

# Predicting Hospitalization Versus Discharge of Suicidal Patients Presenting to a Psychiatric Emergency Service

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**Objective:** Suicidal ideation frequently prompts visits to psychiatric emergency departments, and more information is needed about factors that mediate clinicians' decisions to hospitalize or discharge patients with suicidal ideation. **Methods:** The authors reviewed records for 257 patients presenting with suicidal ideation to a psychiatric emergency service. Demographic and clinical correlates of hospitalization were examined by backward stepwise binary logistic regression. **Results:** Hospitalization occurred for 70% of suicidal persons and was significantly associated with psychosis, a history of attempted suicide, and a suicidal plan. With potential confounding factors controlled, these variables correctly classified 80% of hospitalization decisions. **Conclusions:** Psychosis, past suicide attempts, and the presence of a suicide plan robustly predicted the decision to hospitalize suicidal persons seen in psychiatric emergency services. Diagnosis, pharmacotherapy, having a psychiatrist, and insurance subtype were

unrelated to hospitalization decisions, suggesting that psychiatric emergency department staff perceive few alternatives to hospitalization when psychosis and suicide plans accompany suicidal ideation. (*Psychiatric Services* 58: 561–565, 2007)

Acute suicidality has long been recognized as a contributor to psychiatric hospitalization (1) and accounts for more than one-third of annual visits to psychiatric emergency departments (2). Although suicidal ideation frequently precedes suicide attempts (3), it does not robustly predict impending actual attempts (4). Nevertheless, among patients discharged from emergency departments, rates of completed suicide are higher among persons with suicidal ideation than among nonsuicidal psychiatric or nonpsychiatric patients (5).

The American Psychiatric Association (APA) "Practice Guideline for the Assessment and Treatment of Patients With Suicidal Behaviors" suggests several factors to favor inpatient hospitalization over alternative treatment settings for suicidal patients with a psychiatric disorder, including psychosis, past attempts, and persistent or specific suicidal plans with high lethality or intent (6,7). There has been little empirical study of whether adherence to these characteristics influences hospitalization decisions by psychiatric emergency department staff. In one study, Baca-Garcia and colleagues (8) found that 61% of 509 recent suicide attempters in Spain were discharged from a psy-

chiatric emergency department. Hospitalization was predicted by high suicidal intent, plan to use a lethal method, low psychosocial function, previous psychiatric hospitalizations, an attempt in the past year, and low expectations for being found after an attempt. In a study in the United Kingdom, 69% of 1,096 emergency department patients evaluated for overdoses were hospitalized, and hospitalization was most often associated with prior hospitalizations, older age, poor physical health, and leaving a suicide note (9). Less is known about factors influencing the acute management and disposition of people with suicidal ideation who present to a psychiatric emergency service without a recent attempt.

In this study we examined the discriminant value of suicide risk factors for predicting hospitalization among patients with suicidal ideation seen in an urban psychiatric emergency service. In particular, we evaluated the extent to which factors associated with hospitalization corresponded to those identified by the APA practice guideline (6).

## Methods

The authors reviewed records for 257 adults over age 18 seen in the psychiatric emergency department of Cambridge Hospital, a community-based hospital affiliated with Harvard Medical School, during a three-month period in 2003. Patients' charts were reviewed that represented new encounters plus unplanned revisits. Planned follow-up visits conducted within the emergency de-

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partment were not counted as new, separate cases. Information was harvested from clinical charts by using a rating system we developed and used previously that pertained to axis I clinical diagnoses made by each evaluating clinician; current medications and treatment; health insurance; suicidal ideation and behaviors as described in the chief complaint and history of present illness; past hospitalizations and suicide attempts, as recorded in the clinical history; and current psychiatric symptoms and illicit substance use, as obtained from narrative material by the evaluating clinician (10).

