

Brazilian Psychiatric Association guidelines for the management of suicidal behavior. Part 1. Risk factors, protective factors, and assessment.

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attributable to suicide is approximately 5.23 per 100,000 population. Although many guidelines have been published for the management of suicidal behavior, to date, there are no recent guidelines based on the principles of evidence-based medicine that apply to the reality of suicide in Brazil. The objective of this work is to provide key guidelines for managing patients with suicidal behavior in Brazil. This project involved 11 Brazilian psychiatry professionals selected by the Psychiatric Emergencies Committee (Comissão de Emergências Psiquiátricas) of the Brazilian Psychiatric Association for their experience and knowledge in psychiatry and psychiatric emergencies. For the development of these guidelines, 79 articles were reviewed (from 5,362 initially collected and 755 abstracts). In this review, we present definitions, risk and protective factors, assessments, and an introduction to the Safety Plan.

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Psychiatric emergencies are changes in behavior that place the patient or others at risk and require immediate therapeutic intervention (within minutes or a few hours) to avoid harmful progression. Among them are suicidal behavior, mood episodes, self-mutilation, severely impaired judgment, severe self-neglect, intoxication or abstinence, and aggressive psychomotor agitation. 1 - 5 According to the World Health Organization (WHO), suicide is a serious public health problem and one of the leading causes of death worldwide. 6 - 8 Throughout the world, approximately 800,000 people die by suicide each year, accounting for 1.5% of all deaths. 9 Suicide is the 10th leading cause of death in North America and the foremost cause of death worldwide among persons 15 to 24 years of age. 10 , 11

The WHO estimated that the 2016 suicide rate was 10.6 per 100,000 persons, with 80% of suicides occurring in low- and middle-income countries. 6 , 8 , 10 , 11 Across the six WHO regions, the incidence of suicide differed by a factor of four between the region with the highest rate (Europe) and the region with the lowest rate (the Eastern Mediterranean, including the Middle East). Worldwide, suicide rates are higher in older people and among men (15.6 suicides per 100,000) than they are among women (7.0 per 100,000). 6 , 11 In addition, suicide rates have been declining over time in most of these regions, and some places did not reach the WHO estimate in 2020. Of total deaths by suicide, 84.7% occurred among 15-to-59-year-olds. 6 Suicide also has profound implications for families and communities, and incurs massive societal costs estimated at over 93 billion dollars per year in the United States alone. 12

In Brazil, 50,664 deaths from suicide were registered from 2010 to 2014, and the average suicide mortality rate was 5.23 per 100,000 population. 13 The Brazilian municipalities with the highest rates were Taipas do Tocantins, state of Tocantins (79.68 deaths per 100,000 population); Itaporã, state of Mato Grosso do Sul (75.15 deaths per 100,000); Mampituba, state of Rio Grande do Sul (52.98 deaths per 100,000 population); Paranhos, state of Mato Grosso do Sul (52.41 deaths per 100,000); and Monjolos, state of Minas Gerais (52.08 deaths per 100,000). 13

Although many guidelines have been published for the management of suicidal behavior, to date, there are no recent guidelines based on the principles of evidence-based medicine that apply to the reality of suicide in Brazil.

The objective of this study is to provide key guidelines for managing patients with suicidal behavior in Brazil.

This project involved 11 Brazilian psychiatry professionals selected by the Psychiatric Emergencies Committee (Comissão de Emergências Psiquiátricas) of the Brazilian Psychiatric Association for their experience and knowledge in psychiatry and psychiatric emergencies. For the development of these guidelines, the MEDLINE (via PubMed), Cochrane Database of Systematic Reviews, Web of Science, and SciELO databases were searched for articles published from 1997 to 2020 in English or Portuguese. The search strategy used was based on questions structured according to the PICO format ("patient or population," "intervention or exposure," "control or comparison," and "outcome"),

as recommended by the Guidelines Project of the Brazilian Medical Association (AMB). The use of structured clinical questions aimed at facilitating the elaboration of strategies to search for evidence. The descriptors used were “suicide” OR “suicidal behavior” AND “risk factors” OR “protective factors” OR “assessment.” Systematic reviews with meta-analysis were prioritized, and other types of research were only sought when the information was not found.

