Behavioral Treatments of Suicidal Behaviors

Definitional Obfuscation and Treatment Outcomes

MARSHA M. LINEHAN

University of Washington, Department of Psychology, Box 351525, Seattle, Washington 98195-1525

ABSTRACT: This chapter focuses on a review of randomized clinical trials of both psychosocial and behavioral interventions designed to directly reduce rates of suicide and parasuicidal behavior, including suicide attempts. It begins with an overview of the definitional difficulties in this field and then proceeds to an overview of treatment issues and a comprehensive review of treatment studies aiming to reduce suicidal behavior among suicidal individuals. Twenty studies are discussed. Eighteen studies randomly assigned subjects to the experimental and control condition; the other two studies assigned subjects in an alternating sequential fashion. Analyses showed that four psychosocial intervention studies and one pharmacotherapy study have reported efficacious results when compared to treatments-as-usual or placebo controls. From another perspective, when outpatient psychosocial interventions were examined, the strongest predictor of whether the experimental treatment would be more effective than the control was whether high-risk suicidal individuals were included. Psychosocial interventions appear to be most effective with the more high-risk individuals.

INTRODUCTION

Intentional, nonfatal, self-injury (otherwise known as parasuicide) includes both suicide attempts and acts without suicide intent and is estimated at about 300 persons per 100,000 population per year for all types of parasuicide (for reviews of prevalence estimates, see refs. 10 and 55). In Europe the estimated rate for medically treated parasuicides is 139 per 100,000 for males and 189 for females. The likelihood of encountering parasuicidal behavior during the course of mental health treatment is especially high when treating severely dysfunctional patients. Diagnosis of a DSM axis I disorder is associated with increased risk of both suicide

"Writing of this manuscript was partially supported by Grant MH34486 from the National Institute on Mental Health, Bethesda, MD.

Tel: (206) 543-9886; fax: (206) 616-1513; e-mail: linehan@u.washington.edu
and parasuicide. Although other disorders are associated with suicidal behavior, the most pervasive association is that between suicidal behavior (suicide ideation, suicide attempts, and suicide) and major depression. For example, major depression puts one at increased risk for suicide (for a review, see Tanney\textsuperscript{50}), attempted suicide,\textsuperscript{23,24} and nonsuicidal self-mutilation.\textsuperscript{9} Among individuals meeting criteria for any personality disorder, parasuicidal behavior with and without suicidal intent is most prevalent among those meeting criteria for borderline personality disorder, (BPD).\textsuperscript{14,45,47,58} As many as 69 to 75\% of those with BPD have a history of parasuicide;\textsuperscript{7,8} approximately one out of ten patients with BPD eventually kill themselves;\textsuperscript{21,38,49} and as many as one third of patients who meet all eight DSM-III criteria for BPD commit suicide.\textsuperscript{49} Among patients meeting criteria for BPD, major depression increases the risk of serious suicide attempts,\textsuperscript{11} although increased risk of completed suicide has not been demonstrated.\textsuperscript{19,22,59}

This chapter begins with an overview of the definitional difficulties in this field and then proceeds to an overview of treatment issues and a comprehensive review of treatment studies aiming to reduce suicidal behavior among suicidal individuals. That is, the focus is on tertiary care rather than programs aimed at preventing the emergence of suicide in the first place. To be included in the review (adapted from Linehan, unpublished manuscript), the treatment under investigation had to target suicidal behavior directly and apply a treatment designed specifically to reduce suicide. The treatment study had to select subjects because they were suicidal and report outcomes on suicide ideation, parasuicidal acts, including suicide attempts and/or suicide. There are a huge number of uncontrolled studies of treatments for suicidal individuals, from case studies to large sample longitudinal follow-up studies. They are not included inasmuch as designs without a comparison condition offer little information about the efficacy of a treatment. I could find no well-controlled single-subject experimental designs.

Studies without random assignment to condition, or a close approximation to randomization, are also not included. Without random assignment any findings are essentially correlational. To determine whether any treatment gains are due to the experimental treatment, an experimental design is required. In addition, without randomization, extraneous factors, such as subject, therapist, or program characteristics simply cannot be ruled out as important influences on outcome. Twenty studies are discussed. Eighteen studies randomly assigned subjects to the experimental and control condition; the other two assigned subjects in an alternating sequential fashion. Although in neither of the latter two studies did the authors suggest that the first subject was assigned randomly, they are very close to a randomized design. Studies were located by searching psychological abstracts, MEDLINE, and the archives of the Suicide Information and Education Centre located in Calgary, Alberta, Canada.
All published studies meeting the above inclusion criteria were selected for review. Unpublished dissertation research was not included, although there were several listed in the psychological abstracts.

DEFINITIONAL OBFUSCATION

One problem in research on nonfatal self-injury is the confusion resulting from the numerous terms used to refer to this behavior and the failure to define the terms precisely, if at all. Some investigators label all intentional self-injurious behavior not resulting in death as "suicide attempts." At times the use of the term "suicide attempt" is not even associated with intent to die. For example, Velamoor and Cernovsky\textsuperscript{5} report that of 96 individuals admitted to a general hospital for a suicide attempt (their term) by means of self-poisoning, 17.7\% carried out their attempt with the intent not to die. Others (e.g., Brent\textsuperscript{3} and Lewinsohn et al.\textsuperscript{24}) report that among adolescent suicide attempters (defined by Lewinsohn as "self-inflicted behaviors intended to result in death," p. 26), approximately one fourth report no intent to die and only about a third of those seen in an emergency room state that they had wanted to die (Brent\textsuperscript{5}, referenced in Lewinsohn\textsuperscript{24}). It is difficult to know what is meant by a suicide attempt with no intent to die. Such terminology mislabels the large number of people that injure themselves without intending to die (cf., Linehan\textsuperscript{26}).

