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Influences on call outcomes among Veteran callers to the National Veterans Crisis Line

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Abstract

This evaluation examined the association of caller and call characteristics with proximal outcomes of Veterans Crisis Line calls. From October 1-7, 2010, 665 Veterans with recent suicidal ideation or a history of attempted suicide called the Veterans Crisis Line, 646 had complete data and were included in the analyses. A multivariable multinomial logistic regression was conducted to identify correlates of a favorable outcome, either a resolution or a referral, when compared to an unfavorable outcome, no resolution or referral. A multivariable logistic regression was used to identify correlates of responder-rated caller risk in a subset of calls. Approximately 84% of calls ended with a favorable outcome, 25% with a resolution and 59% with a referral to a local health care provider. Calls from high-risk callers had greater odds of ending with a referral than without a resolution or referral, as did weekday calls (6:00 am to 5:59 pm EST, Monday through Friday). Responders used caller intent to die and the absence of future plans to determine caller risk. Findings suggest that the Veterans Crisis Line is a useful mechanism for generating referrals for high-risk Veteran callers. Responders appeared to use known risk and protective factors to determine caller risk.

Veterans who receive care from the Veterans Health Administration (VHA) are at increased risk for suicide compared to the general U.S. population after adjusting for age and gender (Blow et al., 2012). In addition to enhanced efforts to improve mental health services, VHA efforts to address suicide risk in Veterans included the development of the National Veterans Crisis Line (formerly the National Veterans Suicide Prevention Hotline) that was designed to help Veterans resolve their immediate distress and connect them with appropriate services. The National Veterans Crisis Line is located at the Canandaigua Veterans Administration

Medical Center (VAMC) and is a confidential, toll-free, 24-hour hotline for Veterans, active duty service members and their families and friends. Affiliated with National Suicide Prevention Lifeline network of crisis lines, the Veterans Crisis Line has adopted evidence-based standards of care and provides the requisite training for responders (Joiner et al., 2007). Veterans Crisis Line responders are trained to reduce Veterans' immediate distress, assess their suicide risk and, when appropriate, refer them to additional care.

Caller characteristics and interventional capabilities differentiate the Veterans Crisis Line from other crisis lines. Whereas civilian line callers are predominantly female and responders are largely volunteers, Veterans Crisis Line callers are predominantly male and responders are full-time counselors most of whom have graduate-level training (Gould, Kalafat, Munfakh, & Kleinman, 2007; Kalafat, Gould, Munfakh, & Kleinman, 2007; Knox, Kemp, McKeon, & Katz, 2012). Additionally, the Veterans Crisis Line exists within the VHA Health Care System. To facilitate rapid information gathering, Veterans Crisis Line responders are able to view computerized patient records of each Veteran who receives VHA services and grants permission to view their record. Each VAMC also has at least one Suicide Prevention Coordinator (SPC) to oversee the care of Veteran callers in their local area, facilitating national coordination of care. Once a consult is generated by a Veterans Crisis Line responder, SPCs are required to contact callers within 24 business hours and, when appropriate, conduct a detailed assessment of their risk and needs to provide referrals to appropriate local services. Few civilian crisis lines are able to provide a direct entryway into a health care system and instead provide telephone numbers to local services; few, if any, have the capability to view the medical records of a large proportion of callers.

Some callers to the Veterans Crisis Line are Veterans who experience suicidal thoughts or have a history of suicidal behavior. Other callers include non-Veterans (e.g., family members) and Veterans seeking information or support who do not report suicidality. To increase our understanding of the functioning of the Veterans Crisis Line with the goal of improving it, we evaluated call outcomes for Veteran callers who acknowledged suicidal thoughts or a history of suicide attempt, a group who may be expected to be at increased risk for suicidal behavior (Britton, Ilgen, Knox, Claassen, & Conner, 2012; Harris & Barraclough, 1997; Posner et al., 2011). We used Donabedian's model of monitoring and improving clinical performance as the conceptual framework for these analyses (Donabedian, 1990). According to the model, the first step is to obtain information on variability in practice or outcomes, the second step is to identify reasons for the variability, and the third step is to take practice-modifying action. This analysis focused on steps one and two. Specifically, we examined variability in call outcomes by comparing two groups of callers with suicidal ideation and/or history of suicide attempt who appeared to have favorable call outcomes including: 1) a group that accepted a referral for care (i.e., referred); 2) and callers who appeared to resolve their immediate concern during the call (i.e., resolved); compared to 3) a group that did not accept a referral nor appear to resolve their distress during the call, conceptualized as a group with an unfavorable outcome (i.e., unresolved, declined referral).

