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Suicidality in Pediatric Bipolar Disorder

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Risk for completed suicide in bipolar disorder (BP) is among the highest of all psychiatric disorders;¹ between 25% and 50% of adults with BP make at least one suicide attempt in their lifetime, and between 8% and 19% of individuals with BP will die from suicide.² Research indicates that between 20% and 65% of adults with BP experience onset in childhood,^{3,4} and those adults with early illness onset are at higher risk for suicidal behavior.^{4,5} Given the relative infancy of the field of clinical research examining the phenomenology and course of pediatric BP, it is not surprising that little is known about suicidal behavior in this population despite the apparent link between early illness onset and suicidality.

DEFINITIONS

To correct a history of inconsistent and unclear terminology regarding suicide-related behavior, O'Carroll and colleagues⁶ developed a defined set of terms. According to these guidelines, "suicide" is a fatal self-inflicted destructive act with explicit or implicit intent to die. "Suicide attempt" refers to a nonfatal, self-inflicted destructive act (not necessarily resulting in injury) with explicit or implicit intent to die. "Suicidal ideation" refers to thoughts of harming or killing oneself. "Suicidality" refers to all suicide-related behaviors and thoughts. These terms and definitions will be used throughout this article.

EPIDEMIOLOGY

Completed Suicide

Evidence from case-control studies of adolescent suicide victims indicates that BP in adolescence imparts a particularly elevated risk for completed suicide.^{7,8} Furthermore, reports from two longitudinal studies support significant mortality from suicide among pediatric BP patients. Srinath and colleagues⁹ reported a 3% suicide rate among pediatric bipolar disorder I (BPI) patients 5 years after index episode hospitalization, whereas Welner, Welner, and Fishman¹⁰ documented a 25% suicide completion rate among a BP adolescent inpatient sample (compared with 6% among unipolar [UP] patients) at 10-year follow-up.

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Suicide Attempt

Strober and colleagues¹¹ reported medically significant suicide attempts in 20% of an adolescent BPI sample over a 5-year follow-up. Goldstein and colleagues¹² documented a 32% lifetime suicide attempt rate among a large sample of youth diagnosed with BP; of these attempts, nearly 20% were rated to be moderate to severe medical lethality. Lewinsohn, Seeley, and Klein¹³ reported a 44% lifetime suicide attempt rate among adolescents with BP spectrum disorders—significantly elevated compared with 22% of UP depressed teens and 1% of healthy controls. In this sample, BP attempters (compared with UP attempters) were younger at first attempt, made more lethal attempts, and were more likely to make multiple attempts. Bhargoo and colleagues¹⁴ reported a 47% suicide attempt rate among BPI children and adolescents with an episodic pattern of mood symptomatology (one or more DSM-IV manic or hypomanic episodes), compared with a 15% attempt rate for patients with a chronic illness pattern (no discernable episodes).

Suicidal Ideation

Suicidal ideation can be thought of along a continuum from passive, nonspecific ideation (eg, “I wish I had never been born”) to active, specific ideation with intent and/or plan. High rates of suicidal ideation have been documented among youth with BP. Cross-sectional data from Faedda and colleagues¹⁵ indicate a 30% rate of suicidal ideation among BP youth assessed at an outpatient mood disorders clinic. Craney and Geller¹⁶ reported a 25% rate of suicidal ideation at intake among youth with BP assessed as outpatients. With respect to lifetime rates of suicidal ideation, Lewinsohn and colleagues found that 72% of a community sample of youth with BP endorsed a lifetime history of suicidal ideation—significantly elevated compared with 52% of that of youth with UP and 41% of youth with subsyndromal BP. Similarly, in a large multisite investigation of BP in youth, Axelson and colleagues¹⁷ reported a lifetime rate of suicidal ideation of more than 75%.

RISK FACTORS

Given preliminary studies documenting the elevated incidence of suicidal behavior among BP youth, Lewinsohn and colleagues¹³ have called for comparative studies within the BP group to identify risk factors differentiating pediatric BP patients with a history of attempt from those without. This approach has been widely used in the adult literature, yielding a fairly consistent set of risk factors for suicidal behavior among BP adults. Yet little is known about the extent to which these risk factors for suicidal behavior among BP adults apply to youth with the illness. Identification of such risk factors may serve to inform the development of both preventive and therapeutic interventions for this high-risk group.

Sociodemographic Factors

Among adults with BP, males have higher rates of completed suicide than females, whereas males and females have similar rates of suicide attempt.¹⁸ Multiple studies of BP adults failed to find racial differences in rates of suicidal behavior among BP adults. Among youth with BP, one study found no significant differences in terms of sex, race, or socioeconomic status between BP youth with a history of suicide attempt and those without.¹⁹

Clinical Factors

Age at illness onset—The adult BP literature indicates that earlier age of BP illness onset is associated with higher suicide risk.⁵ It is important to note, however, that the general literature on youth suicide indicates that children are less likely to have attempted suicide than are adolescents,²⁰ likely due to a complex interaction of developmental, psychological, and family factors. In a sample of BP youth aged 7–17 years, a higher percentage of subjects with

a history of suicide attempt (compared with subjects with no history of suicide attempt) reported illness onset after age 12.¹² It is, therefore, possible that a critical period for vulnerability to the development of suicidal behavior exists for pediatric onset, compared with adult-onset, BP.