In evaluating the literature, despite a large number of clinical trials and reviews, some difficulties were found in evaluating the results: the evaluation of suicidal behavior in several different diagnoses, evaluation and follow-up of suicidal behavior in different settings, and evaluation of interventions in a small number of patients, with different instruments and outcome criteria. Therefore, the following criteria were standardized: 1) studies on suicidal behavior for adults (18 to 65 years); and 2) objective assessment of response, either by reduction of symptoms or by an objective scale. The exclusion criteria were as follows: 1) studies with fewer than 20 participants in the sample; 2) incomplete data and low-quality statistical analysis.

In addition, articles deemed to be relevant to the literature were also used in the development of the guidelines. The article selection process proceeded as follows: i) selection of the relevant article summaries; ii) reading the relevant articles in full; iii) critical analysis of evidence; and iv) extraction of results and classification of evidence strength. Levels of evidence and grades of recommendations were selected according to the Oxford classification 2011. For more details, see <https://www.cebm.net/wp-content/uploads/2014/06/CEBM-Levels-of-Evidence-2.1.pdf>. In the text, we will present our recommendation grades, and in the descriptive table of the selected articles, we will present the levels of evidence. Of 5,362 entries initially retrieved and 755 abstracts on the drug approach, 79 articles were ultimately reviewed (Figure 1). Tables S1 and S2 , available as online-only supplementary material, present details as well as the level of evidence of the selected articles.

Definitions of suicidal behavior are highly variable, imprecise, and often changing, especially in regard to nonfatal suicidal behavior and suicidal ideation. Suicidality covers suicidal ideation (serious thoughts about taking one's own life), suicide plans, and suicide attempts. However, Meyer et al. 14 proposed abandoning this term. This author suggests using suicide ideation, suicidal behavior, and suicide as the preferred terms.

In this guideline, we will standardize the terms as described in Box 1.

Risk factors for suicide have been investigated at the population and individual levels; in addition, predisposing factors and precipitating events have been examined, mainly at the individual level. Each of these factors can be mediated through genetic, psychological, and personality characteristics, making most explanatory models complex and difficult to interpret. 10

Patients seeking care for suicidal behavior should undergo risk factor assessment to identify those who need intensive supervision and who should receive more clinical resources. 16 - 19 Some authors propose that risk factors cannot be defined and identified in an isolated and precise manner, and that fatalities occur due to the sum of multiple variables. 16 There is still little statistically robust evidence to justify the isolated use of these risk factors; therefore, in future, cohort studies using multivariable methodology should elucidate whether variables independently associated with suicide exist. 16 Psychiatrists and other physicians must be careful not to reduce patient assessment to a search for specific information, and instead combine the patient's history with risk factors, protection, access to healthcare sources, motivations, and psychosocial support networks. 19

The literature suggests an association between alleged high-risk factors and completed suicide. 16 , 18 - 21 However, a meta-analysis found that approximately half of all suicides are likely to occur in low-risk groups, and that 95% of high-risk patients do not commit suicide. Therefore, these findings must be interpreted with caution. 16

In another study, no factor or combination of factors was strongly associated with suicide in the year after discharge among patients who were hospitalized for suicidal behavior. Approximately 3% of patients categorized as being at high risk can be expected to commit suicide in the year after discharge, while approximately 60% of the patients who commit suicide are likely to be categorized as low risk. 22

It is important to point out that there are no universal risk factors, and that each of those observed in research were only detected after comparison to different variables. Tables 1 and 2 show the main risk factors identified to date. However, we emphasize that no single factor is predictive of attempted or completed suicide. Generally, the sum of several factors, in addition to symptomatic disease, is the trigger for the event. We present only risk factors for attempts and death, as these are the main outcomes to be prevented.

Except for the presence of a previous history, there are still no data in the literature that differentiate the risk factors for attempts or suicide throughout life from the risk factors for immediate events. Therefore, common clinical sense should always prevail in the assessment.

Suicidal behavior is high in family members of individuals who attempt or complete suicide. 78 Evidence from a multitude of research designs (adoption, family, genome scan, geographical, immigrant, molecular genetics, surname, and twin studies of suicide) suggests genetic contributions to suicide risk. 78 , 79 Heritability estimates of suicidal behavior from twin studies range from 30 to 55%, and twin and family studies suggest that the genetic etiology of suicide attempt is partially distinct from that of psychiatric disorders themselves. 48 , 78 , 79

The large number of published meta-analyses on the associations between single-nucleotide polymorphisms (SNPs) and suicidal behavior mirrors the enormous research interest in this topic. Although a previous meta-analysis observed similarities in some studies, the effect sizes were small and rarely statistically significant, and there was substantial heterogeneity. 80 For this reason, and as it is a very well-studied area the results for which are constantly changing, we will limit ourselves to presenting only the most relevant positive results.

