Addressing Suicidal Thoughts and Behaviors in Substance Abuse Treatment:

A Review of the Literature—Updates*

A Treatment Improvement Protocol

TIP
50

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Treatment Improvement Protocol (TIP) 50,

Addressing Suicidal Thoughts and Behaviors in Substance Abuse Treatment

Updated Findings From the Literature

Contents

Introduction

The following updates were developed to keep current the literature review component of Treatment Improvement Protocol (TIP) 50, *Addressing Suicidal Thoughts and Behaviors in Substance Abuse Treatment*, published in 2009. The literature review update period for this TIP spanned 3 years post-publication and concluded with the April–September, 2012 update. The same search methodology used in developing the literature review for TIP 50 was used for the updates.

Findings on Risk Assessment

Conrad et al. (2009) evaluated the reliability and validity of the Suicide Status Form-II (SSF-II) by assessing suicidal risk in 149 people in psychiatric units, of which 108 patients were at risk for suicide and 41 members of a control group were not. Of those at risk for suicide, 79 patients presented with suicidal ideation and 29 patients had a history of suicidal behavior. Fifty-nine patients had co-occurring substance use disorders (SUDs). The SSF-II contains six rating scales, including psychological pain, stress, agitation, hopelessness, self-hate, and overall risk of suicide and was shown to be a convenient and psychometrically reliable and valid instrument for meaningfully assessing suicide risk. Limitations of the study included its small sample size and lack of ethnic diversity within the sample.

A multisite retrospective study of 700 Swiss inpatients being treated for alcohol use disorders (AUDs) was conducted to develop a decision tree for the purpose of identifying predictors of attempted suicide (Buri, von Bonin, Strik, & Moggi, 2009). The researchers compared, using risk factors, 69 patients who had attempted suicide during the three months prior to beginning treatment with 631 patients who had not. It was found that patients with a prior history of attempted suicide, aggression, and severe depression were significantly more likely to attempt suicide than those without those risk factors and that these three factors in combination increased the likelihood of a prior attempted suicide to 52 percent. The authors concluded that the decision tree they had developed was helpful in identifying people with AUDs and who are likely to attempt suicide. Once such patients were identified, suicide prevention efforts could be instituted.

Ilgen, Downing et al. (2009 developed a decision tree based on an empirically based decision analysis. The researchers used information from patient records from FY 1998 and 1999 and data from the National Death Index to examine interactions among several suicide risk factors in a cohort of 887,859 patients with depression treated in the Veterans Affairs health system. Researchers identified subgroups with significantly high or low rates of suicide during a 7-year follow-up period, during which 7,684 veterans committed suicide. Persons with SUDs who were admitted as inpatients for treatment of mental health disorders within the previous 12 months and were non-African American were at highest risk for suicide. Male patients with bipolar disorder and female patients with SUDs were especially at risk. The authors concluded that the examination of higher-order interactions among potential risk factors improves the reliability of identifying increased suicide risk among patients who are depressed.

The association between self-reported suicidality and anxiety symptoms in 2,778 psychiatric outpatients was studied by Diefenbach, Woolley, and Goethe (2009). A bivariate analysis revealed that patients with moderate to high levels of anxiety had a twofold increase in suicidality. The authors suggested using a single-item anxiety self-report screening tool for a preliminary assessment of suicide risk.

Iliceto and colleagues (2010) studied risk of suicide by measuring hopelessness (a major suicide risk factor), health perception, and temperament among 100 people who were heroin-dependent and undergoing treatment and 100 age-matched people who did not use heroin. The 20-item Beck Hopelessness Scale (BHS); the first (2005) version the 84-item Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire (TEMPS-A Rome); Mini-International Neuropsychiatric Interview (which contained questions about past and current suicidality); and the 100-item Multidimensional Health Questionnaire were used to assess health attitudes in people who use heroin and to establish treatment plans accordingly. Hopelessness was positively associated with depression, anxiety, preoccupation with health, self-blame regarding illness, negative thinking about health, and health monitoring. It was concluded that people who use heroin were distinguishable from those who do not on these bases and that special care may be needed to prevent suicide attempts by people who use heroin in light of their history of suicidal behavior.

The seven-item Affective States Questionnaire (ASQ) was found to have 60 percent sensitivity and 74 percent specificity with respect to predicting suicidal behavior that occurred during three months of followup of 240 outpatients at a Veterans' Affairs Medical Center. Participants were combat veterans, some of whom had recently returned from combat in the war in Iraq. The major Axis I diagnoses of study subjects were anxiety disorders (41 percent), major depressive disorder (MDD) (33 percent), post-traumatic stress disorder (PTSD) (20 percent), and bipolar disorder (16 percent). The major secondary Axis I disorder was SUD (43 percent). False positives were reduced when the use of the ASQ was combined with a diagnosis of SUD or an assessment of disability level. The strength of the instrument appeared to lie in the absence of suicide-related questions and its emphasis on substance use, disability level, and affective state of participants (Hendin, Al Jardi, Houck, Hughes & Turner, 2010).

