Effect of Crisis Response Planning on Patient Mood and Clinician Decision Making: A Clinical Trial With Suicidal U.S. Soldiers

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Objective: The study examined the immediate effect of crisis interventions on the emotional state of acutely suicidal soldiers and clinician decision making.

Methods: Soldiers (N=97) presenting to a military emergency department or behavioral health clinic were randomly assigned to receive a contract for safety (N=32), standard crisis response plan (S-CRP; N=32), or enhanced crisis response plan (E-CRP; N=33). Soldiers completed self-report scales before and after the intervention. Clinicians blinded to treatment group assignment rated participants' suicide risk level and made a decision about inpatient psychiatric admission.

Results: Larger reductions in negative emotional states occurred in S-CRP and E-CRP. Larger increases in positive emotional states occurred in E-CRP. Clinician suicide risk ratings did not differ across treatment groups. Participants in E-CRP were less likely to be psychiatrically admitted.

Conclusions: The CRP immediately reduces negative emotional states among acutely suicidal soldiers. Discussing a patient's reasons for living during a CRP also reduces the likelihood of inpatient psychiatric admission.

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Suicide is a leading cause of death among U.S. Army personnel (1). Though historically lower than that of the general population, the Army's suicide rate surpassed the general population rate for the first time in 2008 and has remained elevated since then (1). Concurrent with this trend, psychiatric hospitalizations for suicide risk among military personnel have also increased (2). Although guidelines exist for determining when admission to a psychiatric inpatient unit might be warranted and generally recommend hospitalization in cases of "imminent risk" for suicide (3), the factors that influence clinicians' risk appraisals and decision making about patients who are acutely suicidal remain poorly understood.

Interventions such as crisis response planning or safety planning have been recommended for use with individuals who are acutely suicidal (4), with recent studies indicating that these approaches significantly reduce the incidence of suicidal behavior (5,6). In contrast to the crisis response plan (CRP), use of the contract for safety (CFS), an alternative suicide risk management approach, has been discouraged (4). Nonetheless, the CFS remains a frequently used intervention. Although longer-term effects on suicidal thoughts and behaviors are associated with the CRP, its immediate impact on patients' emotional states remains unknown. Because patients who show rapid improvement during crisis interventions are more likely than other patients to be assessed by clinicians as at lower risk for suicide, such interventions could affect the likelihood of inpatient admission.

Previous research indicates that patients evaluated in an emergency department after a suicide attempt are more likely to be hospitalized if they report intent to make another suicide attempt, used a method considered more lethal than others, had previous psychiatric hospitalizations or suicide attempts, and received lower global assessment of functioning scores by the clinician (7). To date, however, the potential impact of crisis interventions on clinician decision making has not been empirically examined.

The aim of this study was to examine the immediate impact of various risk management interventions on the emotional state of patients who were acutely suicidal. We hypothesized that soldiers who received a CRP would show larger improvements in emotional states, lower suicide risk scores by clinicians, and lower rates of inpatient admission than would soldiers who received a CFS.

METHODS

The study entailed a secondary data analysis of a randomized clinical trial testing the efficacy of the CRP in comparison with the CFS (treatment as usual) for the short-term management of acutely suicidal active duty Army personnel. In this parent

study, there was a significant reduction in suicide attempt rate and severity of suicide ideation among participants who received a CRP (6). A full description of the sample, procedures, and treatments, as well as a CONSORT chart, were published in that report.

Participants included 76 (78%) male and 21 (22%) female soldiers with a mean age of 26.1±6.4 years (range 19–53) and with 5.4±5.2 years of military service. Racial distribution was as follows: 71 (74%) whites, 17 (18%) blacks, four (4%) Asians, three (3%) Pacific Islanders, eight (8%) Native Americans, and two (2%) others. Hispanic/Latino ethnicity was endorsed by seven (7%) of the participants. Rank distribution was as follows: 73 (75%) junior enlisted, 15 (16%) noncommissioned officers, four (4%) senior noncommissioned officers, and five (5%) officers. Forty-three individuals (44%) reported no previous suicide attempts, 24 (25%) reported one previous attempt, and 30 (31%) reported two or more prior attempts. Fifty-two individuals (54%) had been psychiatrically hospitalized within the past three months.