An association between serotonin transporter (5-HTT) gene polymorphisms and suicidal behavior (suicidal attempt and completed suicide) has been described. 52 , 53 The brain-derived neurotrophic factor (BDNF) gene polymorphism Val66Met has also been reported in psychiatric disorders. 31 In individuals who committed suicide, postmortem studies show changes in the methylation pattern or expression of some genes, in addition to a higher overall methylation rate. In patients with suicidal ideation, methylation in the promoter of the BDNF gene was found to inhibit its expression. 81 , 82

In another study, a significant association was identified between the catechol-O-methyltransferase (COMT) gene polymorphism Val158Met and risk of suicide among women. 68 There are also associations of tryptophan hydroxylase 2 (TPH2) polymorphisms with psychiatric disorders and suicidal behavior. 57

In genome-wide association studies (GWAS) of attempted suicide, polygenic risk scores for major depression were significantly associated with suicide attempts in major depressive disorder ($R^2 = 0.25\%$), bipolar disorder ($R^2 = 0.24\%$), and schizophrenia ($R^2 = 0.40\%$). 48

However, it is important to note that genetic changes in suicidal behavior are still controversial, and as one author concluded, at present, there is no identified gene directed linked to suicide. 83

In absolute numbers, suicide mortality peaks in the 15-to-29 age range. Among children aged 10 to 14, suicide is the third most common cause of death, and the second most common cause of death up to the age of 34 years. 84 The ratio between men and women varies according to different studies and regions. 59 , 67 , 84 Homosexual or bisexual orientation may also be a risk factor, 42

as are being the only child in a family, 46 having low educational attainment, 46 being unmarried, 76 and being in prison. 69

Socioeconomic variables influence suicide rates only through their interaction with other risk factors and, mainly, with mental disorders. Several factors have been observed: age, sex, ethnicity, and related parameters; social status (low income, income inequality, unemployment, low education, and low social support); social change (urbanization and income change); neighborhood (inadequate housing, overcrowding, and violence); and environmental impacts (climate change, natural catastrophe, war, conflict, and migration). 8 , 84

An important observation is that the definition of whether a variable is a risk or protective factor depends on the reference group. 76 For example, according to the U.S. Centers for Disease Control and Prevention (CDC), people between the ages of 60 and 64 have a higher prevalence of deaths by suicide than children aged 5 to 9 years, but a lower prevalence rate of deaths by suicide than those aged 80 to 84 years. In this sense, being 60 to 64 years old is considered a risk factor for suicide only when compared to the pediatric age group. 76 , 85 At the same time, being 60 to 64 years old can also be a protective factor when compared to the 80-to-84 age group. 76 Age, sex, race and ethnicity, family types, education level, employment status, and socioeconomic status may be risk factors for suicidal attempt or suicidal death; whether these factors are particularly strong depends on the reference group. 76

Some psychological stressors and other external factors associated with suicidal behavior include affiliation and attachment, 24 arousal, 24 bullying, 33 change of life, 46 child maltreatment, 33 child sexual abuse, 33 - 35 community violence, 33 dating violence, 33 difficulties in interpersonal relationships, 71 exposure to self-injurious thoughts and behaviors of others (e.g., friends, family members, schoolmates, etc.), 40 family history of self-injurious thoughts and behaviors, 40 frustrative nonreward, 24 hopelessness, 24 impaired cognitive inhibition in affective disorders, 43 impairment of cognitive systems (e.g., impulsiveness, attention problems), 24 low psychosocial functioning with childhood sexual abuse, 35 negative attributional style, 24 negative life events, 46 neuroticism, 24 perception and understanding of self, 24 poor anger management, 71 poor relationship with families, 46 rumination, 24 and suicide of relatives. 46

Few variables were significant for this category: neuroendocrine function, 24 higher cortisol levels below age 40 years, 41 and lower lipid levels 45 are the main findings. Others include physical pain 47 and sleep-wakefulness. 24

Information on previous suicidal behavior is the most important and, together with treatment of mental illness, among those factors most amenable to intervention. Previous suicide attempts, 35 self-injurious thoughts and behaviors, 40 suicide ideation and suicide plans, 40 suicide of relatives, 46 deliberate self-harm 40 (associated with other factors), expression of suicidal ideation in the first year of follow-up, 73 and family history of suicide 63 are the most relevant events.