Findings on Co-occurring Conditions and Risk Factors for Suicidality

Niciu and colleagues (2009) differentiated major depressive episode (MDE) subtypes among individuals (N = 1,929) with substance use disorders. Study participants were recruited both from those seeking treatment and from the community. The investigators used the Semi-Structured Assessment for Drug Dependence and Alcoholism and, at the time of its administration, asked about the participants' substance use during each depressive episode. The subjects were then categorized into four subtypes having:

- No lifetime major depressive episode (N-MDE) (55.3 percent, n = 1066)
- Independent MDE only, not substance related (I-MDE) (8.1 percent, n = 156)
- Substance-induced MDE only (SI-MDE) (27.9 percent, n = 539)
- Both types of MDE (B-MDE) (8.7 percent, n = 168)

By far, the patients with the highest rate of suicidality were those with histories of both types of MDE: nearly 73 percent had suicidal ideation and approximately 41 percent attempted suicide. An average of 56 percent of patients with I-MDE or SI-MDE had suicidal ideation and an average of 23 percent attempted suicide. In contrast, only 26 percent of subjects with N-MDE had suicidal ideation and only 7 percent attempted suicide. The study also found that those with both types of MDE reported more lifetime depressive symptoms and co-occurring anxiety disorders and that this group was more likely to have attempted suicide than subjects with either

I-MDE or SI-MDE. The study underscores the potential importance of the MDE subtyping of patients with SUDs and accordingly classifying their risk for suicidal ideation and behavior.

Sublette and colleagues (2009) performed logistic regressions to study suicidal behavior in adults with MDE in the context of differences between bipolar disorder type I (BD-I) and type II (BD-II) with respect to SUD as a risk factor for suicidal behavior. Patients with BD-1 who had both drug use disorders and AUDs had a suicide attempt rate of 97 percent. Suicide was attempted by 93 percent of individuals with BD-I and drug use disorders and by 89 percent with AUDs. Although rates of SUDs were the same in patients with BD-I (n = 96) and BD-II (n = 42), a history of SUDs was associated with suicide attempts in patients with BD-I–but not in those with BD-II. Higher suicide attempt rate association with alcohol use in BD-I was explained by higher aggression scores and an earlier age of onset than those associated with BD-II. The association of the rate of suicide attempts in patients with other SUDs appeared to be related to higher hostility, aggression, and impulsivity scores on standard assessment instruments. The study was limited because of (1) its retrospective design, (2) small sample size, and (3) the inclusion of subjects who were mostly in an MDE. In addition, the sample studied was referred and included a large number of persons who had attempted suicide. The study suggests that treating co-occurring SUDs and addressing aggressive/impulsive traits in subjects with BD-I are critical in reducing suicidal ideation and behavior.

Treatment records of 10,667 persons with SUDs and acutely admitted to an urban, university-staffed hospital psychiatric service over a period of approximately 10 years were analyzed to evaluate the relationship of SUDs and the severity of their effects on suicidality. Researchers found that 41 percent of the patients showed little to no suicidality, 26 percent had moderate suicidal urges and had made plans to commit suicide, and 32 percent exhibited active suicidal behavior or had attempted suicide. This study identified a co-occurring disorder population of patients with acute, mostly nonpsychotic psychiatric disorders, with co-occurring addiction and suicide that requires active intervention. It also showed that level of suicidality was proportional to severity of substance use (Ries, Yuodelis-Flores, Roy-Byrne, Nilssen, & Russo, 2009).

Hills, Afifi, Cox, Bienvenu, and Sareen (2009) studied whether externalizing psychopathology, including SUD, is a risk factor for later suicide attempts. The authors studied cross-sectional and longitudinal data gathered from adult responders from the Baltimore Epidemiological Catchment Area Study. At one-year followup, new suicides were associated with externalizing psychopathology in 3,163 subjects. Externalizing psychopathology was not associated with first-time suicide attempts in 1,920 subjects. Both of these data sets were obtained after adjusting for sociodemographic factors and internalizing disorders. The investigators concluded that the assessment of individuals presenting with externalizing disorders is of significant value in predicting suicidality.

A case control design was used to study the association of borderline personality disorder (BPD) and impulsivity as risk factors for suicidality among 775 people with opioid dependence, who were shown to be more likely than controls (people without opioid dependence) to screen positive for BPD and to be classified as highly compulsive. Opioid dependence alone was not a significant risk factor for suicide attempts among people with opioid dependence and those with BPD or high impulsivity. The study demonstrates the importance of assessing impulsivity of persons who have a history of suicidality. Limitations of the study included a lack of balance

between patient and control groups and reliance on self-reported information (Maloney, Degenhardt, Darke, & Nelson, 2009).

Co-occurring PTSD and other mental disorders—and not PTSD alone—account for an increased lifetime frequency of suicide attempts (LFSA) among patients with SUDs (Cacciola, Koppenhaver, Alterman, and McKay, 2009). This study examined a cohort of male veterans (N = 466) recently admitted to outpatient treatment for SUDs. The participants were divided into four groups, according to diagnosis. These include:

- SUDs only.
- SUDs and PTSD without any other Axis I disorders.
- SUDs, no PTSD, and other Axis I disorders.
- SUDs, PTSD and other Axis I disorders.

Results follow:

- Almost half (n = 230) were diagnosed with SUDS only. This group had a very low rate of LFSA (9 percent).
- Those diagnosed with SUDs and PTSD but no other Axis I disorders (n = 21), reported no LFSA.
- Of those diagnosed with SUD, no PTSD, and no other Axis I disorders (n = 154), 32 (21 percent) participants reported LFSA.
- Those diagnosed with SUDs, PTSD, and other Axis I disorders (n = 61) had the highest rate (41 percent or 24 respondents) reporting LFSA.

The study provided evidence for the importance of taking into account the presence of other mental disorders in patients with co-occurring SUDs and PTSD, but may be limited by the small sample size.

Associations between anxiety disorders and suicidality were studied by Cougle and colleagues (2009), using data from the National Comorbidity Survey-Replication (NCS-R) Study, a national household survey of 9,282 adults living in the United States. The survey used the diagnostic assessment of Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR) mental disorders to assess participants in the survey and included questions related to suicidal behaviors. Members of a subsample of 4,131 individuals were interviewed with regard to lifetime suicide attempts and ideation. Multivariate logistic analysis revealed that AUDs were associated with significantly increased lifetime suicidal ideation (adjusted odds ratio (AOR) of 2.08) and lifetime suicide attempts (AOR 2.19).