Methods

Data

Veterans Crisis Line responders use an automated template with mandatory (e.g., Veteran status) and optional fields (e.g., future plans) to record crucial information, evaluate caller risk, and connect callers with appropriate services. These data are saved daily to a database. The 2010 calendar year database consists of records of 102,720 calls to the Veterans Crisis Line. Data for these analyses were culled from calls received from October 1-7, 2010, corresponding to the first week of the VHA fiscal year. Calls were included in analyses if a Veteran was calling about him or herself and endorsed the presence of current suicidal ideation, suicidal ideation within the past two months, or a lifetime history of suicide attempt. Non-Veteran callers (e.g., active military, no military history, family members of Veterans) and those reporting no current suicidal ideation or suicidal ideation within the past two months (i.e., no current/recent ideation) as well as no history of suicide attempt were excluded from analyses.

Variables

Dependent Variable—Responders took eight different actions with Veterans with current/recent ideation and/or suicide attempt history: 1) Referral sent to SPC; 2) Caller declined referral during the call but accepted SPC contact information; 3) Caller declined referral and refused SPC contact information; 4) Caller referred to the local Veteran Service Center; 5) Warm transfer to callers' California health care provider (an option for Veterans residing in California); 6) Caller was not suicidal at call end and responded to the intervention, leading to the judgment that the callers immediate concern was resolved; 7) Caller accepted a local number to call to obtain further assistance; and 8) No action possible. These call outcomes were available for 100% of callers analyzed, and were trichotomized into the following categories: Resolved (6 above), Referred (1, 2, 4, 5, 7 above), and Unresolved, Declined Referral (3, 8 above). Please note that the “referred” group ranged from callers who accepted an SPC referral to those who accepted contact information for a local healthcare provider.

Independent Variables used in Primary Analyses

Day/Time of Call: All calls are date and time stamped. Day of the call was dichotomized into weekdays and weekends (Monday - Friday, Saturday - Sunday), and time of the call into days/evenings and nights (6:00 am – 11:59 pm, 12:00 am – 5:59 am, EST).

Gender of Caller: Caller gender was rated by responders, dichotomized, and was available for 97% of callers in the analyses.

Categorization of Current Risk: Veterans Crisis Line responders receive structured training in assessing risk and the responder template instructs them to use Lifeline criteria, which categorizes callers based on their desire to make an attempt, intent to die and capability of making an attempt, and taking into consideration the presence/absence of buffers (Joiner et al., 2007). While considering buffers, responders are trained to generally rate callers with 1) desire, intent *or* capability as “moderate to low” risk; 2) desire *with* intent *or* capability as “moderate to high” risk; and 3) desire, intent *and* capability as “high” risk.

For the analyses these ratings were dichotomized into lower risk (i.e., “moderate to low risk”) and higher risk (i.e., “moderate to high risk” or “high” risk). Responder-rated risk was available for 100% of eligible calls.

Independent variables used in Post-Hoc Analysis

Suicide Intent and Future Plans (Non-Suicide): Responders are provided with optional categories that are based on the determinants of risk (e.g., desire, intent, capability [availability of means and willingness to use them], buffers) to help them determine caller's risk level (Joiner et al., 2007). Two of these variables were available for a majority of callers analyzed including “intent to die”, an indicator of risk, and “future plans” associated with living, a buffer, available for 76% and 61% of callers, respectively.

Analytical Plan

Descriptive statistics examined caller characteristics, features of calls, and the three outcome groups (resolved, referred, unresolved and declined referral). A multinomial logistic regression was conducted with the unresolved and declined referral group as the reference group. Multinomial logistic regression produces relative risk ratios (RRR) that are similar to odds ratios (OR) in that they describe the ratio of the odds of an event occurring for one group to the odds of it occurring in another group. Univariate multinomial regressions were conducted to identify variables with a statistically significant association for entry into the multivariate analyses ($p < .05$). Backwards elimination was used to remove variables not significantly associated with linkage ($p > .05$), after adjusting for other significant variables (Sauerbrei, Royston, & Binder, 2007). To evaluate model fit, the multinomial model was retested as two separate logistic regressions and fit was assessed using the Hosmer-Lemeshow statistic (Hosmer & Lemeshow, 1989).

Post-hoc analyses were conducted to examine correlates of responder-rated risk using mandatory and optional variables. A multivariable logistic regression was used with a subset of callers that had data on both suicide intent and future plans. The variable selection strategy and model fit assessment were identical to that used in the primary multinomial logistic regression.