Bipolar subtype—The literature on suicide attempts and bipolar subtypes among adults with BP is inconsistent, with some studies reporting higher attempt rates among BPII patients,²¹ others associating a BPI diagnosis with higher risk,²² and still others finding no differences between subtypes.²³ Goldstein and colleagues¹² found no differences in lifetime rates of suicide attempt between bipolar subtypes in a large clinical sample of BP youth.

Clinical state—Retrospective, cross-sectional, and prospective studies of adults with BP support a strong association between mixed states and suicidality.²⁴ In fact, of all phases of BP illness, rates of both suicidal ideation and suicide attempt are highest during mixed episodes.²⁵ One study reported an incidence of suicide attempt 37 times higher during mixed episodes.²⁶ Consistent with these findings are data from Dilsaver and colleagues,²⁷ indicating that of 82 BP adolescents in a mixed state, 67% reported suicidal ideation. Mixed states also independently contributed to increased risk for suicidal behavior for girls in this sample.²⁸ A history of mixed episodes was also significantly associated with a lifetime history of suicide attempt in a large sample of BP youth.¹²

Comorbid conditions—Comorbidity is the rule rather than the exception among youth who attempt and complete suicide, with up to 70% of suicidal youth meeting criteria for multiple psychiatric conditions.²⁹ Furthermore, as the number of comorbid conditions increases so does the risk for suicide attempt.³⁰ Only one study to date has examined comorbid conditions associated with suicidal behavior in pediatric BP. In this study, Goldstein and colleagues¹² showed that BP youth with a substance use disorder were three times more likely to report a history of suicide attempt than those without a comorbid substance use disorder. Additionally, a comorbid panic disorder was also associated with higher rates of suicidal behavior in youth with BP in this sample. Although no studies to date have expressly studied youth suicide completers diagnosed with BP, among mood-disordered youth who completed suicide, two studies reported high rates of comorbid substance abuse, particularly among males. In fact, more than 50% of mood-disordered male suicide completers in both samples had a comorbid substance abuse disorder.^{31,32} Comorbid substance abuse increases the risk for attempted and completed suicide, both through the negative impact of substance use on mood disorder as well as the increased risk of lethal suicidal behavior while under the influence. This is particularly true among older adolescent males when coupled with disruptive behavior disorders. Although conduct disorder and related disruptive disorders are more likely to result in suicide and suicidal behavior when comorbid with substance use, disruptive disorders also independently contribute to suicide risk.³³

Trauma history—Multiple studies demonstrate a strong link between a history of childhood maltreatment and suicidality. In a study of BP youth, Goldstein and colleagues¹² found a significant association between a history of abuse (physical and/or sexual abuse) and a history of suicide attempt. The relation between early maltreatment and suicidality is substantiated to a far greater degree among adults with BP, among whom a history of physical and/or sexual abuse is strongly associated with increased risk for suicide attempt.³⁴ In fact, the occurrence of both types of abuse appears to have an additive effect on risk for suicidal behavior.⁵

Psychosis—In adults, the risk associated with psychosis is unclear, with some studies documenting increased suicidal behavior among BP patients with psychotic features³⁵ and others finding no difference.³⁶ Among youth with BP, one study demonstrated an association between psychosis and a lifetime history of suicide attempt.¹²

Psychological Factors

Rucklidge³⁷ reported on several psychological factors differentiating BP youth with suicidal ideation from those without; namely, hopelessness, low self-esteem, external locus of control, and problems regulating anger were significantly greater among suicidal BP youth. Among BP adults, trait aggression³⁸ and impulsivity³⁹ are linked to increased risk for suicide attempt; however, these constructs have yet to be explored in a sample of youth with BP.

Suicidal ideation—In general, youth with frequent and severe suicidal ideation (ie, high levels of intent and/or planning) have about a 60% chance of making a suicide attempt within 1 year of ideation onset.⁴⁰

Previous suicidal behavior—Among adults with BP, multiple studies indicate that one of the most potent predictors of future suicidal behavior is past suicidal behavior.²⁶ A history of suicide attempt in adults with BP increases the risk for subsequent attempt four-fold.⁴¹ Follow-up studies of adolescent suicide attempters with a range of psychopathology report a reattempt rate ranging from 6% to 15% per year, with the greatest risk occurring within 3 months of the initial attempt.⁴² The period immediately following discharge from an inpatient psychiatric unit is associated with particularly high risk.⁴³

Youth with a history of attempting suicide using methods high in medical lethality, such as hanging, shooting, or jumping, are at especially high risk for eventual completed suicide.⁴⁴ However, it is not necessarily the case that an attempt of low lethality reflects low suicidal intent, particularly among younger children who may overestimate the lethality of means.

Availability of lethal means—Evidence from case-control studies in youth indicates that firearms are much more common in the homes of suicide completers than attempters and controls. If a loaded gun is in the home, it is highly likely to be selected as a means of suicide and is associated with a 30-fold increased risk for completed suicide even among youth with no apparent psychopathology.⁴⁵

Biological Factors

The neurobiology of suicide is a well-researched area, but little has been done in younger samples.⁴⁶ The most consistent biological finding is a relationship between altered central serotonin, as assessed by neuroendocrine challenge tests and cerebrospinal fluid (CSF) studies in attempters and by receptor binding in postmortem studies. Studies link low CSF 5-hydroxyindoleacetic acid (5-HIAA), a metabolite of serotonin, with impulsive aggression and suicidal behavior across psychiatric conditions in adults.⁴⁷ Greenhill and colleagues⁴⁸ found an association between serotonin measures and medically serious attempts within a small sample of depressed adolescent suicide attempter inpatients.