In addition, SUD was associated with significantly increased lifetime suicidal ideation (AOR of .97) and lifetime suicide attempts (AOR 1.11). Various anxiety disorders, including generalized anxiety disorder (GAD), PTSD, social anxiety disorder (SAD), and panic disorder were found to be associated with suicidal ideation, but only GAD, PTSD, and SAD were shown to be associated with suicide attempts. The study provides further evidence of the consequences of anxiety disorders and the need to detect and treat them at an early stage to prevent suicidality. It also emphasizes the importance of suicide risk assessment in treating individuals with anxiety disorders and how the evaluation of the presence of anxiety disorders as independent risk factors

can aid it. Study limitations included gender differences not being considered and that data collected was not sufficient to definitively establish causality between anxiety disorders and suicidal behavior.

Similarly, Nock, Hwang, Sampson, and Kessler (2010) studied associations between specific mental health disorders and subsequent suicidal attempts, plans, and ideation. Among a subsample of 5,692 individuals included in the NCS-R, anxiety, mood, and SUDs were strongly associated with subsequent suicide attempts. The analysis also indicated that, although depression predicts the onset of suicidal ideation, it does not predict suicide attempts or the presence of plans in those where ideation is present. The researchers found that the presence of severe anxiety disorders (such as PTSD) and poor impulse control (e.g., SUDs and conduct disorder) were highly predictive of a patient with suicidal ideation making suicide attempts or plans.

Nepon, Belik, Bolton, and Sareen (2010) examined the relationship between anxiety disorders and suicide attempts by performing multivariate regression model analysis of data from interviews of 34,653 adults in the National Epidemiologic Survey on Alcohol and Related Conditions Wave 2. They found that anxiety disorders appeared to be significantly associated with suicide attempts and that panic disorder and PTSD, occurring alone or together, was or were independently associated with suicide attempts as well. However, causal relationships could not be established because of data collection methods used. In addition, the frequency of obsessive compulsive disorder in the study sample, which could have contributed to the level of suicidality observed, was not addressed.

Smith and Book (2010) provided preliminary evidence of the prevalence and clinical characteristics of co-occurring GAD and AUDs in 39 outpatients. More than 46 percent were found to have current GAD, and the onset of GAD occurred prior to AUDs in 67 percent of co-occurring cases. A history of suicide attempts was found in 55.6 percent of patients with co-occurring GAD and AUD. The researchers suggest that GAD may be a prevalent and relevant factor among individuals seeking outpatient AUD treatment.

Bivariate and multivariate models were used to study the relationship between partner and non-partner aggression and recent suicidal thoughts in 488 patients undergoing treatment for SUDs. Ilgen, Chernack et al. (2009) found that 33 percent of the sample had suicidal thoughts. Physical and psychological aggression towards a partner were significantly associated with suicidal ideation. However, both forms of aggression towards a person who was not a partner were not significantly associated with suicidal ideation of the patient. However, the study only assessed suicidal ideation and is not necessarily generalizable to suicide attempts.

A recent study showed that, among a sample of 6,233 individuals (from the large, multisite National Treatment Improvement Evaluation Study) entering treatment for SUDs, self-reported suicidal ideation and single or multiple suicide attempts were strongly associated with prior lifetime violent behaviors. This was significantly more so among individuals who had committed more serious forms of violence, such as rape and homicide. The authors concluded that treatment providers should be aware that those patients with SUDs and life-time histories of committing the most severe forms of violence are at significant risk for suicidal behavior (Ilgen, Burnette, et al., 2010).

The relationships among three forms of violence—including nonsuicidal self-harm, having experienced physical assault, and attempting suicide—were examined among 400 individuals who regularly used either psychostimulants, heroin, or both. Strong inter-relationships were found between these forms of violence and that all individuals who had attempted suicide also had a history of violent assault. The researchers suggested that it is important for treatment providers to be aware of the high rates of violent experiences—as either a victim or a witness—among individuals who use illicit drugs regularly and that appropriate screening for a history of nonsuicidal self-harm, physical assault experiences, and suicide attempts is important in suicide prevention. A person who uses illicit drugs and also has a history of being assaulted or nonsuicidal self-harm is significantly more likely to plan or attempt suicide. A limitation of the study was that all information gathered was based on self-reports (Darke, Torok, Crim, Kaye, and Ross, 2010).

Le Strat, Ramoz, and Gorwood (2010) studied the pattern of psychiatric comorbidity associated with nicotine dependence among members of a cohort of 4,782 individuals with lifetime alcohol dependence who participated in the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions. Approximately 48 percent of respondents who were alcohol-dependent were also nicotine-dependent and reported higher lifetime rates of other SUD, GAD, panic attacks, MDD, suicide attempts, and other mental health problems than those who were not nicotine-dependent. The researchers concluded that nicotine dependence represents a general marker for suicidality, SUDs, and other psychiatric co-occurring disorders.

Leeies, Pagura, Sareen, and Bolton (2010) examined self-medication using alcohol, drugs (illicit or prescription), or both, by 2,643 patients with PTSD who were non-institutionalized and community-dwelling and participated in the National Epidemiologic Survey on Alcohol and Related Conditions. More than 21 percent of individuals with PTSD engaged in self-medication behavior, which was associated with a significantly higher likelihood (adjusted odds ratio = 2.46) of suicide attempts. However, the study design precluded the determination of causality, and the severity of PTSD and the amount of substance use were both unknown.