Clinicians should be especially vigilant in cases of repetition of suicide attempts, maintenance of suicidal ideation despite all efforts at treatment, previous serious suicide attempts, and if suicidal behavior occurs in conjunction with active symptoms of mental illness.

Not all cases of nonsuicidal self-injury and suicidal behavior are related to future attempts or suicide. Little information exists that can predict the groups at greatest risk. So far, the following factors have been identified as significant (level of evidence 4): non-suicidal self-injury (NSSI) frequency, number of NSSI methods, hopelessness, borderline personality disorder, impulsivity, posttraumatic stress disorder (PTSD), use of cutting as an NSSI method, and depression. 44 Risk should also be considered when NSSI behavior is associated with other risk factors for suicidal behavior, especially previous suicide attempts, 35 self-injurious thoughts and behaviors, 40 suicide ideation and suicide plans, 40 and suicide of relatives. 46

Mood disorders 46 , 59 , 71 , 86 are the main diagnosis associated with suicidal behavior. The second most frequent factor is substance use and abuse, including acute alcohol use, 23 any alcohol use, 46 , 59 substance use disorder, 46 , 51 , 56 , 59 chronic cannabis use, 36 and smoking. 46 , 55 Other frequent diagnoses are personality disorder 59 (especially borderline personality disorder), 65 psychotic disorders such as schizophrenia, 51 including schizophrenia with sleep disorder 54 and schizophrenia with physical comorbidity or history of depression, family history of suicide or history of drug use or history of tobacco use or being white, and depressive symptoms, 51 schizophrenia in males with history of attempted suicide and younger age, 51 and schizophrenia with higher intelligence quotient or poor adherence to treatment or hopelessness. 51 Anxiety disorders 28 associated with suicide include panic disorder with sleep disorder 54 and PTSD with sleep disorder. 54 Other important diagnoses are anorexia nervosa, 61 body dysmorphic disorder, 87 and sleep disorders (insomnia, parasomnias, and sleep-related breathing disorders) in the presence of psychiatric disorders. 54

Regardless of the diagnosis, it is important to remember that suicidal behavior is a complication of mental illness, and its presence means that improvement has not yet been achieved. Therefore, the presence of suicidal ideation and attempts must be regarded and addressed as the presence of an episode or crisis. Table 3 lists the main mental disorders related to suicidal behavior.

In the opinion of several experts, the use of antidepressants may increase the risk of suicide at the beginning of treatment. This information needs to be analyzed carefully. For the pediatric population, there is a modest increase in suicide. 62 Antidepressant drugs may improve suicide attempts in the short term compared to a placebo, 27 while selective serotonin reuptake inhibitor (SSRI) use may be related to completed suicide in depressed adolescents. 77

For youths, no significant effects of treatment on suicidal thoughts and behavior was found, although depression responded to treatment. No evidence of increased suicide risk was observed in youths receiving active medication. 90 In contrast, exposure to SSRIs almost doubled (odds ratio [OR] = 1.92) the risk of suicide and suicide attempts among adolescents in these observational studies. It is possible that only the most severely ill adolescents would have been prescribed antidepressants, so this observational sample may well have had a particularly high risk for suicide actions. Nevertheless, caution and close monitoring are recommended when antidepressants are prescribed in this age group. 91

Attention should be paid to the fact that bipolar disorder usually starts in childhood and can lead to a first depressive episode, which could result in the prescription of antidepressants, assuming a unipolar depressive episode. In these cases, there is still a risk of worsening symptoms of psychomotor agitation and impulsivity, which should already be a concern when prescribing antidepressants to the pediatric population.

On the other hand, in a meta-analysis, the prescription of fluoxetine and venlafaxine decreased suicidal thoughts and behaviors over time in adult and geriatric patients compared to a placebo by reducing depressive symptoms. For young people, no significant effects of treatment on suicidal thoughts and behavior were found, although depression responded to treatment. There was no evidence of an increased risk of suicide in young people taking medication. 90 Another study concluded that the evidence supporting a causal link between antidepressant use and suicide in children is weak. 92

What we propose, then, is that treatment is a way to reduce the risk of attempted and completed suicide; however, in the case of antidepressants, closer vigilance is needed in the first 30 days, especially in youths.

