for help both over the short and long terms. As in previous steps, once helpers are identified, the patient and clinician troubleshoot potential difficulties reaching out for help when in crisis. Stanley and Brown

(32) note individuals may not, and should not be made to, identify someone to call for help. On the other hand, if the patient feels comfortable, he or she may be encouraged to proactively tell the support about his or her potential role in a crisis.

Professional and agency contacts to help resolve suicidal crises—A detailed list of agencies or professionals who the patient is willing to contact in crisis comprises this portion of the safety plan. Completion of this section provides the opportunity to both highlight the availability of resources and shape patient expectations for staff or professional response. Examples of agencies and individuals who may be listed in this section of the safety plan include the individual's primary mental health clinician, another mental health clinician, a 24-hour local urgent care service facility or emergency department, and the National Suicide Prevention Hotline: 800-273-TALK (8255). All entries should include phone numbers and addresses as appropriate.

Means restriction—The rationale for this step comes from understanding that limiting access to lethal means to suicide saves lives (45). The placement of the step towards the end of the SPI stems from a belief that patients are more hopeful once alternative coping skills are identified and thus more collaborative in removing or restricting means to end life (44). In this step, plans to secure firearms and remove or restrict access to lower lethality means are made. When possible and especially for highly-lethal means, e.g., firearms, help from family members, friends, supervising officers, or even the police may be solicited. Stanley and Brown (44) note that clinicians should be flexible in accepting restriction as opposed to removal when a patient is, for example, unwilling to remove a gun or medications from the house but willing to lock these materials in a cabinet within the house (44).

In addition to detailing the steps of the SPI, the intervention developers (32, 44) highlight two aspects of implementation. The plan should be developed collaboratively so it reflects the patient's personal warning signs and coping skills. Use of the safety plan in crisis should be rehearsed and barriers to using the plan should be addressed. Questions and comments which may facilitate the later discussion include: (i) "How likely is it that you will use the safety plan when you notice the warning signs that we have discussed?"; (ii) "What might get in the way or serve as a barrier to your using the safety plan?", and (iii) "Let's discuss some ways to deal with this problem(s) so that you will be able to use the safety plan when it would be the most helpful for you."

Adapting SPI for patients with bipolar disorder may involve ensuring known the warning signs for suicidal behavior among this group, e.g., increased agitation or mood lability, are considered and included when applicable during Step 1: identification of warning signs. Additionally, clinician familiarity with local bipolar disorder and mood-disorder support groups can aide in Step 2: identifying social contacts that may distract patients from their suicidal thoughts and urges.

The SPI is novel and clinically-significant for its balance of comprehensiveness, brevity, and timeliness. It is thus arguably of utmost clinical utility in keeping patients safe and reducing clinician anxiety over discharging individuals at risk for suicidal behavior. The brevity of the intervention and the ease with which it may be implemented, even after minimal training, address limits to resources in acute care settings. The delivery of the intervention at the time of suicidal crisis overcomes known difficulties engaging patients in ongoing outpatient treatment post-discharge from the ER and inpatient settings (46, 47). Preliminary data about its acceptability, feasibility, and perceived effectiveness are promising (48). A randomized controlled trial (RCT) is now underway to formally evaluate SPI.

Longer interventions for outpatients at risk for suicidal behavior

Clinicians in outpatient settings, especially those who treat patients with bipolar disorder, are responsible for individuals at suicide risk. While a few different types of longer-term (i.e., 10-session plus) psychosocial treatments, including psychodynamic approaches (49), have been designed and tested for the prevention of suicidal behavior among outpatients, interventions based on CT enjoy the largest evidence base. Thus, CT-based treatments to prevent suicidal behavior are summarized below. Evidence for the efficacy of Dialectical Behavior Therapy (DBT) (50), a treatment combining CT and acceptance-based strategies, is strongest. CT to prevent suicide attempts (51) and adapted Mindfulness-Based Cognitive Therapy (MBCT) (Williams, n.d.), an intervention which combines mindfulness training and CT techniques, may be effective and cost-effective psychosocial treatments to prevent suicidal behavior. Only DBT has been shown to reduce suicidal behavior among subjects with bipolar disorder.

Though originally designed to treat chronically suicidal and self-injuring individuals, DBT was manualized to treat borderline personality disorder (BPD) (50). Thus, evidence that DBT reduces suicidal behavior is based largely on outcomes among individuals with BPD. In four RCTs, individuals with BPD receiving DBT made fewer suicide attempts and had less suicidal ideation (52-55). Reductions in suicide attempts were greater among DBT recipients than among those who were treated by community experts or received structured supportive therapy (52, 54). Goldstein et al. (56) adapted DBT for adolescents with bipolar disorder. Results from their pilot study suggest DBT is acceptable and feasible with these adolescents and that it is effective in reducing their suicidal ideation. Despite promising results from this pilot trial, Koerner and Dimeff (57) caution against using DBT for bipolar disorder unless adequate trials of evidence-based treatments have been completed. General drawbacks to DBT include the intensive and expensive nature of the treatment. Standard outpatient DBT requires weekly individual and group psychotherapy sessions for one year.