Wenzel, Brown, and Beck (2009) provided a comprehensive overview of cognitive therapy for suicidal patients with SUDs. They outlined the following treatment regimen:

- **Early Phase of Treatment:** The practitioner (a) conducts an assessment of the presenting problem; (b) develops a safety plan with the patient; (c) develops a cognitive case conceptualization that involves identifying and characterizing the patient's dispositional vulnerability factors, early experiences, beliefs (core, anticipatory, relief-oriented, and permissive), key automatic thoughts, and suicide-relevant cognitive processes; and (d) establishes treatment goals with the patient.
- **Intermediate Phase of Treatment:** The practitioner helps the patient (a) increase the number of reasons for living; (b) develop coping strategies; (c) increase compliance with other services; and (d) improve social resources.
- **Late Phase of Treatment:** The practitioner and the patient (a) work to consolidate the skills learned in treatment; (b) work on relapse prevention; (c) review progress toward treatment goals; (d) and prepare for termination of the acute phase of treatment.

The authors stressed that beliefs related to addictions must be considered in conjunction with those pertaining to suicide and cognitive processes in the aforementioned cognitive case conceptualization and the selection of treatment strategies, and that relapse frequently results in increased distress and suicidal crises. Accordingly, substance use within the context of suicide risk must be addressed at the beginning of treatment sessions. Patients who have SUDs and are suicidal may either have transitory suicide ideation or have difficulty focusing on factors contributing to their suicidal state. They also emphasized the importance of patients' ability to proactively make positive changes in their lives and how critical that is to their motivation to continue treatment, collaborate in the treatment process, and generalize the strategies developed in treatment to their daily lives.

Britton and Connor (2010) conducted a secondary analysis of data from the Drug Abuse Treatment Outcomes Study (DATOS), a longitudinal multisite study of the effectiveness of community-based SUD treatment programs. They sought to determine the correlates of suicide attempts (SA) during the 12-month period following treatment for SUDs and to identify variables that were associated with SA. A group of 2,966 subjects who underwent short-term inpatient treatment and outpatient methadone treatment (OMT) showed a higher probability of SA than those enrolled in an outpatient drug-free program, indicating that hospitalization may not be the most effective approach for preventing SA. Results of the study suggest that regular and long-term contact available to clients in OMT and addressing the use of cocaine could be valuable in SA prevention. The study may have underestimated the prevalence of SA in the group because it was assessed on the basis of a single self-reported item.

The U.S. Army (2010) reported that nearly one-third of suicide deaths and more than 45 percent of suicide attempts among active duty Army personnel between 2003 and 2009 involved the use of alcohol or drugs (reviewed by Kuehn, 2010). In addition, the number of PTSD cases increased from 2,931 in 2004 to 10,137 in 2007, and the percentage of suicides among these soldiers diagnosed with PTSD increased from 4.6 percent in 2005 to 14.1 percent in 2009. Soldiers deployed in and returning from combat and veterans alike often have one or more co-occurring conditions that increase their risk of suicide. Recommendations include:

- Developing and applying protocols for screening for mental health issues co-occurring with PTSD and minor traumatic brain injury.
- Overcoming social and cultural disincentives for seeking treatment for mental problems;
- Enhancing SUD reporting and treatment referral.
- Characterizing the impact of increased abuse of licit and illicit psychotropic drugs.
- Determining which antidepressants can be used to treat anxiety and depression without increasing the risk of suicide.
- Increasing the level of primary care available to soldiers and veterans.
- Identifying and making available treatment for individuals at risk for suicide and other mental health and medical consequences of combat deployment.

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There were many articles published in 2011 on suicide and substance abuse. However, very few of these involved individuals in recovery, and only one article met the criteria for inclusion for this update.

Risk Assessment: Drinking, Suicidal Ideation, Depression, and Anger

Conner et al. (2011) used information from the Project Matching Alcoholism Treatments to Client Heterogeneity (MATCH) data set to determine whether drinking patterns influence suicidal ideation (SI) and whether the association between drinking patterns and SI is affected by depression or anger.

Project MATCH was an 8-year, multisite, randomized clinical trial designed to test whether individuals with different types of alcohol use disorders (AUDs) would respond differently to different types of treatment. Participants (*N*=1,726) were interviewed before beginning treatment and were reassessed at 3, 9, and 15 months.

The authors used two measures of SI. The first was item 9 from the Beck Depression Inventory (BDI):

- "I have thoughts of killing myself, but I would not carry them out."
- "I would like to kill myself."
- "I would kill myself if I had the chance."
- "I don't have any thoughts of killing myself."

The second SI measure was an item taken from the Addiction Severity Index: "During the past 30 days, have you had a period (even during a time when you were using drugs⁄alcohol) in which you experienced serious thoughts of suicide?"

Drinking patterns were determined by calculating the number of drinks per drinking day (DDD) and percent of days abstinent (PDA) reported by participants during the preceding 3 months. The researchers used the BDI to measure depression severity and the State-Trait Anger Expression Inventory to measure anger.

Both DDD and PDA were statistically significant in their association with SI:

- Higher DDD was associated with a higher level of SI.
- Higher PDA was associated with a lower level of SI.

Contrary to the authors' hypothesis, anger was not found to be a moderator of the relationship between drinking patterns and SI. This means that DDD and PDA are good predictors of SI among people with AUDs, and that although depression may mediate the strength of the prediction, anger does not increase the risk of SI. However, the authors noted that one of the limitations of the study is that it only addressed SI, so it is not known whether the results are generalizable to suicidal behavior. This is important because it is possible that anger may be a

factor in impulsive suicidal acts during bouts of drinking, and measures that assess only SI would not be able to capture this connection.