Active duty soldiers who presented to the emergency department or a behavioral health clinic at Fort Carson, Colorado, for an emergency behavioral health evaluation were referred to research staff for an initial assessment to determine eligibility. Inclusion criteria were active suicide ideation during the past week, a lifetime history of suicide attempt, or both. The only exclusion criterion was an inability to provide informed consent. On completion of the informed consent process, participants completed the Visual Mood Analog Scale (VMAS) and all other assessments (described below). Participants were randomly assigned by using a computerized randomization algorithm to one of three treatment conditions. To preserve participant blinding, the interventions were described only as interventions 1, 2, and 3. Research staff administered the assigned interventions, which were audio recorded and reviewed by the investigators to ensure fidelity. Immediately after the intervention, patients completed the VMAS a second time. An on-call physician or psychologist who was blind to treatment assignment next met with the patient, provided an overall rating of the patient's suicide risk, and made a final determination regarding inpatient psychiatric admission. All procedures were approved by the Madigan Army Medical Center Institutional Review Board.

The three interventions were the CFS, the standard CRP (S-CRP), and the enhanced CRP (E-CRP). The CFS comprised a suicide risk assessment, supportive listening, provision of crisis resources, referral to a mental health professional, and a verbal contract for safety ("If you were to go home today, do you think you would be able to keep yourself safe?"). The S-CRP included the same components as did the CFS, excluding the verbal contract for safety, but added the following components, which were handwritten on an index card: the identification of the patient's personal warning signs, self-management skills, and sources of social support. The E-CRP comprised the same components as did the S-CRP but added an explicit discussion of the patient's reasons for living, which were also written on the index card.

Clinician suicide risk rating was assessed with a modified version of item 4 of the Suicidal Behaviors Questionnaire—Revised (8): "How likely is it that this patient will attempt suicide someday?" Scores ranged from 0, never, to 6, very likely. Inpatient psychiatric admission was assessed via medical record review. Ten cognitive-affective states were assessed with the VMAS: depressed, calm, agitated or on edge, hopeful, urge to kill myself, anxious, ashamed, happy, tired, and like a burden. Participants were directed to indicate "how extreme you are experiencing each of the feelings and moods right now, at the current moment" on a horizontal line anchored with "none" (a score of 0) and "extreme" (a score of 100). Suicide ideation was assessed with the Scale for Suicide Ideation (SSI) (9); hopelessness was assessed with the Beck Hopelessness Scale (10); depression was assessed with the Beck Depression Inventory—II (11); posttraumatic stress was assessed with the PTSD Checklist, Military Version (PCL-M) (12); and suicide attempt history was assessed with the Suicide Attempt Self-Injury Interview (13). Suicide attempt was deliberate, self-directed, potentially injurious behavior for which there was evidence of suicidal intent.

Between-groups mean differences were examined by using mixed-effects models, and proportional differences were examined by using chi-square analyses. Pre-post mean differences were tested by using generalized linear mixed-effects regression models with repeated measures and a random intercept. Fixed effects included treatment condition, time, and the interaction of treatment and time. In addition to overall group comparisons, two planned contrasts were conducted: E-CRP and S-CRP combined together and compared with CFS, and S-CRP and CFS combined together and compared with E-CRP.

RESULTS

Mean±SD symptom scores and VMAS scores at baseline are reported in Table 1. Clinician suicide risk scores ranged from 0 to 6, with a score of 2.7±1.2. Twelve participants (12%) were admitted for psychiatric inpatient care. Clinician suicide risk scores did not differ between patients who were hospitalized (2.7±1.2) and were not hospitalized (3.0±1.5; $F=.8$, $df=1$ and 95, $p=.361$). Baseline scores on SSI ($r=.33$, $p=.001$), PCL-M ($r=.23$, $p=.027$), and VMAS item on urge to kill self were significantly correlated ($r=.30$, $p=.003$) with psychiatric admission, with more severe scores being associated with incidence of admission.