In a series of postmortem studies, Pandey and colleagues^{49–51} showed that adolescent suicide completers, compared with deceased controls without disorder, have increased 5-HT_{2A} binding, decreased protein kinase A (PKA) and C (PKC) activity, down-regulation of cAMP response element binding, and increased activity of brain-derived neurotrophic factor in the prefrontal cortex and hippocampus (except PKA, which was not different in hippocampus). These findings are similar to those reported for adults, which suggest involvement of the serotonin system as well as systems involved in cell signaling and signal modulation.

Zalsman and colleagues⁵² examined the allelic association of the serotonin transporter (5-HTTLPR) with suicidal behavior and related traits in a sample of Israeli suicidal inpatients and found no significant relationship. However, patients with the *ll* genotype were significantly different from patients with the *ls* genotype on a measure of trait violence. In a prospective

longitudinal study of a New Zealand birth cohort, Caspi and colleagues⁵³ found that the *s* allele of 5-HTTLPR in the presence of stressful life events resulted in increased rates of depression and suicidality.

Family Factors

Research suggests both genetic and environmental mechanisms for the familial transmission of suicidal behavior in BP, and evidence suggests that suicidal behavior is transmitted in families distinct from its association with psychiatric illness.

Family history—Retrospective studies indicate that BP adults with a history of suicide attempt are more likely to report a positive family history of suicide.^{54,55} Several studies also support an association between a family history of suicidal behavior and suicidal behavior in offspring.⁵⁶ Data from Brent and colleagues⁵⁷ indicate that offspring of mood-disordered suicide attempters have a significantly higher rate of suicidal behavior themselves compared with that of offspring whose parents had no history of suicidal behavior. Goldstein and colleagues¹² similarly found elevated rates of suicidal behavior in the families of BP youth who endorsed a lifetime history of suicide attempt.

Family environment—Youth who complete suicide are more likely than community controls to come from nonintact families of origin;^{58,59} however, this question has not been expressly examined among youth with BP. Recent findings indicate no differences in the family constellation of BP youth who endorse suicidal ideation in the context of the current depressive episode, compared with nonsuicidal BP youth.⁶⁰

Several studies have found that loss of a parent to death or divorce, or living apart from one or both biological parents, is a significant risk factor for completed suicide in youth.^{61,62} Lewinsohn and colleagues²⁹ found an association between loss of a parent before age 12 years and multiple suicide attempts.

Similarly, in a sample of BP youth, Goldstein and colleagues⁶⁰ reported that suicidal BP youth endorsed a greater number of stressful family events over the prior year, including death of a family member as well as parental absence in the home.

There is a consistent literature linking family discord with youth suicide and suicide attempts.^{59,63} The family environments of suicide attempters are characterized by high levels of discord and violence and are perceived as less supportive and more conflictual than those of nonattempters.^{58,59} In one study of youth diagnosed with BP, those who endorsed suicidal ideation in the context of the current depressive episode reported greater conflict with their mother, increased arguments with parents over the past year, and rated their family environment as significantly less adaptable.⁶⁰

ASSESSMENT

The best way to assess for suicidality is by asking the child/adolescent direct questions. Given that suicidality is so common among youth with BP, clinicians treating children and adolescents with the illness should evaluate for the presence of suicidality.⁶⁴ Assessment of the individuals' risk for suicidal behavior includes examining for the presence of specific known risk factors (see Risk Factors, above).

Self-administered scales are useful for screening with this population, since research indicates that adolescents disclose suicidality more readily on self-report than they do in a face-to-face interview. Similarly, adolescents are more likely to endorse suicidality if interviewed without a parent/guardian present. In the event that the teen endorses any item on a suicidality scale, it

is strongly recommended that the clinician follow up with the patient regarding his/her safety. It is important to note that there is no evidence indicating that asking about suicidal thoughts or behaviors precipitates suicidality.

Thorough assessment of suicidal ideation includes questions regarding both severity (intent) and pervasiveness (frequency and intensity). Suicidal ideation characterized by a high degree of severity and pervasiveness is associated with a greater likelihood of suicide attempt in adolescents.²⁹ The clinician should also conduct a thorough and detailed review of prior suicidal behavior.

Suicidal Intent

Suicidal intent is the extent to which the individual wishes to die. Given findings that adolescents may disclose suicidal ideation on self-report ratings but deny this information during interview, assessment of suicidal risk should incorporate both means of assessment.

With regard to suicidal intent, the clinician should explore four components:⁶⁵ (1) belief about intent (ie, the extent to which the individual wished to die), (2) preparatory behavior (eg, giving away prized possessions; writing a suicide note), (3) prevention of discovery (ie, planning the attempt so that rescue is unlikely), and (4) communication of suicidal intent. High intent, as evidenced by expressing a wish to die, planning the attempt ahead of time, timing the attempt to avoid detection, and confiding suicide plans before the attempt, is associated with recurrent suicide attempts and with suicide completion.

Suicide Plan and Access to Means

Assessment should include inquiry regarding specific plans for inflicting self-harm as well as access to means considered (see Means Restriction, below).