When referring specifically to intentional self-injurious behavior without accompanying intent to die, ambiguous terminology is more the rule than the exception. In the absence of a generally accepted term, investigators often label the behavior under study by its form or method (e.g., self-mutilation, overdosing, self-poisoning) or simply by the general terms "self-injury" or "self-harm." Although these terms do not explicitly state that the behavioral act and resulting bodily injury or harm are intentional, the context generally implies an assumption that the behavior and outcome consequences are not accidental. In clinical environments, unfortunately, the term "self-harm" is also frequently used to refer to any behavior pattern that results in psychological or physical harm to the individual, including driving fast and staying in abusive relationships. This further obscures the meaning of the term.

As can be seen in TABLES 1-4, efforts to actually measure suicide intent are more the exception than the rule in research on nonfatal suicide attempts. Instead, investigators often use the topography (i.e., overt form of behavior or self-injury method) and circumstances (e.g., alone or with others) to infer psychological intent, with little or no effort to actually measure intent to die (i.e., suicide intent) in a systematic and reliable manner. Thus, for example, clinicians or researchers may assume that all self-mutilation is intended solely to mutilate (and often manipulate others) rather than cause
death. Or, they may assume that all overdoses taken in the near vicinity of another individual are suicide "gestures" (i.e., behaviors where the intent is to gesture or communicate with others rather than to die). Other investigators infer intent based on the medical (e.g., medical treatment and/or physical condition) and social (e.g., reinforcing interpersonal reactions, avoidance of situations) consequences of the behavior, as if intended outcomes and actual outcomes of behavior are so strongly associated that independent assessment of intent is unnecessary—an unwarranted assumption.

Given the difficulties in the field arriving at a consensus on how to measure or infer intent to die during deliberate self-injurious acts, Kreitman\(^2\) coined the term "parasuicide" to refer to all nonfatal self-injurious behavior with clear intent to cause bodily harm or death (i.e., both the behavioral act and the injurious outcomes are not accidental) that results in actual tissue damage, illness, or risk of death or serious injury. In the ongoing multinational WHO/Euro parasuicide epidemiological monitoring studies, parasuicide is defined as "an act with nonfatal outcome, in which an individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences" (Platt et al.,\(^4\) p. 99).

Platt et al. go on to say, "It should be noted that the apparent purpose of motivation underlying the act was not taken into account when making the [parasuicide] diagnosis" (p. 99). Parasuicide, then, is a heterogeneous category that includes self-injurious behavior with intent to die (a suicide attempt) as well as behavior without intent to die (e.g., putting out a cigarette on one's arm with no thought of dying). Although it represents an inaccurate reading of the actual definition as proposed by Kreitman and used by major researchers in the field, many clinicians in the United States (e.g., Lewinsohn et al.\(^2\) and Sederer\(^4\)) understand the term parasuicide as limited to intentional self-injury that is not a suicide attempt. This is probably because there is no agreed-upon term for nonsuicidal but otherwise intentional self-injury to parallel the term suicide attempt or ambivalent suicide attempt. Unfortunately, the misuse of the term in this manner simply confounds the interpretability of research on suicidal behavior. Definitional ambiguity and vagueness in a field of study, especially when it is as rampant as in the area of suicidal behavior, has at least two major negative consequences. First, heterogeneous definitional practices make it almost impossible to compare findings across studies of parasuicidal individuals. This, of course, made much worse by the fact that so few investigators actually define their terms operationally. Second, the tendency to use terms that implicitly (at least) imply intent to die (e.g., suicide attempt) or absence of intent to die (e.g., deliberate self-injury), in the absence of any
reliable or valid assessment of actual intent, confounds intent and action and can lead to falsely classifying behavior as not suicidal when it is and as suicidal when it is not. A field of inquiry simply cannot grow without clear and precise definitions of the variables one is investigating.

When behavioral and outcome intent can be reliably assessed, they can be useful as a means of discriminating the class of behaviors that are suicide attempts (i.e., deliberate self-injury with moderate to high intent to die) from the class of acts with either no or very low intent to die (see Linehan26 for a review of this point). The absence of reliable and valid measurement of behavioral intent can lead to research findings that are unnecessarily confounded by high heterogeneity of the subject pool and difficult to interpret. The importance of measuring intent, independent of medical seriousness, is suggested by data collected as part of the WHO/Euro multicentre parasuicide studies. Verbal reports (either spontaneously or following questioning) of an intent to die following a parasuicide episode predicted suicide but not repetition of parasuicide during the next 12 months, even when medical seriousness of the parasuicide and a report of psychiatric problems were controlled.18 Similar results were found by Lonqvist20 and Ostamo27 when analyzing the number of suicides following a first suicide attempt within at a five-year follow-up point.

Behavioral intent, however, can be quite difficult to measure. For example, during a specific intentional self-injurious act a substantial minority of individuals may be thinking about suicide (and even wanting to suicide) while simultaneously expecting not to die.41 As noted above, individuals may come to the emergency room for a purported suicide attempt and then say that they had no actual intent to die. In a study in our clinic with suicidal women meeting criteria for borderline personality disorder (BPD), all endorsed intent for multiple outcomes even when “to die” was the primary intended outcome. The good news is that we have found that, when interviewers are well trained and use a structured interview format, they can be quite reliable judges of suicide intent. In data analyses of the Parasuicide History Interview, intraclass interrater reliabilities in estimating suicidal intent have typically been over .80 (Linehan, Heard, Wagner & Brown, 1997, unpublished manuscript).

