Clinical Correlates of Inpatient Suicide

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Background: Previous suicide assessment research has led to standard predictors of risk. Despite this, there are approximately 30,000 suicides per year in the United States, 5% to 6% of which occur in hospitals. The primary purpose of this study is to improve our ability to assess risk and intervene successfully.

Method: Charts from 76 patients who committed suicide while in the hospital, or immediately after discharge, were reviewed. The week before suicide was rated for both standard risk predictors and, using items from the Schedule for Affective Disorders and Schizophrenia (SADS), for presence and severity of symptoms found to be correlated with acute risk in recent studies.

Results: Regarding standard predictors, only 49% (N = 37) had any prior suicide attempt and 25% (N = 19) were admitted for this reason. Thirty-nine percent (30/76) were admitted for suicidal ideation, but 78% denied suicidal ideation at their last communication about this; 46% (N = 35) showed no evidence of psychosis; of those on precautions (N = 45), 51% (N = 23) were on q 15 minute suicide checks or 1:1 observation; and 28% (N = 21) had a no-suicide contract in effect. On SADS ratings, 79% (N = 60) met criteria for severe or extreme anxiety and/or agitation.

Conclusion: Standard risk assessments and standard precautions used were of limited value in protecting this group from suicide. Adding severity of anxiety and agitation to our current assessments may help identify patients at acute risk and suggest effective treatment interventions. The importance of a matched comparison group to ascertain if this sample can be blindly discriminated from inpatients who do not commit suicide is clear.

(J Clin Psychiatry 2003;64:14–19)

See also Commentary on page 12.

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Supported by funding from the Rush Institute for Mental Well Being, Chicago, Ill.

Work on this article was done at the Rush Institute for Mental Well Being, Department of Psychiatry, Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.

None of the authors has any commercial or financial involvements that might present an appearance of conflict of interest in connection with the submitted article.

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Any effort to prevent suicide in high-risk patients rests on the capacity to successfully treat the underlying disease and to accurately identify periods of imminent suicide in order to therapeutically intervene. It has been repeatedly concluded that the prediction of suicide in an individual is statistically impossible.[1–6] This, however, should in no way preclude development of more knowledge concerning clinical or laboratory correlates of suicide that will help the clinician place a given patient into a high-risk category in time to initiate treatment for factors motivating suicidal behavior, or in time for protective intervention.

Attempts to develop more knowledge concerning risk factors for suicide are reflected in the body of classic clinical studies that have reported behavioral correlates of suicide.[4,7–10] Findings from these studies have formed the standards for the assessment of suicide risk upon which present-day clinical practice rests.

Standard predictors of suicide risk, developed from these and other studies, include various demographic factors such as male sex, age over 45 years, marital status of divorced or widowed, and unemployment; the presence of a psychiatric diagnosis such as depression, alcoholism or drug abuse, severe personality disorder, schizophrenia, or psychosis; suicidal ideation and plan, previous suicide attempts, and lethality of prior attempts; and family history of suicide.[11,12]

Three problems that result from the difficulties inherent in studying suicide limit the usefulness of currently known correlates of suicide: (1) The first limitation results from the fact that the early studies were retrospective, based on information partly obtained after the knowledge of the occurrence of suicide. The retrospective nature of these studies could distort the significance of the recall of certain data (e.g., the significance of a joke about death made by a person sometime prior to the suicide—a joke that later may well be considered suicidal ideation). It also limits the possibility of estimating symptom severity as a relevant correlate. (2) The second problem with the retrospective method is the difficulty in relating various observations or events accurately with respect to their time relative to the suicide. It is conceivable, as we will discuss later in this report, that certain behaviors noted prior to suicide may indicate a chronic risk of the act occurring at some time in the future whereas others may indicate an immediate risk, in that they can be observed within weeks, days, or even hours of the suicide. A retro-

spective study makes the separation of chronic from acute correlates, which might prompt immediate lifesaving therapeutic intervention, difficult, if not impossible. Another difficulty in retrospective research is the incompleteness of available data based on random clinical notes or recollections of various observers who know a suicide occurred at the time of their report. (3) The third major problem with most of the available studies of suicide correlates is that no comparison groups were used to determine whether a "correlate" found in a suicide case was truly associated with a suicidal outcome or whether it was simply a feature of an underlying clinical disorder (e.g., depression, schizophrenia, alcoholism). For instance, do severely depressed patients who express suicidal ideation actually have a higher rate of suicide among depressed patients? Is the rate of suicide greater in those who express suicidal ideation than in those who deny suicidal ideation? On the basis of currently accepted standards for the clinical assessment of suicide risk, the assumption is in the positive. We know of no comparative data supporting this assumption, but only of retrospectively gathered data from studies showing that 69% of suicide victims expressed suicidal communication sometime prior to their suicide.[7] Barraclough et al.[9] found that within 1 month of suicide, 33% made direct threats of suicide, and, when less direct communications were considered, this figure rose to 55%.