Evaluations were performed initially either by a physician for 31 patients (12%) or by a nonphysician clinician (social worker or psychiatric nurse with physician backup) for 226 patients (88%). Efforts were made in all instances to obtain corroborative history from collateral informants, such as family members or clinicians who had treated these individuals as outpatients. Evaluations were initially conducted or else reviewed by psychiatry house staff (175 cases) or by attending staff (64 cases). An additional 18 cases were unspecified with respect to house staff versus attending staff. House staff decisions to discharge a suicidal patient occurred after case review with an attending psychiatrist. Decisions about the necessity of hospitalization were made independent of inpatient bed availability. Patients deemed to require hospitalization when beds were unavailable at the study site hospital were transferred for admission to other hospitals or else held until a bed became available.

Statistical analyses were conducted with SPSS version 11.5. Univariate analyses were initially conducted in exploratory fashion, without correction for multiple comparisons, in order to generate candidate variables for entry into a subsequent logistic regression model that assessed the strength of association between hospitalization (the dependent variable) and its theoretical predictors. Independent variables that were either significantly ( $p < .05$ ) or nearly significantly ( $p < .07$ ) associated with hospitalization in univariate analyses

were retained and controlled for in a backward stepwise binary logistic regression model. From that we estimated a best-fitting model for the classification of hospitalization or nonhospitalization that was based on combinations of independent predictor variables.

A waiver for informed consent was obtained from the institutional review board of the Cambridge Health Alliance, which approved the study protocol. Records were stripped of personal health information as required by the Health Insurance Portability and Accountability Act.

## Results

Table 1 presents demographic and clinical characteristics of 179 persons with suicidal ideation who were hos-

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pitalized (70%) and 78 who were not (30%). Twenty-six of the 257 persons with suicidal ideation (10%) had made a recent attempt. Hospitalization occurred after the emergency department evaluation for 21 of the 26 recent attempters (81%), which was not significantly higher than for persons with suicidal ideation but no recent attempt (Table 1). Dispositions regarding hospitalization were not significantly different for patients seen primarily by psychiatry house staff (68% of patients hospitalized with suicidal ideation) versus attending staff (69% of patients hospitalized with suicidal ideation) or for patients

seen primarily by a psychiatrist (58% of patients hospitalized with suicidal ideation) versus a nonphysician evaluator (71% of patients hospitalized with suicidal ideation).

As summarized in Table 1, significant ( $p < .05$ ) or near-significant ( $p < .07$ ) unadjusted univariate associations were observed between hospitalizations of patients with suicidal ideation and the variables of being male, having no residence, having a current psychiatrist, having Medicare or Medicaid or insurance through a health maintenance organization, having a lengthier evaluation (more than 180 minutes), having attempted suicide in the past, having had a psychiatric hospitalization, and manifesting current psychosis (delusions or hallucinations).

Binary backward stepwise logistic regression was used to determine a model that best predicted hospitalization (the dependent variable) from among the independent variables described in Table 1. The best resulting model involved a combination of three predictor variables: having a specific suicide plan ( $\beta = 2.35$ , Wald  $\chi^2 = 44.87$ ,  $df = 1$ ,  $p < .001$ ; odds ratio [OR] = 10.50, 95% confidence interval [CI] = 5.27–20.86), current psychosis ( $\beta = 2.86$ , Wald  $\chi^2 = 19.10$ ,  $df = 1$ ,  $p < .001$ ; OR = 17.37, CI = 4.84–62.49), and a history of having attempted suicide ( $\beta = .84$ , Wald  $\chi^2 = 6.24$ ,  $df = 1$ ,  $p < .001$ ; OR = 2.32, CI = 1.20–4.50). This full model was highly significant (Wald  $\chi^2 = 87.00$ ,  $df = 3$ ,  $p < .001$ ). It correctly classified 146 of 178 hospitalization events (82%) and 58 of 76 nonhospitalization events (76%), with an overall correct classification of 80% (as contrasted with 70% overall correct classification with the constant-only or null model).