An additional source of obfuscation is the repetitive nature of parasuicide in some individuals. In the general population sample investigated by the WHO/Euro studies, one-year parasuicide repetition rates varied from a low of 1.03 to 1.30 within a one-year time frame. Repetition rates can be considerably higher in some diagnostic groups, such BPD. Among individuals who repeat parasuicide, there may be considerable cooccurrence of different types of parasuicidal behaviors within a single individual over time. That is, although actions can be labeled, individuals often cannot be. In a sample of women meeting criteria for BPD with chronic parasuicidal behavior or current drug abuse and entering treatment in our research clinic, 71% had both
cut and burned themselves and had parasuicided using another method at least once in the past year (none had only cut or burned themselves), and almost 80% reported both in their lifetime. In a sample of ten women with suicide attempts severe enough to require inpatient medical treatment, nine also had one or more nonmedically serious parasuicidal acts. In a sample of (nonsuicidal) self-mutilating adolescents, 31% had made a serious suicide attempt close to the time of self-mutilation.

TREATMENT DEVELOPMENT AND EVALUATION:
IMPEDEMENTS TO RESEARCH

In almost all treatment studies addressing mental disorders of any kind, potential subjects who are judged at high risk for suicide are rejected at screening or are dropped from on-going treatments. Exclusion is generally based on the belief that randomization of highly suicidal individuals to treatment condition is unethical, or, at a minimum, too risky. This belief, in turn, is based on an assumption that we actually know that some interventions, or the prevailing standards of care, are better than other interventions for this population. The problem here is very much like the problems that have arisen because of the exclusion of pregnant women from clinical trials of almost all drugs. The exclusion has led to a paucity of information about how to treat pregnant women and is a policy now under fire from many quarters. Similarly, the exclusion of highly suicidal individuals from most controlled clinical trials of pharmacotherapy and behavioral interventions has led to a lack of information about how to treat individuals at high risk for suicide and/or parasuicide.

There are clearly a lot of reasons for the paucity of research on suicide. The first is the traditional faith in standards of care independent of hard experimental data demonstrating effectiveness. Although it is easy to experiment with standards of care in the abstract, it is considerably more difficult in the individual case. In contrast to other life and death disorders, such as cancer, treatment researchers, funding agencies, and universities appear unwilling to take the chance that a patient might die by suicide. Part of this is due to a legal system that holds individual practitioners, including those practicing within a research context, to the prevailing community standards of care. That much of the time those standards are based on dogma rather than on empirical evidence may not sway the average jury. In a sense, we in the clinical field have been too successful in getting the public at large, including the legal system, to believe that our collective clinical judgment is, in fact, the best basis for decision making even when the data on clinical judgment suggest that it is an extremely fallible base for clinical predictions.
A different impediment is the difficulty in getting research funding for treatment studies that do not address a specific mental health diagnosis. The belief in the United States, in particular, that suicidal behavior is a symptom of some other disorder is so strong that studies of suicidal behavior independent of a related mental disorder are hard to fund, hard to mount, and hard to publish. The exception here is suicide primary prevention efforts where there have been a number of requests for research proposals issued by the National Institute of Mental Health over the years. This volume promises to begin to turn this state of affairs around by focusing on suicidal behavior as a behavior that may be associated with, but not caused by, other mental health disorders.

**REDUCING SUICIDAL BEHAVIORS: WHAT SHOULD TREATMENT TARGET?**

All treatment interventions attempt to change or ameliorate the factors that are presumed to underlie or control the problem behaviors or symptoms of the patient. How that is done, however, varies widely across treatments. There are two basic strategies for treating suicidal behaviors in clinical populations. The first strategy assumes that suicidal behaviors are a symptom of some other underlying mental disorder. Treatment time and focus are allocated to treating the mental disorders presumably related to suicidal behavior in the belief that their cure will lead to reductions in suicidal behaviors. Except to maintain life, no special modifications are made in the treatment of the underlying disorder. Reductions in suicidal behaviors are an indirect benefit of therapy. This approach is the model underlying most psychodynamic and biological approaches to treatment. The second strategy is to target the reduction of suicidal behaviors directly. Reduction of suicidal behaviors is an explicit treatment goal and target of intervention. In behavioral approaches, the therapy session agenda engages the patient in a discussion of current and immediately past suicidal behaviors, including suicide ideation, threats and communications, and parasuicide episodes, and explicit connections are made to presumed underlying or controlling factors. In biologic approaches, the selection of medications is based on remediating biologic patterns believed to be specific to suicidal behavior. This approach assumes that suicide ideation, suicide risk, and parasuicidal acts can be reduced independently of other disorders and is the approach favored by crisis intervention and behavior therapists. The belief that there are specific biologic parameters associated with suicidal behavior is the basis for this book. The promise is that once these are discovered, it will be possible to develop specific antisuicide drugs. Suicidal behaviors are also targeted directly by almost everyone during emergencies, that is, when suicide or parasuicidal behavior is imminent.
TREATING SUICIDAL BEHAVIORS INDIRECTLY BY TREATING ASSOCIATED DISORDERS