Pre-post changes in emotional states across the intervention groups are reported in Table 1. Treatment × time interactions were statistically significant for several negative emotional states (tables showing test statistics are available as an online supplement to this article). Planned contrasts indicated that for most negative emotional states (depressed, agitated/on edge, urge to kill myself, ashamed, and tired), the two CRPs yielded significantly larger changes than did the CFS, but the E-CRP and S-CRP did not differ from each other. For two positive emotional states (calm and hopefulness) and for burdensomeness, the E-CRP showed significantly greater improvement than did the S-CRP and CFS.

TABLE 1. Pre- and postintervention scores for soldiers with active suicide ideation who were randomly assigned to one of three intervention groups

Measure	Contract for safety							Standard crisis response plan							Enhanced crisis response plan						
	Pre		Post					Pre		Post					Pre		Post				
	M	SD	M	SD	ΔM	SE	d	M	SD	M	SD	ΔM	SE	d	M	SD	M	SD	ΔM	SE	d
SSI[a]	17.0	7.0	—	—	—	—	—	14.7	6.9	—	—	—	—	—	13.9	6.5	—	—	—	—	—
BDI-II[b]	37.3	10.9	—	—	—	—	—	33.3	12.0	—	—	—	—	—	29.2	9.4	—	—	—	—	—
PCL-M[c]	57.7	16.3	—	—	—	—	—	47.8	17.5	—	—	—	—	—	45.3	19.3	—	—	—	—	—
BHS[d]	14.4	4.1	—	—	—	—	—	12.3	6.1	—	—	—	—	—	11.8	5.7	—	—	—	—	—
VMAS[e]																					
Depressed	76.2	27.4	71.3	32.7	−4.9	7.4	−.2	73.7	24.8	56.5	35.0	−17.2	7.7	−.6	65.2	28.6	54.2	35.0	−11.0	7.9	−.4
Calm	26.1	26.5	28.2	30.1	2.1	7.0	.1	40.5	30.2	45.5	30.7	5.1	7.7	.2	36.8	32.3	46.5	32.2	9.7	8.0	.3
Agitated/on edge	59.5	35.5	58.2	36.4	−1.3	8.9	.0	53.4	32.2	37.1	30.7	−16.3	7.9	−.6	44.9	32.9	33.1	32.3	−11.8	−8.1	−.4
Hopeful	15.7	17.6	21.9	24.6	6.3	5.3	.3	28.5	23.0	37.7	32.2	9.3	7.1	.3	24.8	26.8	40.7	33.3	15.9	7.5	.5
Urge to kill myself	29.3	31.5	31.5	29.3	2.2	7.5	.1	23.6	26.7	18.5	23.3	−5.1	6.3	−.3	17.9	23.0	12.9	20.6	−5.0	5.4	−.2
Anxious	65.2	32.4	60.2	33.2	−5.0	8.1	−.2	51.9	33.1	44.5	35.8	−7.4	8.7	−.2	53.7	36.8	44.4	35.4	−9.3	9.0	−.3
Ashamed	52.9	38.2	46.4	35.2	−6.5	9.0	−.2	44.1	36.8	34.2	38.3	−9.9	9.5	−.3	30.9	30.4	23.8	33.1	−7.1	7.9	−.2
Happy	10.4	11.4	12.9	17.6	2.5	3.7	.2	19.7	20.3	26.1	27.6	6.5	6.1	.3	25.7	29.6	34.9	30.8	9.3	7.5	.3
Tired	74.2	29.3	75.2	27.7	1.0	7.0	.0	74.3	28.4	66.6	31.1	−7.7	6.7	−.3	75.6	25.3	72.5	27.1	−3.1	6.5	−.1
Like a burden	64.7	34.6	55.3	33.9	−9.4	8.4	−.3	52.3	36.6	43.7	37.3	−8.5	9.3	−.4	41.3	33.4	25.8	27.4	−15.5	7.6	−.5

[a] Scale for Suicide Ideation. Possible scores range from 0 to 37, with higher scores indicating more severe suicidal thoughts and urges.
[b] Beck Depression Inventory (second edition). Possible scores range from 0 to 63, with higher scores indicating more severe depression.
[c] Posttraumatic Stress Disorder Checklist. Possible scores range from 17 to 85, with higher scores indicating more severe PTSD symptoms.
[d] Beck Hopelessness Scale. Possible scores range from 0 to 20, with higher scores indicating more severe hopelessness.
[e] Visual Mood Analog Scale. Possible scores range from 0 to 100, with higher scores indicating more intense emotional state.