A meta-analysis concluded that assessing suicidality with regard to negative outcomes did not demonstrate significant iatrogenic effects or support the appropriateness of universal screening for suicidality, which should allay fears that assessing suicidality is harmful. 93 Despite the apparently

strong association between high-risk categorization and subsequent suicide, the low rate of inpatient suicide means that the predictive value of a high-risk categorization is below 2%. It is recommended that hospitals develop safer environments by improving systems of care to reduce the suicide of psychiatric inpatients rather than conduct risk assessments. 63 Therefore, such an approach to suicidal behavior cannot be a risk factor, but a protective factor.

There are many risk factors for attempted and complete suicide, and there is no single factor capable of predicting short- or long-term events. Therefore, assessment must be complete, individualized, and consider the combination of multiple factors, with particular emphasis on personal and family history of suicidal behavior, presence of acute mental illness, and stressors that individuals have difficulty handling.

There are far fewer data on protective factors than on risk factors. Known protective factors are shown in Table 4 . Such factors can reduce the chance of a new attempt or death. However, protective factors do not replace the presence of several risk factors, and the best measures to be offered to the patient are surveillance and treatment. It is noted that in some situations, psychopharmacological treatment is protective, again reinforcing the importance of treatment in preventing suicide. For medications, we present only the best available evidence in this table. Other options will be presented in the "Intervention" item in the next article in this guideline. 94

There are fewer protective factors identified in the literature, and the same rules that apply to risk factors apply to them. No single protective factor can be considered as a guarantee that a fatal event will not occur. The presence of protective factors helps, but does not replace treatment and monitoring. Patients with protective factors but with multiple risk factors should be handled with caution.

There is no effective model capable of predicting suicidal behavior, and its cause is multifactorial. The evaluation needs to be as broad as possible. On the other hand, suicidal behavior is a common health situation, which can overburden the system if long-term models are chosen. In addition, suicide is a medical emergency, and it requires rapid and effective evaluation. For this reason, a structured assessment focused on essential information is recommended.

An important finding suggests that 11 and 50% of individuals with suicidal behavior who were treated in an emergency service either declined or abandoned outpatient treatment, respectively. 102 Therefore, careful evaluation focusing on the development of a therapeutic alliance from the very first contact is essential.

The first step recommended by this guideline, which is ignored in several documents, is to rule out other medical emergencies that require immediate care, such as trauma and poisoning. Health professionals can often neglect such situations in favor of overvaluing psychic symptoms and suicidal behavior. Instead, care of the suicidal patient should begin as in any other medical emergency.

During the assessment, the psychiatrist obtains information about the patient's psychiatric and other medical history and current mental status. This information allows the psychiatrist to identify risk and protective factors for suicide, which may require acute interventions. 19 , 103 , 104 It also allows immediate patient safety concerns to be addressed and helps determine the most appropriate scenario for treatment, as well as develop a differential diagnosis to guide treatment planning. 19 , 103 The breadth and depth of psychiatric assessment aimed specifically at assessing the risk of suicide varies according to the environment, the patient's ability to provide information, and availability of information from other sources. 103 Although assessment scales for suicidal behavior are available, they do not have the necessary predictive validity for use in routine clinical practice, and should be considered only complementary. 103

We recommend that the priority assessment be based on the Practice Guideline for the Assessment and Treatment of Patients with Suicidal Behaviors. 103

Specifically, healthcare professionals should inquire about suicidal thoughts, plans, and behavior, specific methods considered for suicide (including their lethality and the patient's expectation about lethality, as well as whether firearms are accessible), evidence of hopelessness, impulsiveness, anhedonia, panic attacks, or anxiety, reasons for living and plans for the future, alcohol or other substance use associated with the current presentation, and thoughts, plans, or intentions of violence toward others. 103 This detailed information must be obtained at each attempt. 103

Healthcare professionals should determine the presence or absence of signs and symptoms associated with specific psychiatric diagnoses and identify specific psychiatric symptoms that may influence suicide risk. 103

Healthcare professionals should review the psychiatric history (e.g., previous and comorbid diagnoses, prior hospitalizations, and other treatment, past suicidal ideation), history of medical treatment (e.g., identify medically serious suicide attempts and past or current medical diagnoses), as well as gauge the strength and stability of current and past therapeutic relationships. 103