Medical Lethality

Suicide attempts of high medical lethality (eg, hanging, shooting) are frequently characterized by high suicidal intent, and individuals who use more medically lethal means are at higher risk of completing suicide. However, evidence also indicates that an impulsive attempter with relatively low intent but ready access to lethal means may also engage in a medically serious, and even fatal, attempt.³⁰

Precipitant

The most common precipitants for adolescent suicidal behavior are interpersonal conflict or loss, most often involving a parent or a romantic relationship. Legal and disciplinary problems also frequently precipitate suicidal behavior, particularly among youth with comorbid conduct disorder and substance abuse. Precipitants that are chronic and ongoing, especially recurrent physical or sexual abuse, are associated with poorer outcomes, including recurrence of suicidal behavior and even subsequent completion.³⁰

Motivation

Motivation is the reason the individual cites for his/her suicidality. Individuals with high suicidal intent indicate that their primary motivation is either to die or to permanently escape an emotionally painful situation, and these youth are at elevated risk for reattempt.⁶⁶ Many youth who attempt suicide report that they are motivated by the desire to influence others or to communicate a feeling. Understanding the motivation for suicidal behavior has important implications for treatment, as intervention may focus on helping youth identify their needs more explicitly and find less dangerous ways to get their needs met.

Consequences

The consequences of suicidality refer to any environmental contingencies that occur in response to suicidality. Particularly salient are whether there are naturally occurring contingencies in the environment that reinforce suicidal behavior (eg, increased attention and support, decreased demands and responsibilities). However, positive reinforcement from the environment does not necessarily indicate that the individual acted purposefully to gain the reinforcement.

TREATMENT

Clinical Management

The clinical management of suicidality in BP includes the treatment of the underlying mood disorder and comorbid disorders (eg, substance abuse), minimizing risk factors, maximizing protective factors, and means restriction. Few clinical trials have examined the treatment of adolescent suicidality in general, and even less is known about suicidality in pediatric BP. In fact, many treatment studies exclude suicidal youth and do not report outcomes related to suicidality. Data from psychosocial and pharmacological studies among depressed youth suggest that the treatment of depression may not be sufficient to reduce suicidal risk; rather, specific treatments targeting suicidality may be required.⁶⁷

Safety Planning

A safety plan is a hierarchically arranged list of strategies that the patient agrees to employ in the event of a suicidal crisis. The development of a safety plan is one of the most critical parts of the assessment and treatment of suicidal youth and involves collaboration between the clinician, patient, and family. On an outpatient basis, the clinician implements the safety plan once it is determined that the patient is safe to maintain as an outpatient; in fact, the clinician may use the safety plan to help determine the appropriate level of care (ie, the inability to collaborate on a safety plan may be indicative of the need for a higher level of care). However, the clinician should avoid the use of coercion when negotiating the safety plan, so as not to mask the adolescent's suicidal risk.

The first strategy is to eliminate the availability of lethal means in the patient's environment, including firearms, ammunition, and pills. Next, a no-harm agreement is negotiated between the adolescent, parents, and clinician that in the event the adolescent has suicidal urges, he/she will implement coping skills, inform a responsible adult, and/or call the clinician or emergency room. The clinician then works with the patient to develop a plan for coping with suicidal urges. The clinician asks the patient to identify the warning signs of a suicidal crisis; these may include specific thoughts (eg, "I hate my life"), emotions (eg, despair), and/or behaviors (eg, social isolation). Risk factors for that individual may also be identified (eg, not getting enough sleep). The safety plan involves a stepwise increase in the level of intervention from internal coping strategies to external strategies. Primarily, the clinician encourages the patient to consider internal strategies or coping skills he/she can employ without the assistance of other people (eg, distracting by playing a computer game). In the event that internal strategies are insufficient, patients should identify key figures who can be enlisted to help, including responsible adults. Their contact information should be made readily available to the patient.

Few studies have examined the effectiveness of safety plans. One quasi-experimental study showed a reduction in suicide attempts among youth at high risk for suicide after following a one-session intervention that included a written safety plan with a no-harm contract.⁶⁸ A recent review found that no-harm contracts alone are not a sufficient method for suicide prevention.⁶⁹

Means Restriction

Few studies have evaluated the effectiveness of restriction of access to lethal means. Studies in psychiatric and pediatric outpatient settings have not found a significant effect of parental psychoeducation on securing access to lethal means.⁷⁰ However, treatment guidelines strongly recommend the removal of guns from the homes of at-risk youth. Specific elements of psychoeducation regarding access to lethal means may be critical in decreasing risk—insisting on removal of the gun (rather than merely securing it), speaking directly to the gun owner, and ascertaining the perceived risks of removing the gun. Some parents will be unwilling to remove guns but would be willing to secure them.⁷⁰ Therefore, clinicians may reduce risk by exploring alternatives to removal, including storing guns locked, unloaded, and/or disassembled.

Inpatient Hospitalization

Although psychiatric hospital admission is believed to provide a safe environment for suicidal patients to resolve acute suicidal crises, research has not demonstrated that inpatient hospitalization decreases suicide risk. In fact, one study conducted in Australia demonstrated no significant reduction in suicidal ideation or attempts over 3 years following hospitalization at a specialist inpatient child and adolescent mental health service.⁷¹ Nonetheless, this can be a viable option to provide a safe environment during the short term as well as to stabilize and manage mood and medications. It is important to note that among individuals hospitalized for a suicide attempt, the highest risk period for suicide and reattempt occurs after discharge from the hospital,⁴³ making the transition particularly important.

Psychotherapy Approaches

Guidelines for the management of suicidality in adult BP indicate that adjunctive psychosocial intervention is a critical component of suicide risk reduction.^{38,72,73} Such recommendations are largely based on studies demonstrating the efficacy of specific empirically supported psychosocial treatment models in delaying relapse, hastening recovery, and improving functioning in bipolar patients.^{74,75} However, the extent to which these approaches influence suicidality in BP has not yet been expressly examined.