With respect to the alternative dispositions for the 78 persons with suicidal ideation who were not hospitalized, a majority (60 patients, or 77%) were discharged to outpatient care; one (1%) was referred to an alternative medical service, nine (12%) were referred to a partial hospital program, and eight (10%) were referred to other psychiatric services. A follow-up appointment within the psychiatric emergency service was made for 22 of the 78 with suicidal ideation (28%),

**Table 1**Characteristics of hospitalized versus nonhospitalized suicidal persons who sought emergency psychiatric services<sup>a</sup>

Variable	N	Not hospitalized		Hospitalized		$\chi^2$	df	p
		N	%	N	%			
Gender						7.98	1	.006
Male	146	34	23	112	77			
Female	111	44	40	67	60			
Race						1.50	1	.221
White	194	55	28	139	72			
Nonwhite	63	23	37	40	65			
Married						.30	1	.584
No	232	68	29	164	71			
Yes	23	8	35	15	65			
Employed						.41	1	.522
No	167	47	28	120	72			
Yes	81	26	32	55	68			
Has a stable residence						3.46	1	.063
No	51	10	20	41	80			
Yes	203	67	33	136	67			
Has a psychiatrist						5.42	1	.020
No	115	43	37	72	63			
Yes	138	33	24	105	76			
Type of care						7.52	3	.057
Self-pay (uninsured)	32	13	41	19	59			
Hospital Free Care System	18	9	50	9	50			
Medicare or Medicaid	140	34	24	106	76			
Health maintenance organization	67	22	33	45	67			
Duration of evaluation (minutes)						42.82	4	<.001
≤45	2	1	50	1	50			
46–90	18	11	61	7	39			
91–180	56	33	59	23	41			
>180	108	21	19	87	81			
Unspecified	73	12	16	61	84			
Emergency department shift						.09	2	.954
7 a.m. to 3 p.m.	110	34	31	76	69			
3 p.m. to 11 p.m.	109	32	29	77	71			
11 p.m. to 7 a.m.	38	12	32	26	68			
Alcohol abuse or dependence						.34	1	.559
No	128	41	32	87	68			
Yes	129	37	29	92	71			
History of suicide attempts						10.49	1	.001
No	108	44	41	64	59			
Yes	146	32	22	114	78			
History of hospitalizations						17.32	1	<.001
No	77	37	48	40	52			
Yes	177	39	22	138	78			
Presented with psychosis						16.52	1	<.001
No	204	74	36	130	64			
Yes	53	4	8	49	93			
Any substance abuse or dependence						1.64	1	.200
No	141	47	33	94	67			
Yes	112	29	26	83	74			
Suicide plan						47.26	1	<.001
No	116	60	52	56	48			
Yes	140	17	12	123	88			
Recent suicide attempt						1.69	1	.193
No	231	73	32	158	68			
Yes	26	5	19	21	81			
Emergency service diagnosis						14.15	7	.049
Major depression	120	31	26	89	74			
Bipolar disorder	29	8	28	21	72			
Schizophrenia or other psychosis	30	8	27	22	73			
Anxiety disorder	9	5	56	4	44			
Substance use disorder	38	12	32	26	68			
Adjustment disorder	6	5	83	1	17			
Other mood disorder	3	0	0	3	100			
Other diagnosis	18	7	39	11	10			

<sup>a</sup> Cell numbers vary on the basis of availability of complete data. The mean±SD age was 35.8±12.3 for nonhospitalized emergency patients (N=78) and 34.7±13.3 for hospitalized emergency patients (N=179); this difference was not significant.

but that appointment was kept by only slightly more than half of the patients (12 patients, or 54%).

## Discussion

Among the risk factors for suicide identified by the APA "Practice Guideline for the Assessment and Treatment of Patients With Suicidal Behaviors" (6), we found three that were taken as criteria to inform clinicians in their decisions to hospitalize adults presenting with suicidal ideation for emergency care. Specifically, the presence of psychosis, a suicide plan, and a history of past suicide attempts together correctly classified about 80% of hospitalization decisions. Several other criteria identified by that guideline as favoring hospitalization for suicidal patients, and evaluated in this study, were not more often associated with hospitalization than discharge. These criteria included a diagnosis of a major psychiatric disorder, being male, being older than 45, lacking a stable living situation, and lacking an ongoing clinician-patient relationship or access to timely outpatient follow-up.