The present report will consider standard correlates of suicide and those generated by a prospective study[13–15] utilizing standard measures and procedures that permit symptom severity estimates. This report will present data that in part replicate these findings from an inpatient sample in which suicide was the outcome.[13–15] The initial study found that correlates or "predictors" of suicide could be separated into "chronic" (defined as occurring from 2 to 5 years or 10 years from the time of clinical observation) and "acute" (meaning from days, weeks, or months up to 1 year following the time of baseline clinical assessment), each of which resulted in different correlates. Specifically, by separating out the time to suicide from the time of the clinical assessment, "standard" predictors such as severe hopelessness, suicidal ideation, and prior suicide attempts were found to be correlates of chronic, but not acute, risk as defined above. A history of abuse of alcohol plus any other drug ("double abuse"), delusions or thought-insertion or mind-reading, and the psychosocial variable of not having a child under 18 in the home were also found to be correlates of chronic but not acute risk.[13]

In the initial study,[13–15] severe psychic anxiety, panic attacks, severe anhedonia, and recent moderate alcohol abuse were found to be acute correlates, significantly associated with suicide within days, weeks, and months up to 1 year.

Treatment notes were recorded by staff and physicians in a hospital chart before they knew a suicide was going to be the outcome. A review of the inpatient chart provides an opportunity to study clinical records for behaviors occurring immediately before the suicide. This article presents initial findings of correlates of inpatient suicide in 76 cases of death or a vegetative state resulting from an attempt by an inpatient or a recently discharged patient.

METHOD

To obtain a sample where prospective clinical and behavioral information would be available, we collected a nationwide series of 76 hospital records of patients who committed suicide as inpatients or immediately after discharge. These records were "cleaned" of identifying data and were assigned code numbers for study identification. Admission data, medication records, and all physician, nursing, and ancillary staff notes were put into chronological order and rated over a period up to 1 week prior to each patient's suicide (some were hospitalized for less than 1 week prior to their suicide). All patients either died immediately from the attempt or lingered in vegetative states of varying durations. The sample is made up of clinical charts, the data were not standardized, and, in some instances noted below, data were missing for comparisons.

Chart notes were rated by 2 of the authors (K.A.B. and J.F.) using criteria from the Schedule for Affective Disorders and Schizophrenia (SADS),[16] which rates not only presence or absence of symptoms but symptom severity for most items on a 1- (not at all) to 6- (extreme) point severity scale. SADS items rated were chosen on the basis of previous research findings.[15,17] Of the SADS items rated, 1 was modified for purposes of use in chart review: hallucinations and delusions were combined into a psychosis rating. Ratings were made of the most severe presentation of each item during the time rated. The available data will be presented descriptively as percentage cross tabulations characterizing the sample.

RESULTS

Of the 76 cases, 51 (67%) were from community hospitals, 22 (29%) were from teaching hospitals, and 3 (4%) were from state hospitals. The sociodemographic and diagnostic information characterizing the sample is presented in Tables 1 and 2. The methods of suicide employed by the patients in this series show that hanging and/or suffocation together were the most frequent methods (individual incidences of 61% [N = 46] and 7% [N = 5], respectively), whereas jumping had a higher-than-expected incidence of 17% (N = 13).

History of Prior Attempts

Fifty-one percent (39/76) of the patients had no history of a prior suicide attempt. Of those who had a prior history (N = 37), 59% (N = 22) had 1 prior attempt and 19%

Table 1. Demographic Characteristics of 76 Patients Who Committed Suicide[a]

Variable	Males (N = 40)	Females (N = 36)	Total (N = 76)
Marital status			
Single	18 (24)	11 (14)	29 (38)
Married	20 (26)	20 (26)	40 (53)
Divorced/widowed/separated	2 (3)	5 (7)	7 (9)
Race			
White	35 (46)	34 (45)	69 (91)
African American	5 (7)	2 (3)	7 (9)
Age, y			
Range	16–72	15–71	15–72
Mean	37	37	37

[a]Values shown as N (% of total N) unless otherwise noted.