Results

Multinomial Regression Results (primary analysis)

During the first week of October 2010, the Veterans Crisis Line received 1,600 calls from Veterans. Recent/current suicidal ideation or a history of attempted suicide was reported by 665 (42%) Veteran callers, providing the subjects for the analyses. Of these callers, 646 (97%) had complete data on the variables of primary interest, providing the sample for the primary analyses. Of the 646 with complete data, 546 (84%) were male, 301 (47%) called during the day (6:00 am – 5:59 pm) and 345 (53%) during the evening (6:00 pm – 5:59 am), and 454 (70%) on a weekday and 192 (30%) during the weekend (Table 1). Additionally, about one-third ($N=217$, 34%) of the callers were categorized as higher risk and two-thirds ($N=429$, 66%) as lower risk. The outcome groups included 162 (25%) calls categorized as

resolved, 380 (59%) as referred, and 104 (16%) as unresolved and declined referral (Table 1).

In univariate multinomial regressions, call time and responder-rated risk were significantly associated with outcome (Table 2). Day of call (i.e., weekday vs. weekend) was associated with outcome at a nearly significant level ($p = 0.057$) and was also included in the model. The multivariable model comparing the referred group to the unresolved and declined referral group provided adequate fit, $X^2(3) = 4.83$, $p = 0.185$. Calls from Veterans determined to be at higher risk were more likely to be categorized as referred, RRR (95% CI) = 2.70 (1.64-4.47). Other predictors of categorization as referred included calls that took place during the day (6:00 am – 5:59 pm) compared to the evening (6:00 pm – 5:59 am), RRR (95% CI) = 2.32 (1.46-3.68), and calls that took place during the week compared to weekend, RRR (95% CI) = 1.76 (1.09-2.84).

The multivariable model comparing calls categorized as resolved compared to unresolved and declined referral provided adequate fit, $X^2(3) = 1.84$, $p = 0.606$. The only predictor that approached statistical significance in this comparison was callers judged to be at higher compared to lower risk, RRR (95% CI) = 0.56 (0.30-1.04), $p = 0.067$.

Logistic Regression for Responder-Rated Risk

Optional data on intent to die and future plans was available for 54% (356 of 665) of calls. Among those with optional data, 31% (112 of 356) were determined to be at higher risk and 69% (244 of 356) at lower risk. In univariate analyses, call day, intent to die and future plans were statistically associated with responder-rated risk and were included in the multivariable model (Table 3). The multivariable model produced adequate fit, $X^2(1) = 0.15$, $p = 0.699$. Both intent to die, OR (95% CI) = 8.47 (3.85-18.63), and the absence of a future plan, OR (95% CI) = 10.45 (2.84-38.40), greatly increased the odds of being rated at higher vs. lower risk for suicidal behavior, supporting the validity of these categorizations

Discussion

The National Veterans Crisis Line is conceptualized as a mechanism for resolving caller distress, assessing suicide risk, and linking callers with the appropriate level of care. Approximately 84% of calls from Veterans with recent suicidal ideation or a suicide attempt history, a group that is likely to be at increased risk for suicide, appeared to have a favorable outcome. More specifically, 25% of such calls ended with apparent resolution of the current distress and 59% resulted in acceptance of a referral to a relevant local provider or contact information for such a provider. The remaining 16% of calls appeared to have ended without a resolution or acceptance of a referral to a local provider or their contact information.

Comparisons among the three outcome groups (i.e., resolved, referred, unresolved and declined referral) indicated that responder-rated risk differentiated call outcomes, with higher-risk callers having significantly greater odds of accepting a referral than lower-risk callers. Specifically, 77% (168 of 217) of higher-risk callers were offered and accepted a referral compared to 49% (212 of 429) of lower-risk callers, suggesting that higher-risk callers may need referrals more than lower-risk callers who may have less distress and desire

for additional care. Indeed, a trend suggested that the problems of lower-risk callers were more likely to be resolved than the problems of higher-risk callers, supporting this notion.

Time of call also influenced the acceptance of referrals, as weekday calls had greater odds of ending in a referral than without a resolution or referral than weekend and evening calls. It is possible that weekday callers have different reasons for calling than evening and weekend callers. For example, weekday callers may use the Veterans Crisis Line to actively obtain referrals to local services, whereas evening and weekend callers may use the Line for other reasons such as reducing loneliness or distress, until local help was again available.