Unfortunately, data are very sparse regarding which treatments (if any) for primary mental disorders actually reduce the risk for suicide and parasuicide. The exclusion of highly suicidal individuals notwithstanding, investigators frequently include measures of suicidal behaviors in their outcome battery. Because studies consistently find that affective disorders are the most common diagnoses related to suicide, most attention has been given to the effect of treating depression on subsequent suicidal behaviors, the assumption being that effective treatment of depression will reduce the incidence of suicide. Although this assumption makes intuitive sense, there are actually no empirical data from controlled trials to back up the assumption. Pharmacotherapy regimes that are more effective than placebo for reducing depression may or may not be more effective in reducing suicide ideation (e.g., Beasley et al., and Smith & Glaudin). To date, there are no data that antidepressants reduce the incidence of either parasuicide or suicide. Buchholtz-Hansen, Wang, and Kragh-Sorensen followed 219 depressed inpatients who had previously been participants in psychopharmacological multicenter trials. Not only were suicide rates higher than expected at follow-up, but there was no association between response to the antidepressant treatment in the trial and the suicide risk during the first three years of observation. Meta-analyses of clinical trial data in studies of fluoxetine and tricyclic antidepressants in the treatment of depressed individuals show no significant reductions in suicidal acts as a result of taking antidepressants. The reason these studies failed to demonstrate an effect on suicidal acts may be because of the very low base rate of suicidal acts in studies where actively suicidal individuals were not enrolled. Looking at the relationship of reducing depression to reducing suicidal behavior from the reverse direction, Linehan et al. showed that a cognitive-behavioral therapy that resulted in a significant reduction in parasuicide repeat rates compared to treatment-as-usual did so despite being no more effective in reducing depression or hopelessness than the control condition. (Depression and hopelessness improved in both treatments.) A similar finding was reported by Sakinofsky et al., who found that improvement in depression, hostility, locus of control, powerlessness, self-esteem, sensitivity to criticism, and social adjustment, measured following a parasuicide episode, was not related to reduced risk for repeated parasuicide over the next three months.

TREATING SUICIDAL BEHAVIORS DIRECTLY

Despite the frequency of suicide and parasuicide (including suicide attempts) among those with mental disorders, especially those in treatment, and the high therapist stress and legal liability associated with such
behaviors, there is remarkably little research on whether therapeutic interventions aimed directly at reducing suicide risk and parasuicidal behaviors are effective in achieving these aims. There are many books, articles, professional workshops, and legal precedents dictating treatment of suicidal behaviors, but very few of the recommended or required interventions have been subjected to controlled clinical trials. Thus, although there are standards of care for intervening with individuals at high risk for suicidal acts, there are little or no empirical data confirming that these standards of care are effective in preventing suicide or reducing the frequency or medical severity of parasuicidal acts.

Although hopelessness, depression, and other problems in living may be vulnerability factors for suicidal behavior in some individuals, it is obvious that they are neither sufficient nor always necessary for suicidal behavior to occur. Suicide and parasuicide are not inevitable responses to severe depression and hopelessness. Thus, it may be that treatments will be more efficient, and possibly more effective, if they target first the suicidal individual's response to events causing suicide (including depression) rather than the events or psychopathology itself. In surveying the literature on direct treatments of suicidal behavior, I have been able to locate 20 controlled clinical trials where subjects were selected for study due to suicidality (18 following a parasuicide episode, 2 following assessment of high risk for suicide). Characteristics of these studies are outlined in Tables 1-4.

As can be seen in Tables 1-4, inclusion criteria, treatment setting, and length and extensiveness of the interventions examined are highly variable. For example, two interventions involved no in-person contact, relying on letters or phone calls only, whereas two other studies were conducted wholly within psychiatric inpatient settings. Of the studies examining the effectiveness of counseling or psychotherapy, the briefest treatment was eight days and the longest was one year. There are 13 studies examining outpatient psychosocial interventions, two examining inpatient psychosocial interventions, three pharmacotherapy studies, and two studies with nonhospitalized high-risk individuals that did not involve in-person contact.

Eight of the studies examined whether or not some type of additional or more intensive clinical outreach, such as brief admission to an inpatient unit, home visits, letters and/or phone calls, or a simple card with an emergency phone number, added on to treatment as usual would decrease the probability of subsequent parasuicide and suicide. In these studies, the actual content of the outreach interventions was not always described; the experimental factor was the increase in outreach to the suicidal person. Two of the studies showed a significant reduction in parasuicide by follow-up and a third found a significant reduction in parasuicide acts and suicide threats combined. Five studies examined the effectiveness of some sort of focused out-patient psychotherapy or
counseling offered by mental health professionals compared to referral to outpatient psychotherapy or to one's primary care physician (where follow-through on the referral often did not occur). Three of the six studies found lower rates of parasuicide among those receiving the experimental treatments. One study looked at who offered treatment and found no differences between continuing outpatient care with the treating inpatient psychiatrist versus outpatient referral to a suicide prevention center. Three pharmacotherapy studies examined the efficacy of antidepressants (Draper & Hirsch referenced in Hirsch, Walsh & Draper, and Montgomery et al.) or neuroleptics. Antidepressants were not effective, but results in the neuroleptic study showed an astounding decrease in parasuicidal acts. In the two inpatient treatments, neither found an added benefit in subsequent suicide and parasuicide rates by adding an experimental treatment to the usual inpatient treatment regime.