Healthcare professionals should inquire about family history of suicide and suicide attempts and psychiatric hospitalizations or mental illness, including substance use disorders; determine the circumstances of suicides in first-degree relatives, including the patient's involvement and the patient's and relative's ages at the time; and determine the childhood and current family milieu, including history of family conflict or separation, parental legal trouble, family substance use, domestic violence, and physical and/or sexual abuse. 103

Healthcare professionals should consider acute psychosocial crises or chronic psychosocial stressors that may augment suicide risk (e.g., financial or legal difficulties, interpersonal conflicts or losses, stressors in gay, lesbian, or bisexual youths, housing problems, job loss, and educational failure). 71 , 103

Healthcare professionals should consider how coping skills, personality traits, thinking style, and developmental and psychological needs may affect the patient's suicide risk and the formulation of the treatment plan. 103

Some structured and simplified interviews can assist in the assessment of risk and protection factors, which in turn can assist in planning interventions. For example, D'Onofrio et al. 105 has developed a 10- to 15-minute approach that includes screening, brief intervention, and referral to treatment. 102 Another similar model is the so-called security planning intervention (SPI). It is indicated for patients in emergency departments, trauma centers, telephone helplines, psychiatric inpatient units, and other acute care settings. The SPI consists of a list of coping strategies and sources of support that patients can use to alleviate a suicide crisis. 102

The Emergency Department Safety Assessment and Follow-Up Evaluation (ED-SAFE) assessed screening and intervention in a single study. The authors concluded that universal screening plus intervention was more effective in preventing suicides compared with universal screening added to treatment as usual and treatment as usual alone. 106 , 107 In response, we propose, under the name of "Safety Plan," an approach in which assessment (including of risk and protection factors) is conducted in sequence with therapeutic measures. Such focused assessment can be more effective and save time and costs. 102 , 106 , 107

None of the available instruments for assessment of suicidality reached the predetermined benchmarks (80% sensitivity and 50% specificity) for the suicide outcome. 108 Since most scales are unable to evaluate and predict a future attempted or complete suicide with good precision, no single scale or measure can be recommended to replace a comprehensive evaluation performed by

a psychiatrist. Such instruments have only complementary value and must be preceded by a thorough history, physical and psychological examination, and assessment of risk and protection factors. Suggested scales for complementary use are listed in Table 5 .

Considering the complexity of the assessment of risk and protection factors and uniting the need for a special assessment for patients with suicidal behavior, we suggest the use of the Safety Plan technique, which combines assessment with intervention. This technique will be discussed in the next article of this series. 94

In conclusion, this first part of the guidelines discussed the importance of assessing suicidal behavior, especially in regard to risk and protective factors. Based on the discussion, we propose a flow diagram for suicidal behavior management (Figure 2). A focused assessment can be more effective and save time and costs, especially if combined with intervention measures. 94

LB has served as a speaker for Libbs and a scientific consultant for Apsen. GAR has served as speaker for Pfizer, Lundbeck, Servier, Libbs, Takeda, FQM, and Genon, and received assistance for events from Torrent, Daichi Sankyo, Janssen, and Aché. AM has served as a consultant for Abbott, Jansen, Aché, Cristália, Libbs, Pfizer, Torrent, Eurofarma, Medley, Sanofi-Aventis, and Allergan; as a board advisor for Cristália, Jansen, and Libbs; as a speaker for Abbott, Aché, Cristália, Jansen, Libbs, Pfizer, and Eurofarma; receives copyrights from Guanabara Koogan; and received assistance for events from Eurofarma and Cristália. HC has served as a speaker for Janssen, Sanofi, Servier, and EMS; as a medical writer for EMS; and as a board advisor for Janssen. TCT has served on advisory boards for Janssen-Cilag, Lundbeck, Servier, Abbott, Medley, Takeda, SEM, and Torrent; and received grant or research support from Abbott, Libbs, Lundbeck, Medley, Aché, Torrent, Biolab Sanus, Pfizer, Servier, Apsen, and EMS. JQ has received clinical research support from LivaNova; has speaker bureau membership with Myriad Neuroscience, Janssen Pharmaceuticals, and Abbvie; is a stockholder at Instituto de Neurociências Dr. Joao Quevedo; and receives copyrights from Artmed Editora, Artmed Panamericana, and Elsevier/Academic Press. The other authors report no conflicts of interest.