Table 2. Primary Admitting Diagnoses of 76 Patients Who Committed Suicide

Disorder	N
Depression (total N = 49)	
Major depressive disorder	30
Psychotic depression	11
Agitated depression	6
Atypical depression	1
Dysthymic disorder	1
Bipolar disorder (total N = 2)	
Bipolar I	1
Bipolar II	1
Psychosis (total N = 15)	
Schizoaffective disorder	2
Schizophrenia	6
Schizophreniform disorder	1
Paranoia	1
Other	5
Alcohol/substance abuse	4
Adjustment disorder	1
Anxiety disorder	1
Personality disorder (total N = 4)	
Mixed	3
Borderline	1

(N = 7) had 3 or more prior attempts. Forty-seven percent (36/76) of the suicides occurred during the first hospitalization, whereas 29% (22/76) occurred during the third or later hospitalization. Forty-three percent (33/76) of the suicides occurred during the first week of hospitalization.

Admitting Status

Twenty-five percent (19/76) of these patients were admitted for suicide attempt. Thirty-nine percent (30/76) were admitted for suicidal ideation but no attempt. Thirty-four percent (26/76) were admitted for other reasons, excluding both ideation and attempt. In 1 chart, the reason for admission was not stated.

Suicidal Ideation

A major finding of this study is that of 50 patients for whom information on suicidal ideation was available in the hospital chart, 78% denied suicidal thoughts and intent as their last communication before their suicide. The denial was recorded in the chart before the note recording their attempt.

Table 3. Schedule for Affective Disorders and Schizophrenia Anxiety and/or Agitation Ratings of 5 (severe/marked) or 6 (extreme) in 76 Patients Who Committed Suicide

Symptom	N	%
Anxiety only	22	29
Agitation only	9	12
Anxiety and agitation	29	38
Anxiety ± agitation[a]	51	67
Agitation ± anxiety[b]	38	50
Anxiety or agitation[c]	60	79

[a]Includes anxiety only + anxiety and agitation groups.
[b]Includes agitation only + anxiety and agitation groups.
[c]Includes anxiety only + agitation only + anxiety and agitation groups.

Anxiety-Agitation

On the basis of previous findings that severe psychic anxiety or agitation was significantly correlated with acute suicide risk, 2 of the authors (K.A.B. and J.F.) evaluated each record for the presence of these states at the "severe" or "extreme" level (a SADS rating of 5 or 6, respectively) during the 7 days prior to suicide. On the basis of this assessment, 79% of patients (60/76) were found to have evidence of severe anxiety and/or severe agitation within 1 week of their suicide (67% [51/76] had severe or extreme anxiety and 50% [38/76] had severe or extreme agitation) (Table 3).

Psychosis

Of the 76 patients, 35 (46%) showed no evidence of either hallucinations or delusions. Ten patients (13%) showed clinical states in which psychosis was suspected but could not be established. Forty-one percent (N = 31) showed definite evidence of psychosis, and 2 patients (3%) showed some evidence of psychosis without any major effect on behavior (SADS ratings of 3.5). The remaining 29 (38%) showed psychotic symptoms with a clear effect on their behavior; 4 (5%) had a rating on the SADS of 4.5, 9 (12%) met criteria for a rating of 5, 11 (14%) had a rating of 5.5, and 5 (7%) had a rating of 6.

Precautions

Treatment and management data for this sample show that at the time of suicide, 17% (N = 13) of the total sample were either on pass from the unit or had been discharged for less than a week. Eight percent (N = 6) of the patients had absconded from the unit. In 16% (N = 12), no information on precaution level was recorded and the presence or absence of precautions could not be determined.

Data on precautions were available for 59% (N = 45) of the total sample. Analysis of this group revealed that 20% (N = 9) were on q 30 minute checks or were observed within 30 minutes of the suicide; 42% (N = 19)

Table 4. Precautions[a]

Precaution	N	%
1:1 (or with staff)	4	9
Q 15 minutes (or seen within 15 minutes)	19	42
Q 30 minutes (or seen within 30 minutes)	9	20
No precautions ordered	13	29

[a]Data on precautions available for 45 patients.

were on q 15 minute checks or were observed within 15 minutes, and 9% (N = 4) were on 1:1 observation or with staff at the time of their suicide. Twenty-nine percent (N = 13) were on no precautions at the time of their suicide (Table 4).