What are we to make of these findings? Five psychosocial treatment regimes and one pharmacotherapy regime showed significant reductions in subsequent parasuicidal acts, and the simple act of making nondemanding phone calls and sending a letter produced a trend towards lower suicide rates over time. The quality of the studies and focus of the treatments, however, were extremely variable. Unknown or large pretreatment differences between conditions make results of both Termansen and Bywater and Welu hard to interpret. The failure to publish in a refereed journal and the subsequent absence of a published replication study in nineteen years makes one wonder about the generalizability of the neuroleptic effectiveness reported by Montgomery. Results in the Motto study did not reach significance and the study has not been replicated. We are left with three reasonably well-designed studies showing psychosocial interventions that appear effective in reducing the risk of subsequent parasuicidal behavior. Each study employed a very specific behavior and problem-solving focus. Both the Salkovskis and van Heeringen studies were very brief interventions aimed at acutely suicidal individuals who did not need immediate treatment for mental disorders. The Linehan study was a one-year intervention aimed at chronically suicidal high-risk, difficult-to-treat individuals meeting criteria for BPD, and having multiple behavioral dysfunctions and significant mental disorders. At the 18-month posttreatment point, Salkovskis found a parasuicide repeat rate of 25% among those receiving behavior therapy versus 50% receiving treatment-as-usual, a difference that was not statistically significant. Although this difference could certainly have been due to chance, the small sample size (n = 20) suggests that the study may have had inadequate power. During the one year after treatment ended, the parasuicide patients receiving the home visits in van Heeringen's intervention and the patients receiving Linehan's dialectical behavior therapy (DBT) had fewer parasuicide episodes than patient's receiving treatment-as-usual.
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time</th>
<th>Pretreatment analyses</th>
<th>Results</th>
</tr>
</thead>
</table>
| Chowdhury et al.⁵⁺⁺        | Patients with multiple parasuicides admitted to poison center for parasuicide³ (high suicide risk excluded) | 1. (E) Regular frequent appointments, home visits, 24-hr emergency phone, home visits and drop-in service (n=71).  
2. (C) TAU: referral to outpatient clinic (n=84). | 6 mo | E = C baseline measures. | E = C: parasuicide [17/71 (24%) vs. 19/84 (23%)]. |
| Termansen & Bywater⁹⁺⁺      | Patients admitted to emergency room (ER) for attempted suicide³ (high suicide risk included). | 1. (E) In-person follow-up (daily tapering to biweekly, up to 19 visits) by mental health worker (n=57).  
2. (E) Phone contact follow-up (daily tapering to biweekly) by crisis center volunteers (n=57).  
3. (C) No follow-up (n=50). | 3 mo | Significant pre-treatment differences across measures of psychopathology. | E₁ = E₂: parasuicide [1/45 (2.2%) vs. 2/33 (6.5%)].  
E₂=C: parasuicide [2/33 (6.5%) vs. 7/32 (21.9%)]; z=1.85.  
E₁ < C: parasuicide; z=2.79.  
E₁ > (E₂=C): treatment compliance. |
| Welu⁷                      | Patients > 16 yrs old admitted to ER for suicide attempt³ (excluded: living in institutional setting) (high suicide risk included). | 1. (E) TAU, home visits, and weekly contact by mental health worker (CPN, SW, counselors) monitoring or providing psychotherapy, crisis intervention, and/or family therapy as needed (n=62).  
2. (C) TAU: Referral to outpatient or inpatient followed by outpatient referral (n=57). | 4 mo | Not reported. | E < C: parasuicide [3/62 (4.8%)  
vs. 9/57 (15.8%)]; z=1.98.  
E > C: treatment compliance. |
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time</th>
<th>Pretreatment analyses</th>
<th>Results</th>
</tr>
</thead>
</table>
| Gibbons et al.\(^1\) | Patients > 17 yrs old admitted to ER for deliberate self-poisoning (excluded: in treatment, needing immediate psychiatric treatment) (high suicide risk excluded). | 1. (E) Immediate time-limited, task-centered casework by SWs in home (n=200).  
2. (C) TAU: Referral to treatment (n=200). | 3 mo   | 1 yr                  | E = C baseline measures.  
E = C: parasuicide [29/200 (14.5%) vs. 27/200 (13.5%)]; z=.29 (not significant).  
E > C: treatment completers. |
| Hawton et al.\(^1\) | Patients > 17 yrs old admitted to ER for deliberate self-poisoning (excluded: in treatment, needing psychiatric inpatient, substance abuse, or day treatment, no fixed abode) (high suicide risk excluded). | 1. (E) As needed (mean=4.3 visits) 3 mo problem-oriented counseling in home, and phone consultation by MD\(^*\), CPN, SW (n=48).  
2. (C) Problem-oriented counseling (mean=4.95 visits) in clinic (n=48). | 3 mo   | 1 yr                  | E = C all but one baseline measure.  
E > C: treatment completion.  
E = C parasuicide (10% vs. 15%). |
| Hawton et al.\(^1\) | Patients > 16 yrs old admitted to hospital for deliberate self-poisoning,\(^*\) suitable for out-patient counselling (excluded: in treatment, needing psychiatric inpatient, substance abuse, or day treatment) (high suicide risk excluded). | 1. (E) Brief, problem-oriented counseling in clinic (n=41).  