It is possible that “prevention of suicide in bipolar patients is...inextricably bound to the prevention of further affective episodes,”⁷⁶ such that affective symptoms and suicidality concurrently respond to treatment. However, data from psychosocial and pharmacological studies of suicidal individuals with an array of axis I and II pathology suggest that therapy targeting illness symptoms may not be sufficient to reduce suicidal risk.^{77,78} If the same is true in BP, specific treatments targeting suicidality in this population may be required above and beyond standard treatments for mood disorder.^{72,79}

Psychotherapy approaches for youth with BP are in various stages of treatment development. These include a multi-family psychoeducational group approach for families of school-aged BP children,⁸⁰ a modified version of family-focused treatment for adolescents with BP and their families (FFT-A),⁸¹ a model combining FFT with cognitive-behavioral therapy for school-aged BP children,⁸² and an adaptation of interpersonal and social rhythm therapy for adolescents.⁸³ Each model has shown promise in reducing mood symptoms. However, none of these models expressly targets suicidality, and outcomes related to suicidality in these trials are not reported. Specific psychosocial treatments that target the management of suicidality, such as dialectical behavior therapy (DBT),⁸⁴ have been recommended in the American Academy of Child and Adolescent Psychiatry (AACAP) treatment guidelines for pediatric BP. In an open pilot study, Goldstein and colleagues¹⁹ demonstrated significant improvement in suicidal ideation and nonsuicidal self-injurious behavior from pre- to post-treatment with an adapted version of DBT for adolescents with BP and their families.

Pharmacological Approaches

Research supports the protective effects of lithium treatment against suicide among adults with BP,⁸⁵ with long-term lithium use associated with an eight-fold reduction in completed suicide and suicide attempts.⁸⁶ However, the literature on treatment of suicidality with other classes of medications, including antidepressants, anticonvulsants, and atypical antipsychotics, remains inconclusive.⁸⁷ No studies have been conducted to date examining the impact of any medication on suicidality in youth with BP.

FUTURE DIRECTIONS

The public health implications of suicidality among youth with BP are serious. Although some progress has been made in improving our understanding of risk factors for suicidality in BP youth, a great deal remains unknown about the effective prevention and treatment of suicidality in this population. Recommended directions for future research include increased inclusion of suicidal youth in research studies, treatment studies aimed at prevention, and studies examining the neurobiology associated with suicidality in BP youth.

SUMMARY

- Youth with BP exhibit high rates of suicidal ideation and behavior.
- Risk factors for suicidality in BP youth have begun to be identified, and they include psychosis, mixed episodes, history of abuse, family history of suicidal behavior, and comorbid substance use.
- Assessment of suicidal ideation should include attention to both severity (intent) and pervasiveness (frequency and intensity).
- Assessment of suicidal individuals should include explicit questions regarding plans for self-harm as well as determination of access to lethal means.
- Clinical management of suicidal youth includes safety planning with the adolescent and family members, means restriction, and inpatient hospitalization when warranted.
- Data from psychosocial and pharmacological studies suggest that treatment of the underlying mood disorder and comorbid conditions may not be sufficient to reduce suicidal risk in BP youth; rather, specific treatments targeting suicidality may be required and may include pharmacological and psychosocial interventions.

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References

1. Baldessarini RJ, Tondo L. Suicide risk and treatments for patients with bipolar disorder. *J Am Med Assoc* 2003;290(11):1517–8.
2. Goodwin, FK.; Jamison, K. *Manic-depressive illness*. 21. New York: Oxford University Press; 1990. p. 938
3. Lish JD, Dime-Meehan S, Whybrow PC, et al. The National Depressive and Manic-Depressive Association (DMDA) survey of bipolar members. *J Affect Disord* 1994;31(4):281–94. [PubMed: 7989643]
4. Perlis RH, Miyahara S, Marangell LB, et al. Long-term implications of early onset in bipolar disorder: data from the first 1000 participants in the systematic treatment enhancement program for bipolar disorder (STEP-BD). *Biol Psychiatry* 2004;55:875–81. [PubMed: 15110730]