Reference

Conner, K. R., Gunzler, D., Tang, W., Tu, X. M., & Maisto, S. A. (2011). Test of a clinical model of drinking and suicidal risk. *Alcoholism: Clinical and Experimental Research, 35*(1), 60–68.

Numerous articles were published during the 3-month period of this review, and eight were selected for this update because of their emphasis on substance use disorders (SUDs) and suicidality.

Findings on Risk Assessment

Conner et al. (2011) studied a sample of adult patients in residential substance abuse treatment for an alcohol use disorder (AUD) who recently attempted suicide. The study was designed to examine the type, severity, and timing of stressful life events (SLEs) in adults 30 days prior to, and the day of, their suicide attempts. Researchers recruited and screened 3,043 patients from residential substance abuse treatment programs in Western New York, then selected and assessed 101 patients with an AUD who had made a recent (within 90 days) suicide attempt. For each selected patient, a nonsuicidal control subject was recruited from the same treatment facility; sites were the only matching variable in this study.

A modified, semi-structured SLE interview was conducted with each participant. SLEs were defined as a new event that an average person would view as negative, or an event that signaled the worsening of a chronic circumstance. SLEs were collapsed into two broad severity levels: minor and major events. They were then further collapsed into interpersonal and non-interpersonal events. Interpersonal SLEs included, for example, relationship problems, physical assault or rape by someone known to the person (not simply an acquaintance), or death of a family member. Noninterpersonal SLEs included, for example, injury or illness, physical assault or rape by a stranger or acquaintance, a housing problem, or job or financial problems.

Results indicate that major interpersonal SLEs may present a marked risk for suicide attempt in patients with an AUD, whereas minor interpersonal and major noninterpersonal SLEs may not present the same level of risk. In addition, the findings suggest that within this population, an SLE may prompt a suicide attempt on the same day, which makes prevention difficult. The authors state that preventive interventions focusing on anticipating and planning for major interpersonal SLEs and improving interpersonal relationships could be beneficial in reducing suicidal behavior in adults with an AUD. Couples' therapy may also be advantageous, because partner–relationship separations were the most common interpersonal SLE preceding suicide attempts in subjects with an AUD.

The authors note several study limitations. The study included relatively few individuals who attempted suicide for the first time in the preceding 90 days. This made it impossible to determine if SLEs resulted in a greater risk for those making a first attempt versus those making repeated attempts. Also, the study did not examine the role of other types of stressors (e.g., chronic stress, distal events) in determining suicide risk. The authors also acknowledge that because the study focused on adults in treatment for AUDs, the results may not be generalizable to other populations.

Kaplan, McFarland, Hugert, and Valenstein (2012) compared the suicide risk among male veterans and nonveterans. Further, they examined age-associated life circumstances that

commonly precede suicide among male veterans in four age groups: 18–34 (young), 35–44 and 45–64 (together, middle-aged), and 65 and older (older). Researchers examined data from the National Violent Death Reporting System (2003–2008) to determine age-specific suicide rates for male veterans (n=8440) and nonveterans (n=21,668) and to calculate the age-stratified mortality ratio for veterans. Family members or friends of the deceased were contacted to ascertain mental health status, suicidal behavior, alcohol or drug problems, and life events. Coroner/medical examiner testing was used to determine the suicide method and blood alcohol concentration (BAC) at time of death.

The researchers found that suicide risk for male veterans, compared with nonveteran men, was greater in all age groups except those 65 and older. Among veterans, the precipitating circumstances preceding suicide varied by age group. Specifically, younger veterans were more likely than older veterans to have experienced intimate partner, financial, legal, and occupational problems prior to suicide. In fact, nearly half of the veterans in the youngest group experienced a relationship problem before taking their lives. In older veterans, health problems were the life event most likely to have preceded suicide.

Although older veterans were more likely than other age groups to have been perceived as depressed, middle-aged veterans (specifically, 35 to 44) were more likely to have received a mental disorder diagnosis before death. Older and middle-aged veterans also were less likely to have received mental health services for their symptoms when compared with nonveterans in the same age groups.

Depression was the most common mental disorder diagnosis for all four age groups, and posttraumatic stress disorder was more common in younger veterans. Alcohol dependence and acute alcohol use at the time of death were more common among young and middle-aged veterans when compared with those ages 65 and older. In particular, nearly one-third of the young veterans had a BAC greater than or equal to 0.08 when they took their lives, yet alcohol dependence appeared to be most prevalent in the middle-aged veterans. In terms of suicide attempt history, young veterans were the most likely group to have previously displayed suicidal behaviors. In addition, the most common method of suicide among veterans in all age groups was through use of a firearm—particularly among older veterans.

The authors suggest that by focusing on precipitating life stressors, the risk of suicide among male veterans could possibly be reduced. Specifically, older veterans who are depressed or suicidal should be asked about access to firearms and counseled about safe firearm storage. It may also be beneficial for providers to focus on the physical health of older veterans. Among young veterans, there is a need for more extensive resources to cope with family/relationship concerns. Among middle-aged veterans, more attention should be paid to substance abuse and psychiatric issues.

The authors note a number of potential study limitations. Most of these involve difficulties inherent in postmortem research (e.g., accuracy of death certificate information, lack of consistency in the kinds of data collected in different States, reliability of information from family members or others). The authors also note that this study was descriptive and no causal relationship between variables and suicide risk could be inferred.

Spokas, Wenzel, Brown, and Beck (2012) analyzed the characteristics of people who make impulsive suicide attempts. Participants were recruited from psychiatric or medical emergency departments following a suicide attempt and were assessed using the Suicide Intent Scale (SIS); the Lethality Scale; the Number and Dates of Suicide Attempts measure; the Psychiatric History Questionnaire; the Scale for Suicide Ideation; the Beck Depression Inventory-II; the Beck Hopelessness Scale; and the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-IV-I). Each participant was paid $50 for taking part in the study.