Treatment group was not associated with differences in the clinician's suicide risk scores (F=.3, df=2 and 89, p=.769). Both planned comparisons also yielded nonsignificant treatment effects (contrast 1, F=.5, df=1 and 90, p=.468; contrast 2, F=.1, df=1 and 90, p=.708). However, treatment group was significantly associated with clinical disposition (Wald χ^2=6.4, N=97, df=2, p=.040): six out of 32 (19%) in CFS, five out of 32 (16%) in S-CRP, and one out of 33 (3%) in E-CRP were psychiatrically admitted. The first contrast was nonsignificant (Wald χ^2=.0, N=97, df=1, p=.876), but the second planned contrast was statistically significant (Wald χ^2=4.0, N=97, df=1, p=.045), indicating that patients in E-CRP were significantly less likely than patients in S-CRP or CFS to be psychiatrically admitted (3.0% vs 17.2%; adjusted odds ratio=.100, 95% confidence interval=.002–.900).

DISCUSSION

This study examined the immediate effects of crisis response planning on the emotional state of U.S. soldiers who were acutely suicidal and presenting for an emergency behavioral health appointment at a large Army installation, as well as the effect of this intervention on clinicians' determinations of patients' risk and subsequent decision making. Results of this study indicate that soldiers who received either version of the CRP (standard or enhanced) showed significantly larger reductions in negative emotional states from pre- to postintervention than did those who received the CFS, but the two CRP groups did not differ from each other. This finding aligns with previous findings that both versions of the CRP yield better outcomes than does the CFS, although they do not differ from each other (6). The enhanced CRP also showed a unique effect on strengthening two positive emotional states: calmness and hope. Taken together, these findings suggest that the CRP, regardless of its components, contributes to immediate reductions in negative emotional states, but the CRP's impact on positive emotional states is modest unless it also includes a conversation about the patient's reasons for living.

Second, clinicians' ratings of patients' suicide risk were comparable across intervention groups, but clinicians were significantly less likely to recommend hospitalization when a soldier received the E-CRP. These results suggest that a brief discussion about a patient's reasons for living may not influence a clinician's subjective appraisal of risk, but it may influence the clinician's

decisions about treatment planning. Although this study limits us from providing definitive explanations for this seeming discrepancy, it is possible that clinical decision making is influenced by factors that are not readily captured via self-report scales, interview-based assessment methods, or both. Additional research is needed to further understand the potential effects of interventions on clinician decision making across different settings.

This study builds on earlier work by considering how the interventions received by patients might influence clinicians' decision making. These findings are especially salient in light of the absence of empirical studies testing the efficacy of psychiatric inpatient care for suicide risk, which has led the Institute of Medicine to conclude that the effectiveness of psychiatric hospitalization for suicide risk is "questionable" (14). In contrast, accumulating evidence supports the efficacy of the CRP and other related interventions (5,6). Nonetheless, hospitalizing patients who are suicidal or have made a suicide attempt remains common, especially in emergency departments (15).

Conclusions based on this study should be made cautiously in light of several important limitations. First, our sample comprised active duty soldiers only. Results therefore may not extend to other military, veteran, or nonveteran groups. Relatedly, this study was conducted within the military health care system, which differs from the Veterans Health Administration and private-sector health care systems. Additional studies across diverse settings are needed to determine the extent of generalizability. A third limitation is the predominantly male composition of our sample. Future studies with greater gender balance would be beneficial to determine whether findings differ across genders. Finally, our study is limited by the absence of information about clinician characteristics, which hampers our ability to determine whether clinician variables influence clinical decision making. Despite these limitations, this study provides novel information about how interventions may influence clinical decision making.

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