5. Leverich GS, Altshuler LL, Frye MA, et al. Factors associated with suicide attempts in 648 patients with bipolar disorder in the Stanley Foundation Bipolar Network. *J Clin Psychiatry* 2003;64(5):506–15. [PubMed: 12755652]
6. O'Carroll PW, Berman AL, Maris RW, et al. Beyond the Tower of Babel: a nomenclature for suicidology. *Suicide Life Threat Behav* 1996;26:237–52. [PubMed: 8897663]
7. Brent DA, Perper JA, Goldstein CE, et al. Risk factors for adolescent suicide: a comparison of adolescent suicide victims with suicidal inpatients. *Arch Gen Psychiatry* 1988;45:581–8. [PubMed: 3377645]
8. Brent DA, Perper JA, Moritz G, et al. Psychiatric risk factors of adolescent suicide: a case control study. *J Am Acad Child Adolesc Psychiatry* 1993;32:521–9. [PubMed: 8496115]
9. Srinath S, Reddy Y, Girimaji SR, et al. A prospective study of bipolar disorder in children and adolescents from India. *Acta Psychiatr Scand* 1998;98(6):437–42. [PubMed: 9879784]
10. Welner A, Welner Z, Fishman R. Psychiatric adolescent inpatients: eight to ten-year follow-up. *Arch Gen Psychiatry* 1979;36(6):698–700. [PubMed: 444023]
11. Strober M, Schmidt-Lackner S, Freeman R, et al. Recovery and relapse in adolescents with bipolar affective illness: a five-year naturalistic, prospective follow-up. *J Am Acad Child Adolesc Psychiatry* 1995;34:724–31. [PubMed: 7608045]
12. Goldstein TR, Birmaher B, Axelson D, et al. History of suicide attempts in pediatric bipolar disorder: factors associated with increased risk. *Bipolar Disord* 2005;7:525–35. [PubMed: 16403178]
13. Lewinsohn, PM.; Seeley, JR.; Klein, DN. Bipolar disorder in adolescents: epidemiology and suicidal behavior. In: Geller, B.; DelBello, MP., editors. *Bipolar disorder in childhood and early adolescence*. New York: Guilford Press; 2003. p. 7-24.
14. Bhangoo RK, Dell ML, Towbin KE, et al. Clinical correlates of episodicity in juvenile mania. *J Child Adolesc Psychopharmacol* 2003;13(4):507–14. [PubMed: 14977463]
15. Faedda GL, Baldessarini RJ, Glovinsky IP, et al. Pediatric bipolar disorder: phenomenology and course of illness. *Bipolar Disord* 2004;6:305–13. [PubMed: 15225148]
16. Craney JL, Geller B. A prepubertal and early adolescent bipolar disorder-I phenotype: review of phenomenology and longitudinal course. *Bipolar Disorder* 2003;5:243–56.
17. Axelson DA, Birmaher B, Strober M, et al. Phenomenology of children and adolescents with bipolar spectrum disorders. *Arch Gen Psychiatry* 2006;63:1139–48. [PubMed: 17015816]
18. Hawton K, Sutton L, Haw C, et al. Suicide and attempted suicide in bipolar disorder: a systematic review of risk factors. *J Clin Psychiatry* 2005;66(6):693–704. [PubMed: 15960561]
19. Goldstein TR, Axelson DA, Birmaher B, et al. Dialectical behavior therapy for adolescents with bipolar disorder: a one year open trial. *J Am Acad Child Adolesc Psychiatry* 2007;46(7):820–30. [PubMed: 17581446]
20. Spirito, A. Understanding attempted suicide in adolescence. In: Spirito, A.; Overholser, JC., editors. *Evaluating and treating adolescent suicide attempters*. San Diego (CA): Academic Press; 2003. p. 1-18.
21. Rihmer Z, Pestaloty P. Bipolar II disorder and suicidal behavior. *Psychiatr Clin North Am* 1999;22(3):667–73. [PubMed: 10550861]
22. Perugi G, Musetti L, Pezzica P, et al. Suicide attempts in primary major depression subtypes. *Psychiatria Fennica* 1988;19:95–102.
23. Slama F, Bellivier F, Henry C, et al. Bipolar patients with suicidal behavior: Toward the identification of a clinical subgroup. *J Clin Psychiatry* 2004;65(8):1035–9. [PubMed: 15323586]
24. Oquendo MA, Waternaux C, Brodsky B, et al. Suicide behavior in bipolar mood disorder: clinical characteristics of attempters and nonattempters. *J Affect Disord* 2000;59:107–17. [PubMed: 10837879]
25. Valtonen HM, Suominen K, Mantere O, et al. Suicidal behavior during different phases of bipolar disorder. *J Affect Disord* 2007;97:101–7. [PubMed: 16837060]
26. Valtonen HM, Suominen K, Haukka J, et al. Differences in incidence of suicide attempts during phases of bipolar I and II disorders. *Bipolar Disord* 2008;10:588–96. [PubMed: 18657243]
27. Dilsaver SC, Benazzi F, Akiskal H. Mixed states: the most common outpatient presentation of bipolar depressed adolescents? *Psychopathology* 2005;38:268–72. [PubMed: 16179813]