Contracts

Twenty-one (28%) of these patients had made some form of no self-harm contract with staff during the time being rated. That is, they were under current, active no-suicide contracts at the time they killed themselves.

Medication

Medication records were useful in determining the intensity of treatment received by these patients. We looked at the presence and duration of the use of antidepressant, antipsychotic, or anxiolytic medications. In 9% (7/76), there was no information available on medication usage. Eleven percent (8/76) of patients received no psychiatric medications. Fifty-one percent (39/76) of the sample received any antidepressant, and, of the 42 patients hospitalized for over 1 week, 29% (N = 12) received antidepressant medication for at least 1 week prior to the suicide. Forty-one percent (31/76) received any antipsychotic medication, and 17% (7/42) received this medication for over 1 week. Forty-two percent (32/76) of patients received daytime anxiolytic medication, mostly benzodiazepines, and 16% (12/76) received hypnotic medication, again mostly benzodiazepines.

Examination of individual charts showed that anxiolytic medication was often given on a p.r.n. basis to be decided by nursing staff as opposed to patient request. In a number of instances, patients were not given medication because they responded, temporarily, to reassurance, only to become agitated again, often immediately. In some instances, anxiolytic medication that seemed to be helping was discontinued, with a clear subsequent increase of anxiety symptoms noted. In general, anxiolytic doses used were low and often inadequate to control severe anxiety symptoms.

DISCUSSION

Some interesting and useful data arise in this naturalistic chart review. One important observation is that there was a great deal of fluctuation of clinical state in most of the charts, for almost all of the items studied. That is, the clinical course was not consistent for the symptom rated throughout the week. What fluctuated primarily was the severity of the symptom, where patients would seem improved, usually for a short duration, then show recurrence.

The data can be viewed as unstandardized, from heterogenous charts, with missing data in some cases, and as yet no matched comparison group. Even with these limitations, some important conclusions can be drawn from this sample. The group of patients who were on no precautions, on pass, or just discharged constitutes at least 34% of this sample and retrospectively can be assumed to have been incorrectly assessed as having no imminent or acute risk. This in no way implies that this group of patients was not "correctly" assessed according to the standard risk assessments in the literature.

The finding that 77% of patients, for whom data are recorded, who took their lives while in the hospital denied suicidal ideation as their last recorded communication is worthy of note. This finding is similar to the previous finding from 25 cases of suicide from among 954 follow-up patients[15] showing that suicidal ideation was not an acute correlate (within 1 year of assessment) and that the nonsuicidal patients had a higher percent of expressed suicidal ideation. This finding across 2 "prospective" studies suggests that a denial of suicidal ideation alone is not a reliable basis for a suicide risk determination.

Of interest was the finding that 42% of these patients who committed suicide were on every-15-minute precautions or seen within 15 minutes of their suicide. Given that 9% of those on precautions were on 1:1 observation or with staff at the time of suicide, it is clear that no specific precautions are 100% effective. Once the determination of acute, high risk is made, however, 1:1 supervision would perhaps be the most reasonable intervention.

The existence of a no-suicide contract in 28% (21/76) of the patients also requires some comment. Possible factors that could make contracts unreliable include psychosis and/or borderline personality. Fourteen (66%) of these patients were not psychotic. In 2 of the patients, psychosis was suspected but could not be identified definitively by the information available. The remaining 5 patients were clearly psychotic. The inability to rely on a no-suicide contract in this group of patients was not based on whether or not the patients were psychotic. Of those with no-suicide contracts, patients with borderline personality disorder were a small proportion. Two of these patients had secondary diagnoses of borderline personality, and 1 patient had this as a secondary rule-out diagnosis. It is likely, therefore, that the inability to rely on the contract in this group is also not based on whether or not the patients had borderline personality disorder. This is not to say that no-suicide contracts have no therapeutic use; perhaps in some patients, they even help to prevent suicide.

What is clear is that we cannot rely on a patient's ability to agree to a no-suicide contract as being a deterrent to suicide.

This study also offers initial support for previous findings[13–15,17] that presence of severe anxiety/agitation symptoms may be an acute predictor of suicide. The finding that 79% of this sample exhibited recorded chart evidence of severe anxiety/agitation continues to raise the question of whether aggressive treatment of this symptomatology, if properly assessed and recognized, could reduce suicide. Given the high prevalence and severity of anxiety/agitation symptoms, the relevant medication usage was quite low. The aggressive treatment of severe anxiety/agitation may well be capable of reducing acute suicide risk, even before the depression is in full remission.