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Figure 1 PRISMA flowchart for the study selection process. Figure 2 Flow diagram for management of suicidal behavior, with a focus on emergency settings. Box 1 Main suicidal behavior terms suggested

15 Completed suicide A self-injurious behavior that resulted in fatality and was associated with at least some intent to die as a result of the act. Preparatory acts toward imminent suicidal behavior (or suicide plan) The individual takes steps to injure him- or herself, but is stopped by self or others from starting the self-injurious act before the potential for harm has begun. Suicide attempt A potentially self-injurious behavior, associated with at least some intent to die because of the act. Evidence that the individual intended to kill him- or herself, at least to some degree, can be explicit or inferred from the behavior or circumstance. A suicide attempt may or may not result in actual injury. Suicidal ideation Passive thoughts about wanting to be dead or active thoughts about killing oneself, not accompanied by preparatory behavior.

Table 1 Risk factors * for suicide attempt

Risk factor Level of evidence Acute alcohol use 23 4 Affiliation and attachment 24 1 Alcohol use 2 , 25 3 Antidepressants in pediatric MDD, OCD, and anxiety disorders 26 1 Antidepressants in short-term use, compared to placebo 27 1 Anxiety 28 , 29 , 30 1 Arousal 24 1 BDNF polymorphism Val66Met in persons with psychiatric disorders 31 4 Bipolar disorder type II 32 2 Bipolar disorder with female sex, younger age of illness onset, depressive polarity, comorbid anxiety disorder, any comorbid substance use disorder, alcohol use disorder, any illicit substance use, comorbid cluster B/borderline personality disorder, and first-degree family history of suicide 3 Body dysmorphic disorder 4 Bullying 33 1 Child maltreatment 30 , 33 4 Childhood sexual abuse 33 - 35 2 Chronic cannabis use 36 4 Cognitive systems (e.g., impulsiveness, attention problems) 24 1 Community violence 33 4 Dating violence 33 1 Depressed mood 24 , 37 1 Depressive symptoms during first-episode psychosis 38 1 Derangements of central serotonergic function 24 1 Emotional abuse 39 1 Exposure to self-injurious thoughts and behaviors of others (e.g., friends, family members, schoolmates, etc.) 40 1 Family history of self-injurious thoughts and behaviors 40 1 Frustrative nonreward 24 1 Higher cortisol levels below age 40 years 41 4 Homosexuality or bisexuality in men 42 2 Hopelessness 24 1 Impaired cognitive inhibition in affective disorders 43 4 In persons exhibiting NSSI: NSSI frequency, number of NSSI methods, and hopelessness; borderline personality disorder, impulsivity, posttraumatic stress disorder, NSSI method of cutting, and depression 44 4 Low psychosocial functioning with childhood sexual abuse 35 2 Lower lipid levels 45 4 Mood disorder 46 4 Negative attributional style 24 1 Neuroticism 24 1 Obesity 34 4 One child in family 46 4 Perception and understanding of self 24 1 Physical abuse 39 1 Physical neglect 39 1 Physical pain 47 4 Placebo use in adolescents with MDD, OCD, and anxiety disorders 26 1 Polygenic risk scores for major depression, bipolar disorder, and schizophrenia 48 2 Poor relationship with family 46 4 Previous suicide attempts 35 2 Psychotic unipolar depression 49 3 PTSD 50 3 Rumination 24 1 Schizophrenia with history of alcohol use or family history of psychiatric illness 51 1 Schizophrenia with physical comorbidity or history of depression, family history of suicide, or history of drug use, or history of tobacco use, or being white, and depressive symptoms 51 4 Self-injurious thoughts and behaviors 40 1 Serotonin transporter (5-HTT) gene polymorphism 52 , 53 4 Sexual abuse 39 1 Sleep disorders (insomnia, parasomnias, and sleep-related breathing disorders) associated with psychiatric disorders 54 4 Sleep-wakefulness 24 1 Smoking 46 , 55 4 Substance use disorder 46 , 56 4 Suicidal ideation and suicide plans 40 1 Suicide of relatives 46 4 Suicide theory-relevant risk factors 24 1 TPH2 polymorphisms 57 3 Unemployment 58 3 BDNF = brain-derived neurotrophic factor; MDD = major depressive disorder; NSSI = non-suicidal self-injury; OCD = obsessive-compulsive disorder; PTSD = posttraumatic stress disorder.

BDNF = brain derived neurotrophic factor; COMT = catechol-O-methyltransferase; SSRI = selective serotonin reuptake inhibitor.

SSRI = selective serotonin reuptake inhibitor.