28. Dilsaver SC, Benazzi F, Rihmer Z, et al. Gender, suicidality, and bipolar mixed states in adolescents. *J Affect Disord* 2005;87:11–6. [PubMed: 15944138]
29. Lewinsohn PM, Rohde P, Seeley JR. Adolescent suicidal ideation and attempts: prevalence, risk factors, and clinical implications. *Clin Psychol Sci Pract* 1996;3:25–46.
30. Brent DA, Baugher M, Bridge J, et al. Age and sex-related risk factors for adolescent suicide. *J Am Acad Child Adolesc Psychiatry* 1999;38(12):1497–505. [PubMed: 10596249]
31. Marttunen MJ, Aro HM, Henriksson MM, et al. Mental disorders in adolescent suicide: DSM-III-R axes I and II diagnoses in suicides among 13- to 19-year-olds in Finland. *Arch Gen Psychiatry* 1991;48:834–9. [PubMed: 1929774]
32. Shaffer D, Gould MS, Fisher P, et al. Psychiatric diagnosis in child and adolescent suicide. *Arch Gen Psychiatry* 1996;53:339–48. [PubMed: 8634012]
33. Fergusson DM, Horwood LJ, Lynskey MT. The stability of disruptive childhood behaviors. *J Abnorm Child Psychol* 1995;23(3):379–96. [PubMed: 7642843]
34. Leverich GS, McElroy SL, Suppes T, et al. Early physical and sexual abuse associated with an adverse course of bipolar illness. *Biol Psychiatry* 2002;52(8):288–97. [PubMed: 11958779]
35. Axelsson R, Lagerkvist-Briggs M. Factors predicting suicide in psychotic patients. *Eur Arch Psychiatry Clin Neurosci* 1992;241(5):259–66. [PubMed: 1606189]
36. Black D, Winokur G, Nasrallah A. Effect of psychosis on suicide risk in 1,593 patients with unipolar and bipolar affective disorders. *Am J Psychiatry* 1988;145(7):849–52. [PubMed: 3381930]
37. Rucklidge JJ. Psychosocial functioning of adolescents with and without paediatric bipolar disorder. *J Affect Disord* 2006;91:181–8. [PubMed: 16478633]
38. Oquendo MA, Mann JJ. Identifying and managing suicide risk in bipolar patients. *J Clin Psychiatry* 2001;62(25):31–4. [PubMed: 11765094]
39. Michaelis BH, Goldberg JF, Davis GP, et al. Dimensions of impulsivity and aggression associated with suicide attempts among bipolar patients: a preliminary study. *Suicide Life Threat Behav* 2004;34(2):172–6. [PubMed: 15191273]
40. Kessler RC, Borges G, Walters EE. Prevalence of and risk factors for lifetime suicide attempts in the national comorbidity survey. *Arch Gen Psychiatry* 1999;56(7):617–26. [PubMed: 10401507]
41. Marangell LB, Bauer MS, Dennehy EB. Prospective predictors of suicide and suicide attempts in 1556 patients with bipolar disorder followed for up to 2 years. *Bipolar Disord* 2006;8:566–75. [PubMed: 17042830]
42. Goldston DB, Daniel SS, Reboussin DM, et al. Suicide attempts among formerly hospitalized adolescents: a prospective naturalistic study of risk during the first 5 years after discharge. *J Am Acad Child Adolesc Psychiatry* 1999;38(6):660–71. [PubMed: 10361783]
43. Kjelsberg E, Neegaard E, Dahl AA. Suicide in adolescent psychiatric inpatients: incidence and predictive factors. *Acta Psychiatr Scand* 1994;89:235–41. [PubMed: 8023689]
44. Beautrais AL. Further suicidal behavior among medically serious suicide attempters. *Suicide Life Threat Behav* 2004;34(1):1–11. [PubMed: 15106883]
45. Brent DA, Bridge J. Firearms availability and suicide: evidence, interventions, and future directions. *Am Behav Sci* 2003;46:1192–210.
46. Mann JJ. Neurobiology of suicidal behavior. *Nat Rev Neurosci* 2003;4:819–28. [PubMed: 14523381]
47. Mann JJ. The neurobiology of suicide. *Nat Med* 1998;4(1):25–30. [PubMed: 9427602]
48. Greenhill, L.; Waslick, B.; Parides, M., et al. Biological studies in suicidal adolescent inpatients. Scientific Proceedings of the 42nd Annual Meeting of the American Academy of Child and Adolescent Psychiatry; New Orleans (LA). October 1995;
49. Pandey GN. Decreased catalytic activity and expression of protein kinase C isozymes in teenage suicide victims: a postmortem brain study. *Arch Gen Psychiatry* 2004;61(7):685–93. [PubMed: 15237080]
50. Pandey GN, Conley RR, Pandey SC, et al. Benzodiazepine receptors in the postmortem brain of suicide victims and schizophrenic subjects. *Psychiatry Res* 1997;71(3):137–49. [PubMed: 9271787]
51. Pandey GN, Dwivedi Y, Rizavi HS, et al. Higher expression of serotonin 5-HT_{2A} receptors in the postmortem brains of teenage suicide victims. *Am J Psychiatry* 2002;159:419–29. [PubMed: 11870006]