Together, these findings highlighted the importance of responder-rated risk in determining the outcome of Veterans Crisis Line calls, and an analysis examining determinants of responder-rated risk was conducted. Research on civilian lines suggests that responders do not systematically assess suicide risk (Mishara et al., 2007b), which led the National Suicide Prevention Lifeline to draft evidence-based assessment standards that have been adopted by the Veterans Crisis Line (Joiner et al., 2007). When discriminating between higher and lower risk, intent to die and a lack of future plans were found to increase the odds of a higher-risk rating, which is consistent with Lifeline criteria (Joiner et al., 2007). This suggests that responders' training prepares them to use known risk (Harriss & Hawton, 2005; Harriss, Hawton, & Zahl, 2005) and protective factors (Hirsch et al., 2006; O'Connor et al., 2007) to determine risk. Furthermore, a civilian crisis line study found intent to die was a stronger predictor of subsequent suicide-related behavior than hopelessness and psychological pain (Gould et al., 2007), supporting responders' emphasis on it.

Comparison of this study with civilian crisis line studies are difficult if not impossible to interpret given differences in callers, responders, and systems (Gould et al., 2007; Kalafat et al., 2007; Knox et al., 2012). Veteran callers are largely older males, whereas civilian callers are predominantly younger females, which are disparate populations likely to have very different needs. The Veterans Crisis Line primarily uses trained graduate-level mental health counselors, but there is significant heterogeneity among civilian crisis lines responders. The Veterans Crisis Line is part of a nation-wide health care system designed specifically to meet the needs of Veterans and service members. Responders routinely have access to medical records (with caller permission), a network of local SPCs available to follow-up with high-risk callers, and a variety of services for at-risk populations including homeless Veterans. Most civilian crisis lines do not function in the context of a healthcare system, do not allow access to medical records, and are reliant on community referral options. Although comparison studies with similar callers, responders and systems may not be possible, analyses of the components of crisis lines (i.e, responder training, access to medical records, structured referral system) may produce findings that could inform or improve both Veteran and civilian lines.

Studies of civilian crisis lines may also identify domains that future Veterans Crisis Line evaluations should address. In a prospective study of civilian lines, 12% of callers that did not express suicidal ideation reported it during a follow up assessment (Kalafat et al., 2007). Recognizing that addressing caller needs before suicidality develops may be critical to prevention, VA has rebranded the National Veterans Suicide Prevention Hotline the National

Veterans Crisis Line. Future evaluations of the Veterans Crisis Line should therefore examine characteristics and outcomes of callers who do not acknowledge suicidal ideation or an attempt history.

Collectively, these findings may have important implications for understanding and improving the functioning of the National Veterans Crisis Line. Approximately 84% of calls ended with a resolution or acceptance of a referral, suggesting the majority of calls ended well. If reducing long-term risk for all callers with some indication of suicide risk is a goal, there may be benefits to refining responders' referral skills as 41% of calls (23% of higher risk and 51% of lower risk) did not lead to a referral. Multiple options to improving referral skills are available including training in Motivational Interviewing (Carroll et al., 2006; Hettema, Steele, & Miller, 2005) or cognitive behavioral-based approaches (Stecker, Fortney, & Sherbourne, 2011). Ongoing structured observational supervision (e.g., live observation of calls), training booster sessions, or responder templates that target referrals skills may also increase the referral rate, as referrals that are tailored to caller characteristics may prove to be helpful. For example, higher-risk callers may be willing to accept a consult with a "Suicide Prevention Coordinator", whereas lower-risk callers who are not reporting current suicidal ideation may be more likely to accept a referral to a more benign "Crisis Coordinator."

There are a number of limitations that must be considered when interpreting these findings. The Veterans Crisis Line is evolving and changes in policy, training, and staffing may limit the generalizability of these findings to current calls. The responder template is a clinical tool and the reliability and validity of responder-generated variables (e.g. veteran status, generation of a consult, and caller risk) are unclear. Statistical power may have been lacking for some analyses, preventing findings such as the association between lower-risk callers and increased odds of a resolution from achieving significance. The analysis examining correlates of responder-rated risk was based on optional data available for only 54% of calls and may not generalize to all calls.