Seventy-eight participants were classified as making an impulsive suicide attempt (no premeditation) and 65 were classified as making a premeditated attempt (3 hours or more of premeditation; i.e., an SIS score of 2). Those who reported considering suicide for 3 or fewer hours (i.e., a score of 1 on SIS item number 15; $n=37$) before the attempt were not included in the subsequent analyses.

The authors determined that participants who made impulsive attempts (a) were less likely to report using drugs to facilitate the attempt, (b) were less likely to have used alcohol prior to the attempt, (c) had significantly lower expectations of death (although lethality rates were similar to those who premeditated the attempt), (d) reported significantly less depression and hopelessness, and (e) were significantly less likely to have a history of sexual abuse. Individuals in both groups had similar levels of suicidal ideation and had no difference in prevalence of borderline personality disorder or drug use disorders. However, those making impulsive attempts were more likely than those who premeditated the attempt to meet criteria for an AUD.

The study results suggest that providers should not minimize the significance of impulsive suicide attempts, as they have a similar lethality to premeditated attempts. The authors state that the most important finding of this study is that those who make impulsive suicide attempts have a different clinical profile (e.g., lower levels of depression and hopelessness) than those who make premeditated attempts and should not be overlooked by clinicians assessing for suicide risk. This finding may be particularly relevant in AUD treatment settings, as patients with AUD are at higher risk for making an impulsive suicide attempt.

A study limitation of note is that participants' histories of sexual abuse and the nature of their suicide attempts (impulsive versus premeditated) were both measured with single questions, and the construct validity of these items is not known.

Buckner, Joiner, Schmidt, and Zvolensky (2012) examined the role of social anxiety in the relationship between marijuana and suicidality. Participants *(n=343)* were recruited from those who responded to community-based advertisements for a larger study about the efficacy of a four-session, tobacco smoking-based behavioral intervention program. Included were 66 individuals who reported never using marijuana and 134 who endorsed current (past-month) use. Among the 134 current users, 32.1 percent reported daily marijuana use and roughly 14 percent met the criteria for social anxiety disorder (SAD), per the *Diagnostic and Statistical Manual of Mental Disorders* Fourth Edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000). Participants considered to be at high risk for suicidal behavior were excluded from the study.

Participants were assessed for the following: suicidality, marijuana use, social anxiety, clinical diagnosis of SAD, depression, negative affect, nicotine dependence severity, alcohol-related problems, and other types of anxiety. Well-accepted assessment tools, such as the Inventory of Depression and Anxiety Symptoms (IDAS), the Social Interaction Anxiety Scale, the SCID-IV-I, and the Beck Depression Inventory-Second Edition were used to conduct the assessments.

Results of the study showed that the relationship between marijuana use status and suicidality did not vary as a function of social anxiety. However, participants who used the drug daily who experienced social anxiety were more likely to present with elevated suicidality. The authors recommend further study into why daily marijuana users with social anxiety are at higher risk for suicidality. They also suggest that clinicians who treat patients for marijuana dependence perform comprehensive assessments of suicidal ideation, self-injurious behaviors, and other suicide risk factors.

Study limitations include that participants were seeking tobacco-smoking cessation treatment, and smokers report higher levels of suicidal ideation than nonsmokers. Thus, the results may not be generalizable to nonsmoking populations. The study's dependent variable (i.e., suicidality) was based on the IDAS score, which includes both suicidal ideation and suicidal behaviors. The authors suggest that future research might be useful in parsing out the role that social anxiety may play in the relationship between those two aspects of suicidality and daily marijuana use. The study did not assess participants' suicide attempt histories, and the potential impact of this variable remains unknown. Also, the study's cross-sectional design made it impossible to make causal inferences or dissect the directionality of observed effects.

Liu, Vassileva, Gonzalez, and Martin (2012) compared the relationship between a marker of impulsivity—delay discounting (DD)—and suicide attempt history among substance dependent individuals (SDIs). DD is the tendency to undervalue an anticipated future reward as the amount of time before obtaining the reward increases (e.g., preferring to receive $5 today rather than waiting 2 weeks for $10). Studies have shown that (a) in general, people discount smaller delayed rewards at a higher rate than larger ones (called the magnitude effect), and (b) the rate at which delayed rewards are discounted is a behavioral aspect of impulsivity. Higher discounting rates have been found among SDIs, but DD has not been well studied as a suicide risk factor.

This study assessed 466 people with SUDs who were enrolled in a larger study of neurocognitive effects of HIV and substance dependence. Participants were only included in the study if they met the following criteria:

- Absence of acute mania or major depression
- No documented history of neurological injury or illness
- No history of schizophrenia or current neuroleptic treatment
- Negative results on a breathalyzer test and rapid urine toxicology screening for opiates and cocaine
- No drug use for at least 1 week prior to study participation

In addition to the measures of HIV and hepatitis C serostatus found in the larger study, participants were evaluated for a lifetime history of SUDs, mood disorders, and suicide attempts.

Each participant completed a delayed reward discounting task (the Monetary Choice Questionnaire). The researchers found no significant difference on DD between participants with and without a history of attempting suicide. However, the two groups differed significantly in terms of reaction to delayed reward size. In essence, participants with a history of suicide attempts were generally indifferent to the size of the delayed reward, whereas those without a suicide attempt history reflected the more common tendency to discount small, delayed rewards more than large ones.