52. Zalsman G, Frisch A, King RA, et al. Case control and family-based studies of tryptophan hydroxylase gene A218C polymorphism and suicidality in adolescents. *Am J Med Genet* 2001;105:451–7. [PubMed: 11449398]
53. Caspi A, Sugden K, Moffitt TE, et al. Influence of life stress on depression: moderation by a polymorphism in the 5-HT gene. *Science* 2003;301:386–9. [PubMed: 12869766]
54. Roy A. Genetic and biologic risk factors for suicide in depressive disorders. *Psychiatr Q* 1993;64:345–58. [PubMed: 8234546]
55. Stallone F, Dunner DL, Ahearn J, et al. Statistical predictions of suicide in depressives. *Compr Psychiatry* 1980;21(5):381–7. [PubMed: 7418380]
56. Gould MS, Greenberg T, Velting DM, et al. Youth suicide risk and preventative interventions: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry* 2003;42(4):386–405. [PubMed: 12649626]
57. Brent DA, Oquendo M, Birmaher B, et al. Familial pathways to early-onset suicide attempt: risk for suicidal behavior in offspring of mood-disordered suicide attempters. *Arch Gen Psychiatry* 2002;59:801–7. [PubMed: 12215079]
58. Brent DA, Perper JA, Moritz G, et al. Familial risk factors for adolescent suicide: a case-control study. *Acta Psychiatr Scand* 1994;89:52–8. [PubMed: 8140907]
59. Gould MS, Fisher P, Parides M, et al. Psychosocial risk factors of child and adolescent completed suicide. *Arch Gen Psychiatry* 1996;53:1155–62. [PubMed: 8956682]
60. Goldstein, TR.; Sinwell, N.; Birmaher, B., et al. Family environment and suicidality among bipolar youth. Poster presented at the annual Pediatric Bipolar Disorder Conference; Cambridge (MA). March 28–29, 2008;
61. Agerbo E, Nordentoft M, Mortensen PB. Familial, psychiatric, and socioeconomic risk factors for suicide in young people: Nested case-control study. *BMJ: British Medical Journal* 2002;325(7355): 74–7.
62. Shaffi M, Steltz-Lenarsky J, Derrick AM, et al. Comorbidity of mental disorders in the post-mortem diagnosis of completed suicide in children and adolescents. *J Affect Disord* 1998;15:227–33.
63. Fergusson DM, Lynskey MT. Childhood circumstances, adolescent adjustment, and suicide attempts in a New Zealand birth cohort. *J Am Acad Child Adolesc Psychiatry* 1995;34:612–22. [PubMed: 7775356]
64. Kowatch R, Fristad MA, Birmaher B, et al. Treatment guidelines for children and adolescents with bipolar disorder. *J Am Acad Child Adolesc Psychiatry* 2005;44(3):213–35. [PubMed: 15725966]
65. Kingsbury SJ. Clinical components of suicidal intent in adolescent overdose. *J Am Acad Child Adolesc Psychiatry* 1993;32:518–20. [PubMed: 8496114]
66. Cohen-Sandler R, Berman AL, King RA. Life stress and symptomatology: determinants of suicidal behavior in children. *J Am Acad Child Adolesc Psychiatry* 1982;21(2):178–86.
67. Emslie G, Kratochvil C, Vitiello B, et al. Treatment for Adolescents with Depression Study (TADS): safety results. *J Am Acad Child Adolesc Psychiatry* 2006;45(12):1440–55. [PubMed: 17135989]
68. Rotheram-Borus MJ, Bradley J. Triage model for suicidal runaways. *Am J Orthop* 1991;61(1):122–7.
69. Lewis LM. No-harm contracts: a review of what we know. *Suicide Life Threat Behav* 2007;37(1): 50–7. [PubMed: 17397279]
70. Brent DA, Baugher M, Birmaher B, et al. Compliance with recommendations to remove firearms by families participating in a clinical trial for adolescent depression. *J Am Acad Child Adolesc Psychiatry* 2000;39:1220–6. [PubMed: 11026174]
71. McShane G, Mihalich M, Walter G, et al. Outcome of patients with unipolar, bipolar and psychotic disorders admitted to a specialist child and adolescent mental health service. *Australas Psychiatry* 2006;14(2):198–201. [PubMed: 16734650]
72. Gray SM, Otto MW. Psychosocial approaches to suicide prevention: applications to patients with bipolar disorder. *J Clin Psychiatry* 2001;62:56–64. [PubMed: 11765098]
73. Sachs GS, Yan LJ, Swann AC, et al. Integration of suicide prevention into outpatient management of bipolar disorder. *J Clin Psychiatry* 2001;62:3–11. [PubMed: 11765093]

74. Miklowitz DJ. A review of evidenced-based psychosocial interventions for bipolar disorder. *J Clin Psychiatry* 2006;67(11Suppl):28–33. [PubMed: 17029494]
75. Miklowitz DJ, Otto MW, Frank E, et al. Psychosocial treatments for bipolar depression: a 1-year randomized trial from the systematic treatment enhancement program. *Arch Gen Psychiatry* 2007;64:419–26. [PubMed: 17404119]
76. Jamison, KR. Psychotherapeutic issues and suicide prevention in the treatment of bipolar disorders. In: Hales, RE.; Frances, AJ., editors. *American Psychiatric Association annual review*. Vol. 6. Washington, DC: American Psychiatric Association; 1987. p. 108-24.
77. Brown GK, Have TT, Henriques GR, et al. Cognitive therapy for the prevention of suicide attempts. *J Am Med Assoc* 2005;294(5):563–70.
78. Linehan MM, Comtois KA, Murray A, et al. Two-year randomized controlled trial and follow-up of dialectical behavior therapy vs therapy by experts for suicidal behaviors and borderline personality disorder. *Arch Gen Psychiatry* 2005;63(7):757–66. [PubMed: 16818865]
79. Khan A, Warner HA, Brown WA. Symptom reduction and suicide risk in patients treated with placebo in antidepressant clinical trials: an analysis of the Food and Drug Administration database. *Arch Gen Psychiatry* 2000;57:311–7. [PubMed: 10768687]
80. Fristad MA, Goldberg-Arnold JS, Gavazzi SM. Multi-family psychoeducation groups in the treatment of children with mood disorders. *J Marital Fam Ther* 2003;29(4):491–504. [PubMed: 14593691]
81. Miklowitz DJ, George EL, Axelson DA, et al. Family-focused treatment for adolescents with bipolar disorder. *J Affect Disord* 2004;82:113–28. [PubMed: 15465583]
82. Pavuluri MN, Graczyk P, Henry D, et al. Child- and family-focused cognitive behavioral therapy for pediatric bipolar disorder: development and preliminary results. *J Am Acad Child Adolesc Psychiatry* 2004;43(5):528–37. [PubMed: 15100559]
83. Hlastala SA, Frank E. Adapting interpersonal and social rhythm therapy to the developmental needs of adolescents with bipolar disorder. *Dev Psychopathol* 2006;18:1267–88. [PubMed: 17064438]
84. Linehan, MM. *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford Press; 1993.
85. Baldessarini RJ, Tondo L, Hennen J. Treating the suicidal patient with bipolar disorder. Reducing suicide risk with lithium. *Ann N Y Acad Sci* 2001;932:24–38. [PubMed: 11411189]
86. Baldessarini RJ, Hennen J. Lithium treatment and suicide risk in major affective disorders; update and new findings. *J Clin Psychiatry* 2003;64(Suppl 5):44–52. [PubMed: 12720484]
87. Ernst C, Goldberg JF. Antisucide properties of psychotropic drugs: a critical review. *Harv Rev Psychiatry* 2004;12(1):14–41. [PubMed: 14965852]