2. (C) Referral and advice given to general practitioner (n=39). | 2 mo   | 2, 4, 6 mo            | E = C baseline measures.  
E = C: suicide [1/41 (2.4%) vs. 0].  
E = C: parasuicide [3/41 (7.3%) vs. 6/39 (15.4%)].  
E = C: treatment compliance. |
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time</th>
<th>Results</th>
</tr>
</thead>
</table>
| Moller†         | Patients admitted to hospital for attempted suicide,* by self-poisoning (excluded: 50% of self-poisoners deemed unsuitable for brief outpatient psychotherapy) (high suicide risk excluded). | 1. (E) Inpatient crisis intervention and short-term outpatient psychotherapy with MD in charge of patient in hospital (n=68).  
2. (C) Inpatient crisis intervention with additional motivational interviewing and contacts, and referral to suicide prevention services (n=73). | 3 mo  | E=C: suicide [3/66 (4.6%) vs. 2/70 (2.9%)].  
E=C: parasuicide [9/66 (13.6%) vs. 3/70 (4.3%)]; z=1.92 (against prediction).  
E=C: suicide and suicide attempts; z=1.95 (against prediction).  
E>C: treatment compliance. |
| Waterhouse & Platt‡ | Patients >16 yrs old admitted to casualty department for parasuicide by self-poisoning* (excluded: needing immediate medical or psychiatric treatment, no fixed abode, current inpatient) (high suicide risk excluded). | 1. (E) Hospital admission, TAU at discharge (n=38).  
2. (C) TAU: referral to general practitioner (n=39). | 1 wk  | E=C all but one baseline measure; E>C: age.  
E=C: parasuicide at 1 week [2/38 (5.3%) vs. 2/39 (5.1%)].  
E=C: parasuicide at 1 wk-4 mo [1/38 (2.6%) vs. 2/39 (5.1%)]. |
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time</th>
<th>Pretreatment analyses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salkovskis et al.</td>
<td>Multiple high-risk suicide attempters aged 16-65 yrs old admitted to ER for antidepressant overdose (excluded: needling immediate psychiatric treatment, psychotic or organic illness, no fixed abode) (high suicide risk included).</td>
<td>1. (E) TAU and brief (5 sessions) problem-oriented counseling by CPN (n=12).</td>
<td>1 mo</td>
<td>E = C all but one baseline measure; E&gt;C: males.</td>
<td>E&lt;C: parasuicide at 6 mo [0 vs. 3/8 (37.5%)]; z=2.3. E = C: (cumulative) parasuicide at 18 mo [3/12; (25%) vs. 4/8 (50%)].</td>
</tr>
<tr>
<td>Allard et al.</td>
<td>Suicide attempters admitted to ER (excluded: no fixed abode, currently in primary care, sociopathy, parasuicide &gt; 1 week previous excluded) (high suicide risk included).</td>
<td>1. (E) Weekly (mean=12 visits) therapy (supportive or psychoanalytic, or behavioral, psychosocial), tapering to monthly meetings with psychiatrist, and home visit (n=76).</td>
<td>1 yr</td>
<td>E = C baseline measures.</td>
<td>E = C: suicide attempts [22/63 (34.9%) vs. 19/63 (30.2%)]. E = C: suicide [3/63 (4.8%) vs. 1/66 (1.6%)].</td>
</tr>
<tr>
<td>Author</td>
<td>Sample</td>
<td>Interventions</td>
<td>Time</td>
<td>Pretreatment analyses</td>
<td>Results</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>-------</td>
<td>----------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Linehan et al.²⁷,²⁸ | Patients with multiple parasuicides (1 in last 8 weeks) with borderline personality disorder (excluded: males, schizophrenics, bipolar disorder, primary substance abuse) (high suicide risk included). | 1. (E) Dialectical behavior therapy (weekly individual therapy, group skills training, as needed phone calls) mainly by PSY (n=24). 2. (C) TAU: referral to outpatient treatment (n=23). | 1 yr   | E = C baseline measures. | E = C: suicide [1/22 (4.6%) vs. 0] at 2 yr  
E < C: parasuicide at 1 yr [13/22 (59.1%) vs. 21/22 (95.5%); z=2.88.  
E < C: suicide and parasuicide at 1 yr [14/22 (63.6%) vs. 21/22 (95.5%); z=2.62.  
E < C: parasuicide at 1-2 yr [5/19; (26.3%) vs. 12/20 (60%); z=2.12.  
E > C: treatment compliance. |
| Morgan et al.³⁵  | All patients admitted to a general hospital for nonfatal deliberate self-harm with no history of prior parasuicidal behavior (high suicide risk included). | 1. (E) TAU and a card offering rapid, easy access (drop-in and on-demand hospitalization if no parasuicide during the episode) to on-call psychiatrists; encouragement to use such services (n=101). 2. (C) TAU: referral to primary healthcare team or to inpatient unit (n=111) | 1 yr   | E = C baseline measures. | E = C: parasuicide [5/101 (4.9%) vs. 12/111 (10.81%)]; z=1.57.  
E < C: parasuicides and serious threateners [5/101 (4.95%) vs. 15/111 (13.51%); z=2.13. |
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time Treat Asses</th>
<th>Pretreatment analyses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>van Heeringen et al.</td>
<td>Consecutively referred to the ER for parasuicide and 15 yrs or over, CPN to discuss noncompliance who did not need inpatient medical treatment other than intensive care unit (high suicide risk included).</td>
<td>1. (E) TAU and home visits (up to 3) to treatment noncompliers by a measure. E=C baseline. 2. (C) TAU: referral to treatment (n=258).</td>
<td>2-4 wks 1 yr</td>
<td>E = C baseline measures.</td>
<td>E&lt; C: parasuicide [15/196 (7.7%) vs. 27/195 (13.9%); z=1.98. E = C suicide [6/196 (3.1%) vs. 7/195 (3.6%). E&lt; C: parasuicide and suicide [21/196 (10.7) vs. 34/195 (17.4)]; z=1.98. E&gt; C: treatment compliance.</td>
</tr>
</tbody>
</table>