To illustrate the criteria used for a rating of "severe" and/or "extreme," the following case, abstracted from 1 day of chart notes, is reported in chronological sequence:

- Admit with depression, anxiety, much life stress.
- Severe panic, suicidal ideation, poor appetite, and sleep.
- Increased rumination, converses easily, and wants help.
- Hyperalert, rambling, tangential, circumstantial.
- Markedly anxious, agitated, depressed, unreassurable, labile.
- Denies current suicidal ideation, believes it's morally wrong.
- Intense homicidal impulses which panic patient.
- Agitated depression, overwhelmed, no pleasure, nothing helps, at patient's worst.
- Extremely anxious, nervous, pacing through day.
- Holds forehead, wrings hands.
- Depressed, unable to eat, rest, or concentrate.
- Denies attempts or current suicidal or homicidal thoughts.
- Sought contact, fears treatment is useless.
- Contracts for safety.
- Labile—happy, depressed, anxious, hopeless.
- Delusional, obsessive.
- Very anxious, fears impulses, states is afraid to hurt self.
- Anxious, restless, paced all evening but open to reassurance.
- Denies suicidal ideation, verbal contract not to harm self.
- Given antipsychotic, monitored q 15 minutes. Found hanging 10 minutes after last seen.

In the above case example, it is clear that the anxiety/agitation level observed is not only present but obvious and would be rated on both the psychic anxiety and agitation items on the SADS as at least a 5 (severe/marked) if not a 6 (extreme).

Clayton et al.[18] reported the distribution of anxiety severity in 327 primary unipolar patients. In this study, 37.9% of the mostly inpatients reached the highest anxiety severity scores, i.e., ratings of 5 or 6—a much lower incidence than the 67% found in our 76 patients who committed suicide.

A recent report[19] of 100 consecutive patients admitted through the emergency room for severe suicide attempts found a 92% rate of severe anxiety. This corresponds with the findings presented in this article.

There have been varying reports concerning the association of psychosis and suicide. In the present study, 54% showed definite or suspected evidence of psychosis, with 38% showing hallucinations and/or delusions that had a definite effect on behavior. These findings are consistent with the finding by Roose et al.[20] that a delusional depressed patient was 5 times more likely to commit suicide than a nondelusional depressed patient. The Collaborative Study of Depression found no significant prominence of the diagnosis of psychotic depression in suicidal as opposed to nonsuicidal depressed patients, but did find that delusions of thought insertion, grandeur, and mind reading were significantly more prevalent in the suicidal group.[13]

Points worth considering are that these are clinical, not research charts, that the staff was neither looking for nor systematically assessing anxiety/agitation, and that it is possible that these findings are low estimates of the actual prevalence and severity of anxiety/agitation in this population.

One question raised by the data is whether symptom severity, along the dimensions of psychic anxiety, worry, and agitation, is of greater value than diagnostic categories in assessing suicide risk. The presumed cause of the symptom may be less important than its presence and severity for this purpose.

The importance of a matched, case-controlled comparison to ascertain whether the suicide sample can be blindly discriminated from a nonsuicidal group of inpatients is clear. We are presently attempting to match these cases.

CONCLUSION

A review of 76 cases in which patients committed suicide despite hospitalization has demonstrated information relevant to the prevention of suicide in treatment settings. At least 34% of the patients were assessed as having little or no acute risk. These assessments and subsequent precautions ordered were, in general, consistent with the standard suicide risk predictors in the literature. Of interest is that 78% of the patients denied suicidal ideation or intent as their last communication. It appears that such denials can not be relied upon in the presence of other clinical correlates of suicide risk. This replicates a similar

finding from a prior study[15] with a different sample. Of further interest, the present study found evidence of severe anxiety/agitation in 79% of patients during the week prior to their suicide, supporting a finding that severe psychic anxiety and agitation were significant symptoms of differentiating a group of patients who committed suicide within 1 year of assessment. These 2 independent studies argue for the importance of estimating the severity of an anxiety/agitation factor in the assessment of suicide risk.

These outcomes suggest that the importance of recognition and treatment of severe anxiety/agitation is underrecognized as a technique for suicide risk assessment and intervention. Data from this review further indicate that suicide precautions must include 1:1 close observation to more effectively prevent suicide in a high-risk patient. In the era of managed care, careful assessment of suicide risk relying on acute risk factors, together with the aggressive treatment of severe anxiety symptoms and the use of 1:1 supervision for patients during periods of high risk, could be especially important to reduce the incidence of suicide.

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