Notably, only a small minority of persons with suicidal ideation had made a recent attempt (26 of 257 persons, or 10%). Details regarding the circumstances of actual attempts that would likely bear on hospitalization decisions, such as degree of lethality or premeditation or precautions made to avoid rescue or discovery, were not systematically available. Data also were unavailable regarding dimensions such as hopelessness or patients' attitudes about suicide as described by Beck and colleagues (11) (such as perspectives about the future after an attempt, beliefs that an attempt would influence others) that may help predict hospitalization decisions (9).

The findings are consistent with previous studies that have identified psychosis as a perceived suicide risk factor (12), although the literature has been mixed on the extent to which psychotic features elevate the likelihood of actual suicide completions. For example, despite initial hypotheses to the contrary, Grunebaum and colleagues (13) found no significant link between delusions

and suicidal ideation or attempts in a prospective study of patients with schizophrenia and affective disorder, noting in their literature review that most studies of suicide completions have found that acute psychosis poorly predicts suicide completions. In our study, psychiatric emergency staff perceived acute psychosis as the predictor of the largest magnitude in determining whether to hospitalize persons with suicidal ideation.

The presence of a suicide plan also emerged as a significant predictor of hospitalization in this study. This factor also had been identified as a presumed contributor to suicidal behavior, although prior studies have yielded mixed findings on the predictive value of an identified suicide plan relative to eventual suicide attempts (14).

Alcohol and substance use disorders have traditionally been regarded as suicide risk factors but did not emerge as significant correlates of hospitalization decisions for our study group. Notably, hospitalization occurred for about 70% of persons with suicidal ideation regardless of the presence or absence of alcohol or substance abuse or dependence. It is possible that alcohol misuse superimposed on suicidal ideation does not appreciably increase the likelihood of hospitalization as an ultimate disposition among those with suicidal ideation. It is also possible that individuals who verbalize suicidal thoughts while acutely intoxicated—even in the setting of prior or recent suicide attempts—are more likely to be managed via extended or overnight observation rather than hospitalization, on the clinical presumption that suicidal ideation may diminish as intoxication effects clear.

Limitations of this study are similar to those of other studies of retrospective chart reviews. Diagnoses were made by clinicians without the benefit of research-based structured interviews, which could have diminished the certainty of differential diagnoses. Information on axis II disorders that bear on suicidality (such as borderline personality disorder) were not systematically assessed, nor was information on other constructs linked with suicidal behaviors, such

as hopelessness or the lethality of means of suicide among recent attempters. Hospitalization decisions also may have been influenced by other factors we did not assess, such as the inability to care for oneself. The study findings derived from practice patterns at a single academic community hospital and may not generalize to other settings. Data on psychotropic medication nonadherence—a further correlate of suicidal ideation (15)—also was not systematically obtained but could further contribute to hospitalization decisions for suicidal patients. Finally, limited statistical power may have contributed to the lack of observed association between hospitalization decisions and other parameters from the APA "Practice Guideline for the Assessment and Treatment of Patients With Suicidal Behaviors."

Information about aftercare and follow-up was not a focus of this study, leaving uncertain the proportion of hospitalized or nonhospitalized persons who in fact made a subsequent suicide attempt. Finally, although we examined criteria by which hospitalization decisions were made concerning those with suicidal ideation, we did not evaluate the extent to which such perceived suicide risk factors contribute to suicidal behavior. Ultimately, further studies are needed to help refine the sensitivity and specificity of suicide risk factors and combinations of risk factors that can inform management decisions to help reduce the potential for suicide among patients at high risk.

## Conclusions

These data affirm the adherence by psychiatric emergency service clinicians to several key criteria that favor hospitalization for patients with suicidal ideation, as described in the APA "Practice Guideline for the Assessment and Treatment of Patients With Suicidal Behaviors" (6). Among those who were discharged from the emergency department, relatively few did not show psychosis, prior attempts, or a plan for suicide. Further studies are needed to evaluate the outcome of suicidal patients managed in treatment settings alterna-



tive to inpatient hospitalization. Clinical factors such as psychosis or suicide plans continue to represent perceived hazards for suicidal patients that influence hospitalization decisions, although it remains to be demonstrated whether such characteristics are associated with suicide acts and whether hospitalization decisions based on these characteristics successfully reduce suicide acts.

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