"Each of these two studies are sequential alternate rather than random assignment to condition.

""Any deliberate act of self-poisoning or self-injury which resulted in the patient being referred to hospital" (p. 70); clinical assessment; no reliability, no mention of blind assessment.

'E, experimental treatment.

'C, control condition.

'TAU, treatment-as-usual in clinical community where research occurs.

""Any act of self-injury, regardless of its seriousness, which was motivated by self-destructive tendencies"" (p. 29); clinical assessment; no reliability; no mention of blind assessment.

'all z scores are based on a binomial test calculated by the author and are included when the value is ≥ 1.57, which is p = .05 value for a one-tail test.

""Any nonfatal act of self-damage inflicted with self-destructive intention, however vague and ambiguous"" (p. 19); clinical assessment; no reliability; no mention of blind assessment.

'CPN, community psychiatric nurse.
TABLE 1. Continued.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Source</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>rSW</td>
<td>Social worker</td>
<td>&quot;Deliberate taking of a pharmacologically active substance in more than the prescribed dose or the usual consumption which resulted in the patient being admitted to a hospital unit&quot; (p. 112); clinical assessment and medical records; no reliability; blind assessment.</td>
<td></td>
</tr>
<tr>
<td>k</td>
<td>&quot;Intentional self-administration of more than the prescribed or recommended dose of any drugs whether or not there was evidence that the act was intended to cause self-harm&quot; (p. 172); alcohol intoxication alone not included; clinical assessment; no reliability; no mention of blind assessment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*MD, psychiatrist.</td>
<td>No definition of overdose given; interviews with patients, their general practitioners, and by monitoring service of hospital; interviewers blind to treatment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>Suicide attempt not defined; assessment not described.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>&quot;A non-fatal act in which an individual deliberately ingests a substance in excess of any prescribed or generally recognised therapeutic dosage&quot; (p. 237); clinical interviews; no reliability; assessors not blind.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>Suicide attempt not defined; structured clinical interviews; no reliability; no mention of blind assessment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>&quot;Any life-threatening behavior, with a real or professed intention of causing one's own death, not resulting in death&quot; (p. 306–307); clinical interview by researcher or therapist; no reliability, assessment not blind.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>&quot;Any intentional, acute self-injurious behavior with or without suicidal intent, including both suicide attempts and self-mutilative behaviors&quot; (p. 1060); Parasuicide History Interview; reliability given; blind assessment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*PSY, psychologist.</td>
<td>Self-harm not defined; clinical assessment; review of medical records; no reliability; no mention of blind assessment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>&quot;The deliberate ingestion of more than the prescribed amount of medical substances, or ingestion of substances never intended for human consumption irrespective of whether harm was intended&quot;...&quot;any intentional self-inflicted injury, irrespective of the apparent purpose of the act&quot; (p. 964); no reliability; no mention of blind assessment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Author</td>
<td>Sample</td>
<td>Interventions</td>
<td>Time Treat</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Liberman &amp; Eckman(^3)</td>
<td>Multiple suicide attempters(^4) admitted to psychiatric inpatient unit for suicide attempt (excluded: psychotic, organic brain syndrome, currently addicted to substances) (high suicide risk included).</td>
<td>1. (E) Behavior therapy by PSY(n=12). 2. (C) Insight-oriented therapy by PSY(n=12).</td>
<td>8 days</td>
</tr>
<tr>
<td>Patsiokas &amp; Clum(^5)</td>
<td>Patients admitted to psychiatric inpatient unit for suicide attempts (excluded: psychotic or substance abuse) (high suicide risk included)</td>
<td>1. (E) Cognitive therapy (n=5). 2. (E) Skills training in problem solving (n=5). 3. (C) Nondirective, reflective psychotherapy (n=5).</td>
<td>3 wks</td>
</tr>
</tbody>
</table>

*See footnotes on Table 1 for explanation of symbols.

\(^{4}\)No definition of suicide attempt given; structured interviews; no reliability; no mention of blind assessment.

\(^{5}\)No definition of suicide attempt given.
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time</th>
<th>Pretreatment analyses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montgomery et al.</td>
<td>Patients admitted to hospital after ≥ third suicide attempt; personality disorder (mainly BPD, histrionic) (without schizophrenia or depression).</td>
<td>1. (E) Mianserin, 30 mg (n=17). 2. (C) Placebo (n=21).</td>
<td>6 mo 6 mo</td>
<td>E = C on gender, age, personality disorder diagnosis (34% dropout rate).</td>
<td>E = C: repeated self-harm [8/17 (47%) vs. 12/21 (57%)].</td>
</tr>
<tr>
<td>Montgomery et al.</td>
<td>Patients admitted to hospital after ≥ third suicidal act; personality disorder (mainly BPD, histrionic) (without schizophrenia or depression).</td>
<td>1. (E) Flupenthixol, 20 mg im/4 wk (n=14). 2. (C) Placebo (n=16).</td>
<td>6 mo 6 mo</td>
<td>Not reported.</td>
<td>E &lt; C: suicide attempts [3/14 (21%) vs. 12/16 (75%)].</td>
</tr>
<tr>
<td>Author</td>
<td>Sample</td>
<td>Interventions</td>
<td>Time</td>
<td>Pretreatment analyses</td>
<td>Results</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------</td>
<td>-----------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Draper &amp; Hirsch</td>
<td>Patients admitted to hospital following parasuicide not already in treatment, consenting to treatment, and sufficiently high on a general health questionnaire to need psychiatric treatment (schizophrenia and depression not excluded).</td>
<td>1. (E) Mianserin, 60 mg (n=38).</td>
<td>6 wks</td>
<td>E₁ = E₂ = C on Ham-D</td>
<td>E₁ = E₂=C (21% vs. 13%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. (E) Nomifensine, 150 mg (n=38).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. (C) Placebo (n=38).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*See footnotes to TABLE 1 for explanation of symbols.

*No definition of suicide attempt given.

*No definition of self-harm given.

*No definition of suicidal act given, but from context appears to refer to suicide attempts or any parasuicide.