Nevertheless, these findings supported the use of the Veterans Crisis Line in generating referrals for Veterans who are thinking about suicide or have an attempt history. The strongest known determinant of a referral is responder-rated risk, and the majority of higher-risk callers are linked with care. Lower-risk callers may be more likely to have their problems resolved during calls than higher-risk callers, and may have less need for a referral. Responders appear to use known risk and protective factors to assess caller risk, but further research is needed to examine the reliability and validity of their risk ratings. Documentation on why referrals were not generated, including not wanting a referral, having a scheduled mental health session, being a repeat caller, or not having regular telephone access may explain why some callers were not offered or did not accept a referral. Additional training and/or ongoing support may help refine responders' referral skills to increase referral rates. Future research may use silent monitoring to identify clinical variables that may be associated with the resolution of problems and acceptance of referrals (Mishara et al., 2007a; Mishara et al., 2007b). Follow-up assessments could also provide critical outcome data, such as whether callers engaged in suicide-related behavior, SPCs made contact with callers, or used the telephone numbers they were given (Gould et al., 2007; Kalafat et al., 2007).

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Table 1
Caller and call characteristics for outcomes among at-risk Veteran callers (N=646)

Variables	Resolved N = 162 N (%)	Referred N = 380 N (%)	Unresolved/Unreferred N = 104 N (%)
Gender			
Female	35 (22%)	52 (14%)	13 (12%)
Male	127 (78%)	328 (86%)	91 (88%)
Call Time			
6 am – 5:59 pm	66 (41%)	200 (53%)	35 (34%)
6 pm – 5:59 am	96 (59%)	180 (47%)	69 (66%)
Day of Call			
Mon – Fri	106 (65%)	281 (74%)	67 (64%)
Sat – Sun	56 (35%)	99 (26%)	37 (36%)
Risk Level			
Higher	24 (15%)	168 (44%)	25 (24%)
Lower	138 (85%)	212 (56%)	79 (76%)

Note. “Referred” = callers who accepted a referral to a Suicide Prevention Coordinators, warm transfer or telephone number to local services. “Resolved” = callers who were judged by the responder to have their question/concern resolved during the call. “Unresolved/Unreferred” = callers who were not judged to have their question/concern resolved during the call and declined a referral.

Table 2
Multinomial logistic regression comparing call outcomes among at-risk Veteran callers
(N=646)

Variables	Referred vs. Unresolved/ Unreferred RRR (95% CI) unadjusted	Resolved vs. Unresolved/Unreferred RRR (95% CI) unadjusted	Referred vs. Unresolved/ Unreferred RRR (95% CI) adjusted	Resolved vs. Unresolved/Unreferred RRR (95% CI) adjusted
Gender				
Female	1.11 (0.58-2.13)	1.93 (0.97-3.85)	--	--
Male	1.00	1.00	--	--
Call Time				
6 am – 5:59 pm	2.19 (1.39-3.45) **	1.36 (0.81-2.26)	2.32 (1.46-3.68) ***	1.34 (0.80-2.24)
6 pm – 5:59 am	1.00	1.00	1.00	1.00
Day of Call				
Mon – Fri	1.57 (0.99-2.49) ^a	1.04 (0.62-1.75)	1.76 (1.09-2.84) *	1.02 (0.61-1.72)
Sat – Sun	1.00	1.00	1.00	1.00
Caller Risk				
Higher	2.50 (1.53-4.10) ***	0.55 (0.29-1.03)	2.70 (1.64-4.47) ***	0.56 (0.30-1.04)
Lower	1.00	1.00	1.00	1.00

*
p < 0.05,

**
p < 0.01,

p < 0.001

^a
p = 0.057, was included in adjusted models

Table 3
Multivariable logistic regression for risk ratings among at-risk Veteran callers with complete optional data (N=356)

Variables	Lower Risk N = 244 N (%)	Higher Risk N = 112 N (%)	OR (95% CI) unadjusted	OR (95% CI) adjusted
Gender				
Female	43 (18%)	10 (9%)	0.46 (0.22-0.95) *	--
Male	201 (82%)	102 (91%)	1.00	--
Call Time				
6 am – 5:59 pm	98 (40%)	49 (44%)	1.16 (0.74-1.82)	--
6 pm – 5:59 am	146 (60%)	63 (56%)	1.00	--
Day of Call				
Mon – Fri	177 (73%)	71 (63%)	0.66 (0.41-1.06)	--
Sat – Sun	67 (27%)	41 (37%)	1.00	--
Intent to Die				
Yes	10 (4%)	43 (38%)	14.98 (6.97-30.52) ***	8.47 (3.85-18.63) ***
No	234 (96%)	69 (62%)	1.00	1.00
Future Plans				
No	3 (1%)	28 (25%)	26.78 (7.94-90.35) ***	10.45 (2.84-38.40) ***
Yes	241 (99%)	84 (75%)	1.00	1.00

*
p < 0.05,

**
p < 0.01,

p < 0.001