The authors suggest that although people with SUDs, in general, have impulse control deficits, significant variability in impulsivity exists within this population. Their findings support the theory that people with SUDs who display suicidal behavior may show an impaired sensitivity to significant future rewards. However, the authors stress that due to the cross-sectional nature of this study, no causal inferences can be made. They recommend further studies into this topic to determine possible suicide prevention strategies.

Findings on Co-Occurring Conditions and Risk Factors for Suicidality

Risk of suicide among offenders with co-occurring mental and substance use disorders was evaluated in a secondary data analysis by Ruiz, Douglas, Edens, Nikolova, and Lilienfeld (2012). After analyzing a combined sample of offenders (*n*=3,197) who participated in five previous studies, the researchers found that co-occurring substance use and mental disorders were associated with suicide risk factors. Additionally, offenders with substance use disorders were more likely than other offenders to have particular mental disorders that are associated with suicide risk factors (e.g., depression, traumatic stress, and personality disorders). No statistically significant differences were found between male and female offenders in terms of co-occurring disorders being associated with suicide risk. The researchers surmised from the analysis that offenders with mental disorders may be at higher risk for suicidal behavior when they abuse drugs or alcohol.

Study limitations include that the five studies analyzed provided only concurrent and retrospective validation; the researchers conducted no followup work. The study relied heavily on self-reported scale elevations (i.e., symptoms), which are not synonymous with official clinical diagnoses. In addition, offenders with psychotic disorders were not included in the study.

Tiet and Schutte (2012) presented findings from a study about treatment setting and outcomes for patients with co-occurring disorders. This was the first study to examine in a "real-world" setting the potential benefit of treating patients with co-occurring disorders in dual-diagnosis treatment programs, rather than in either a substance abuse or psychiatric treatment program. Participants were recruited from four specialty outpatient treatment programs (one dual-diagnosis, one psychiatric, and two SUD treatment programs) in two U. S. Department of Veterans Affairs (VA) Medical Centers. All (*n*=257) participants had co-occurring psychiatric disorders and SUDs at treatment entry. Participants were compensated for their time.

Participants completed a structured diagnostic interview at treatment entry (covering both lifetime and past 12-month diagnoses) and completed a self-report survey both at treatment entry and 6 months later (covering patient demographics, alcohol and drug use and abuse, and psychiatric symptoms). Study results were mixed. Results indicated that patients who initiated

treatment at dual-diagnosis programs were more likely than those entering psychiatric or SUD programs to have attempted suicide in the past 30 days (20 percent versus 3 percent) and had lower substance use abstinence rates. At 6-month followup, patients in dual-diagnosis programs no longer differed from the other patients in relation to abstinence rates or suicide attempts in the past 30 days.

Patients in dual-diagnosis treatment did not have better absolute outcomes than patients who entered SUD or psychiatric treatment programs. However, there were differences among subgroups of patients who continued to use substances. Patients who initiated treatment at the dual-diagnosis treatment program (and continued to use substances) reported more days of heavy alcohol consumption and days of drug use within the past 30 days at 6-month followup than did those who entered SUD or psychiatric treatment programs (and continued to use substances). However, patients who initiated treatment at the dual-diagnosis program started out with more severe symptoms, and the slopes of improvement (in terms of suicide attempts and abstinence from alcohol and drugs) were steeper than those experienced by SUD or psychiatric program patients. The authors suggest that integrating SUD and psychiatric treatment may have advantages in terms of managing and reducing suicidal behavior among patients with co-occurring disorders.

Several study limitations are noted. First, because the study relied on a quasi-experimental design, and patients at different treatment centers had varying pretreatment characteristics, a causal relationship cannot be inferred. Second, as the study only utilized four treatment programs, the findings are not necessarily representative of other treatment programs. Third, the participant population was largely male, and the number of participants in the dual-diagnosis program was small, so generalizability of the results may be limited. Fourth, this study did not analyze the interactive effects of treatment setting and patient severity at treatment entry in relation to outcomes. Fifth, counselors at the SUD and psychiatric programs may have informally incorporated some aspects of integrated dual-diagnosis treatment, thus lowering the differences between the programs. The authors suggest that future studies focus on identifying specific parts of dual-diagnosis treatment programs that are related to better outcomes, such as lower rates of suicidality.

Ilgen et al. (2012) studied data on male veterans who died by suicide who had a least one SUD during the 2 years prior to death. Specifically, the study aimed to describe: demographic and clinical characteristics of male veterans with an SUD who died by suicide, the extent of their contact with the healthcare system during the year prior to their deaths, and the factors related to care settings on the last visit before their deaths. The researchers surveyed data from the U.S. Department of Veterans Affairs' National Patient Care Database and the National Death Index and identified all male Veterans Health Administration (VHA) patients who had a documented SUD and had died by suicide between October 1, 1999, and September 30, 2007 (*n*=3,132).

Subjects were grouped into three age categories: 18–44, 45–64, and 65 and older, and into four racial groups: White, Black, unknown or other, and missing. Also noted were patients who had two or more mental disorders unrelated to their SUDs.

AUDs were the most common type of SUD among the veterans who died by suicide (83.4 percent). The second most common category was other or polysubstance abuse (31.9 percent).

Depression was the most common psychiatric diagnosis (31.9 percent). However, 48.1 percent of patients had been diagnosed with two or more psychiatric disorders in the 2 years prior to death.

In analyzing the timing of the veterans' contact with the healthcare system before suicide, it was found that 94.6 percent had some sort of contact with the VHA in the year before death. More than half (55.5 percent) visited a VA facility during the month before death, and 25.4 percent were seen within the week before death.