*No definition of parasuicide given.
<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Interventions</th>
<th>Time</th>
<th>Pretreatment analyses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motto</td>
<td>High suicide risk; psychiatric inpatients refusing further treatment.</td>
<td>1. (E) Intermittent, nondemanding letters expressing concern (n=401). 2. (C) No follow-up (n=452).</td>
<td>4 yr</td>
<td>4 yr</td>
<td>Not reported E=C: suicide [12/230 (5.2%) vs. 20/242 (8.3%)].</td>
</tr>
<tr>
<td>Litman &amp; Wold</td>
<td>High suicide risk; persons calling crisis phone line</td>
<td>1. (E) TAU and weekly “befriending” phone calls by crisis center volunteers to the subject (n=200). 2. (C) TAU: Telephone crisis intervention when subject called (n=200).</td>
<td>18 mo</td>
<td>18 mo</td>
<td>Not reported E=C: suicide [7/200 (3.5%) vs 2/200 (1%)]. E=C: suicide risk.</td>
</tr>
</tbody>
</table>

*See footnotes to TABLE 1 for explanation of symbols.

+High suicide risk not defined.
+High suicide risk determined by consensus of research psychologist and experienced paraprofessionals based on scores on unspecified suicide risk measures.
Who is included and who is excluded from the clinical trials is an extremely important factor in understanding the results of these treatment studies. Nine studies (45%) excluded subjects needing immediate psychiatric treatment, or at high risk for suicide, or who had characteristics known to increase suicide risk. The remaining 11 (55%) focused on patients at high risk for suicide or parasuicide. Looking at just the 13 outpatient studies, the effectiveness of the experimental condition compared to the control condition can be predicted almost perfectly by whether individuals at high risk of suicide are included or excluded from the trial. In each of the six studies that excluded individuals at high risk for suicide, no significant differences were found between the experimental treatments and treatment-as-usual. On the other hand, six of the seven outpatient studies that included individuals at high risk for suicide did show a significant beneficial effect of the experimental treatment under study. The exception is the study by Allard et al. where there appeared to be no attempt to control the type of behavioral intervention. This finding suggests that individuals who parasuicide but do not have current serious mental disorders or high suicide risk may benefit from very minimal interventions. This suggests that a policy of hospitalizing individuals based simply on an acute episode of parasuicide is not warranted. Intensive or special outpatient treatments, however, are likely to be effective when the individual is seriously disordered or at high risk for further suicidal behavior.

CONCLUSION

The most important conclusion that can be drawn from this review of treatment studies is that we do not appear to know how to reduce the incidence of death by suicide among individuals going for help with suicidal behavior or disorders associated with suicidal behavior. The closest anyone has come to reducing suicide rates was Motto who found a trend towards reduced suicide rates by the very simple procedure of sending non-demanding letters and making brief phone calls to high-risk individuals refusing further treatment. Indirect treatment of suicidal behavior by treating depression has failed to demonstrate effectiveness in reducing suicide or suicide attempts, although this may be a consequence of inadequate power in studies. Inadequate statistical power, however, remains a hypothesis rather than a fact until it is tested.

We know more about how to reduce the incidence of suicide attempts and other parasuicidal acts. When high-risk parasuicidal individuals are not excluded from the population being treated, focused, behavioral interventions appear promising. The studies by Linehan, Salkovskis, and van Heeringen and their colleagues are well designed and very promising. They are the strongest evidence we have that outpatient behavioral
interventions are effective with highly suicidal patients. It is remarkable, however, that the treatment that is standard-of-care in many locations, namely inpatient psychiatric hospitalization, has never been shown effective, not in one single study that I could locate.

The most compelling conclusion that can be drawn from this review is that the treatment of suicidal behavior appears to be an exceptionally low priority within the clinical research community. Not only were they excluded in 45% of the studies aimed directly at treating suicidal behavior, they were also excluded from 15 of the 17 (88%) pharmacotherapy trials examining fluoxetine as a treatment for depression reviewed by Beasley et al. The exclusion of suicidal individuals from most research studies has all but insured that we do not know how to treat these individuals. Until they are included in clinical trials and until treatment researchers focus directly on developing treatments for these individuals, progress will be limited and suicide rates undoubtedly will remain high.

What directions do we need for the future? Two avenues would improve the state of our science. First, it is paramount that we begin to include individuals at high risk for suicide in clinical trials. We need first a review of clinical inclusion, exclusion, and treatment termination guidelines that have been employed in randomized clinical trials to date. The obvious ethical concerns, especially of placebo medication conditions, must be surmounted. This could perhaps be done by developing a standardized, across-study, crisis intervention protocol for use with patients who are or who become suicidal during treatment trials. This protocol could incorporate the key behavioral interventions that have so far been found effective with this population (e.g., specific focus on the suicidal behavior). The use of neuroleptics with personality-disordered, suicidal individuals needs to be thoroughly tested to understand and possibly replicate the findings of Montgomery.

Second, we simply must increase the interest of well-trained clinical scientists in the field of suicide and increase the number of young investigators interested, willing, and trained to develop treatments explicitly targeting suicidal behaviors. The absence of treatment development and randomized, controlled trials, especially given the seriousness of the problem, is remarkable. Part of this problem is due to the overreliance on standards of care, expert opinion, open clinical trials, and anecdotal case reports as guides to what is effective and ethical treatment. Longitudinal designs and open clinical trials can tell us what is safe to examine further. Nonrandomized trials can tell us what is promising enough to study further. Neither, however, can tell us what treatments are actually effective in reducing suicidal behavior. Another impediment to research is the fear of litigation following the suicide of a research subject who is not getting either the standard of care or the experimental treatment. A concerted effort to get consumer groups involved in developing research guidelines may be a useful first step. A public and professional educational program
to inform human-subject review committees, professionals, and the public that we have very little evidence about what is effective in reducing suicidal behaviors and virtually no evidence that the standard treatments work is necessary to increase public support for this type of research.

REFERENCES