Brown et al. (51) adapted CT for suicide attempters. Compared to recent suicide attempters receiving intensive case management and enhanced usual care, recent suicide attempters who received 10 sessions of CT were less likely to make a suicide attempt over 18 months (58). In an earlier study of CT to prevent the recurrence of suicidal behavior, Salkovskis et al. (59) also found CT was efficacious in reducing suicidal behavior.

Williams (n.d.) adapted MBCT for individuals with a history of suicidal depression and found that it was acceptable and feasible to them. A subset of individuals with bipolar disorder participating in this trial also realized reduced interepisode depression and anxiety (60). Adding further justification are empirical studies showing the applicability of Differential Activation Theory, the theory on which MBCT is based, to acute suicidality (61). The group and didactic nature of the treatment may also overcome known barriers to treatment among individuals at high risk for suicidal behavior treatments (62). We are currently adapting and testing MBCT for individuals with current suicidal ideation and a history of recent suicide-related behavior.

Conclusions

In the past decade, risk factors which place individuals at long-term risk for suicide have been identified, articulation of warning signs for imminent suicide risk, meanwhile, remains in its infancy. Nock et al. (63) recently used ecological momentary assessment (EMAs) to determine proximal interpersonal, intrapersonal and contextual factors to non-suicidal self-injury among adolescents. Extending EMA methods to the study of suicidal behavior could improve understanding of triggers and warning signs of acute suicidality. Such

understanding, in turn, would aid development of targeted interventions for suicide prevention.

To date, few outcome studies of suicide prevention interventions have been completed. Such study is thus a direction for future research. Assessment and intervention with suicidal patients presupposes suicidal individuals present to professionals prior to suicide. In reality, many (i.e., up to half) do not (64). When suicidal individuals present, they are much more likely to present to professionals in primary care settings or the ER than to mental health providers (65). Unfortunately, providers often (i.e., around two-thirds of the time) do not ask about suicidality when clinically indicated (64). Thus, training of primary care and emergency services providers in suicide risk assessment and management is needed.

Finally, no validated psychosocial intervention targeting suicidality among individuals with bipolar disorder is currently available (66). As suicide and suicide attempt are prevalent problems among these individuals, there is a need to develop suicide prevention efforts for this population. Comparing outcomes among individuals with bipolar disorder to those of other psychiatric populations receiving treatment, i.e., evaluation of diagnosis as a moderator of treatment outcome, is another approach to determining a suicide prevention intervention for individuals with this disorder.

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Table 1

Risk factors indicating short-term suicide behavior risk

Expert consensus: warning signs indicative of imminent suicide risk	Empirical study
Hopelessness	Suicidal ideation plus anxiety or agitation
Rage	Recent discharge from hospital or acute care setting
Anger	Benzodiazapine use among self-harming individuals presenting to the emergency room
Recklessness	Psychiatric treatment engagement among self-harming individuals presenting to the emergency room
Feeling trapped	Mixed or depressed episode for patients with bipolar disorder
Increased substance use	Early in the course of illness for patients with bipolar disorder
Social withdrawal	Within one year of lithium discontinuation for patients with bipolar disorder
Anxiety	
Agitation	
Changes in sleep	
Changes in mood	
No purpose or reasons for living	

Table 2
Randomized controlled trials of brief interventions to reduce suicide risk among adults and adolescents

Study	Sample ^a	Treatment arm	Control arm	Effects
Motto and Bostrom 2001 (33)	Depressed or suicidal inpatients not in treatment 30 days post-discharge	Contact	No treatment	(i) In years 1 and 2, lower suicide rate in the treatment group (HR = 0.53) (ii) In years 2–15, no difference in survival
Carter et al. 2005 (34)	Deliberate self-poisoners ^b	TAU + contact	TAU	(i) At one year, no difference between groups in proportion of individuals with repeat self-poisoning (ii) Lower risk of repetition of self-harm in the treatment group (RR = 0.55)
Beautrais et al. 2010 (35)	Suicide attempters or those with deliberate self-harm	TAU + contact	TAU	(i) At one year, fewer total self-harm ^b representations among the treatment group (IRR = 0.73) (ii) At one year, no difference between groups in proportion of individuals representing with repeat self-harm
Fleischmann et al. 2008 (37)	Suicide attempters	TAU + contact + psychoeducation	TAU	At 18 months post-discharge, there were fewer suicides in the treatment group than in the TAU group ($W = 0.18$)
King et al. 2009 (40)	Adolescents with significant SI or SA in the previous 4 weeks	TAU + psychoeducation and social support	TAU	(i) At 6 weeks, SI was lower among the treatment group ($d = 0.21$) (ii) No significant differences in SI between groups during weeks 6–12 of treatment or post-treatment at 6 and 12 months (iii) No difference in SA between groups

SI = suicidal ideation; SA = suicide attempt; TAU = treatment-as-usual; HR = high-risk; RR = risk ratio; IRR = incidence risk ratio.

^a All samples were recruited from acute care settings.

^b Suicide intent unknown.