In terms of types of treatment within the year before suicide, 32.8 percent had received SUD treatment, 69.0 percent had received mental health services, and 89.4 percent had received some other type of medical treatment. The data related to veterans who had some sort of contact with VHA during the year before death (*n*=2,964) were further analyzed to determine what type of treatment was received in the visit preceding death. It was found that 10.5 percent had SUD treatment, 32.8 percent received mental health services, and 56.6 had some other sort of medical contact with VHA. From among these three groups, the Black patients with SUDs were less likely to have been seen in SUD treatment settings than White patients with SUDs. Older veterans (age ≥ 65) with SUDs were the least likely age group to have been seen in SUD treatment prior to suicide.

The study found that the majority of male veterans with SUDs who died by suicide received health care during the year and month before death—most in a general healthcare setting, rather than a specialty treatment setting. The authors suggest that this study could prompt further evaluations of suicide risk detection and intervention strategies that could provide benefit in a variety of healthcare settings.

Some of the study limitations are similar to those of other postmortem studies, such as the possibility that the causes of death might have been misclassified, potentially affecting the study results. Additionally, male veterans who had received treatment services from VA facilities comprised the sample population; the results may not be generalizable to other populations. Furthermore, study design could have resulted in increased estimates of treatment utilization because one inclusion criterion was that patients had to have received an SUD diagnosis from a VA treatment provider within the 2 years before suicide (which, by definition, requires some type of treatment utilization within the 2 years before death). It is also important to note that all of the diagnoses were made by VA treatment providers, some of whom were not mental health professionals. Consequently, diagnoses might have differed from those that would have been obtained through the use of structured diagnostic interviews.

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Two articles met the selection criteria for this literature review update for TIP 50, *Addressing Suicidal Thoughts and Behaviors in Substance Abuse Treatment*.

Findings

Anestis, Gratz, Bagge, and Tull (2012) examined the shared effect of borderline personality disorder (BPD) and distress tolerance (DT) on suicidal behavior. As people with BPD have high rates of suicidal behavior, the researchers wanted explore the effect that DT (which is usually low in individuals diagnosed with BPD) had on suicidal behavior. Assessment of suicidal behavior included number of suicide attempts, the level of intent to die (clear versus ambiguous), and the medical severity of the attempt. DT was defined as the degree to which an individual is able to withstand aversive psychological states.

This study took place in a residential treatment facility for substance use disorders (SUDs). The researchers used structured interviews, behavioral assessments, and self-report questionnaires to assess the 176 participants. Exhibit 1 presents the diagnostic history of respondents.

Exhibit 1 Respondents' Diagnostic History

Diagnostic History	Percent of Respondents (*N*=176)
Mood disorder (lifetime)	64.2
Alcohol dependence (lifetime)	58.0
Cocaine dependence (lifetime)	51.1
Anxiety disorder (lifetime)	45.5
Deliberate self-harm (lifetime)	33.5
Cannabis dependence (lifetime)	32.4
Opioid dependence (lifetime)	21.6
Borderline personality disorder	30.1
Any suicide attempt	15.9
Any suicide attempt with intent to die	10.8
Any medically serious suicide attempt	10.2
Any ambivalent suicide attempt	9.1

The authors presented the following as results of the study. Individuals with BPD were significantly more likely than those without the disorder to report a history of suicidal behavior. In addition, individuals with both BPD and high DT were the most likely to have a higher frequency of suicide attempts and attempts made with a clear intent to die. In regard to the interaction between BPD and high DT, the authors hypothesized the following:

- **High DT.** High DT in itself is not always a problem. However, in a population with high levels of suicidal desire (e.g., SUD patients with BPD), high DT may increase the risk of all types of suicidal behavior (overall behavior, varying degrees of intent to die, and medical severity). When coupled with severe psychopathology such as BPD, high DT may allow these people to engage in behaviors that would otherwise seem too painful or difficult, such as suicidal behaviors.

- **Low DT.** Low DT may increase the risk behaviors that help the person avoid emotional distress (e.g., substance misuse, deliberate self-harm) but might also protect against more lethal suicidal behaviors.

Darke, Campbell, and Popple (2012) collected data on self-harm and attempted suicide history from people newly admitted to a therapeutic community (TC). The researchers wanted to determine if a relationship existed between the main type of substance of abuse and history of self-harm and suicide. They also sought to identify predictors of self-harm and attempted suicide.

Of the 188 participants, 65 percent were male, and the most common primary substance of abuse was alcohol (*n*=71). All entrants reported using more than one substance, 52 percent had a diagnosis of BPD, and 45 percent had a posttraumatic stress disorder diagnosis.

In regard to rates and frequencies of self-harm and suicide attempts among TC entrants:

- 34 percent reported a lifetime history of self-harm.

- 9 percent reported past-year self-harm.

- 20 percent reported multiple episodes of self-harm.

- 36 percent reported a lifetime history of attempted suicide.

- 15 percent reported past-year suicide attempts.

- 17 percent reported multiple suicide attempts.

In addition, the researchers found that:

- There were no significant associations between primary substance of abuse and either self-harm or suicide attempt.

- Number and rates of both attempted suicide and self-harm were extremely high when compared with the general population.

- Approximately half of the female entrants reported histories of self-harm and attempted suicide compared to one-quarter of male entrants.

- Multivariate analyses showed that TC entrants whose primary substance of abuse was cannabis had a lower risk of self-harm than participants in the opioid and alcohol groups. However, participants in the cannabis group were more likely than participants in the opioid and alcohol groups to have a suicide history.

- No differences were found between the alcohol, opioid, or stimulant groups in rates of either self-harm or suicide behavior.

- Self-harm history was associated with an increased likelihood of a history of attempted suicide (up to fourfold increase in risk).

The authors stated that all TC entrants should be asked about their self-harm and suicide histories and assessed for current risk.

References

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