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Challenging Prevailing Models of US Army Suicide

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ABSTRACT: Statistics behind reported suicide rates in the military are often insufficiently analyzed and portray a distorted picture of reality. Several models for identifying individuals at risk for suicide have been proposed but few show adequate predictive power to be actionable. Instead, a collaborative and consistent effort to address core drivers at the individual level may be more useful.

Since the drawdown of combat action in Iraq and Afghanistan, suicide and self-inflicted injury account for more deaths annually across the armed forces than all other factors except accidents.[1] Accordingly, suicide prevention has been a strategic priority for more than a decade. The 2015 *National Military Strategy* emphasized suicide prevention as a core aspect of ethical leadership requiring a culture of trust and mutual respect.[2] Despite the sustained emphasis on prevention, however, the rate of suicide in the US Army remains largely unchanged.[3]

This article highlights several key findings in the scientific literature in an effort to dispel myths regarding suicide rates in the US Army. It thereby provides a touch point for military leaders as they prioritize prevention initiatives and programs. Specifically, six questions are addressed:

1. What is the current trend in suicide death rates?
2. How do US Army suicide rates compare to civilian rates?
3. Can predictive models be used to predict suicide deaths?
4. What risk factors can leaders influence?
5. Have prevention programs been effective?
6. What is an appropriate target for suicide reduction?

Current Trends

Recent publications erroneously describe current trends of suicide among servicemembers as "steadily rising."[4] Popular media similarly

1. Armed Forces Health Surveillance Branch, "Surveillance Snapshot: Manner and Cause of Death, Active Component, U.S. Armed Forces 1998–2013," *Medical Surveillance Monthly Report 21*, no. 10 (October 2014): 21.

2. US Joint Chiefs of Staff (JCS), *The National Military Strategy of the United States of America 2015* (Washington, DC: JCS, June 2015), 14–15. The unclassified summary of the 2018 National Military Strategy does not refer to suicide prevention.

3. Larry D. Pruitt et al., *Department of Defense Suicide Event Report (DoDSER): Calendar Year 2016 Annual Report*, no. 0-A2345E0 (Washington, DC: Defense Health Agency, June 20, 2018), iv.

4. James Griffith and Craig J. Bryan, "Preventing Suicides in the U.S. Military," *Psychological Services* 15, no. 3 (2018): 251.

report, "suicide among troops spiked [to] crisis proportions."[5] Analysis of data, however, shows the suicide rate for the Army has not significantly changed since 2011.[6] Indeed, annual suicide rates per 100,000 person-years for the US Army of 29.8 (2019), 29.9 (2018), 24.7 (2017), 27.4 (2016), 24.4 (2015), 24.6 (2014), 23.0 (2013), 29.6 (2012), and 24.8 (2011) are within the same statistical margin of error.[7] These data, which contradict the typical narrative surrounding military suicide, warrant the attention of leaders who may otherwise incorrectly interpret small arithmetic changes in rates as significant.

Further, stable trends may take several years to establish and interpret—quarterly or monthly reports inherently are prone to greater uncertainty and instability of estimates. Defense Suicide Prevention Office reports, collected monthly and issued to the public quarterly, result in problematic statements such as "Army suicide deaths are up" for a given reporting period.[8] Such statements can be misinterpreted by senior leaders as representing reliable trends and can, therefore, misinform efforts to formulate a strategic approach to military suicide.

Similarly, literature on military suicide suggests rates across the services nearly doubled from 10.1 per 100,000 in 2002 to 19.7 per 100,000 in 2009.[9] But several intervening factors during this time period call this interpretation into question. Prior to implementation of the DoDSER in 2008, there were few systematic and standardized studies of military suicides.[10] Thus, rate calculations that include data prior to the implementation of DoDSER differ depending on the case definition utilized in a particular setting.[11]

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5. Tom Vanden Brook, "Troops at Risk for Suicide Not Getting Needed Care, Report Finds," *USA Today*, August 7, 2017. Popular media might report a "20 percent spike" in military suicide deaths in a given quarter. This number is a simple comparison of number of suicide events from a given quarter compared to the previous quarter. This number does not account for normal variability in the number of suicide deaths on a quarterly basis. If there were 71 suicide deaths in Quarter 2 of 2019, and 85 suicide deaths in Quarter 3 of 2019, then numerically this is a 20 percent increase. But this comparison fails to report that any given quarter from 2017 through 2019 might have as few as 57 suicide deaths, or as many as 99 suicide deaths. In that context, 85 suicide deaths is within the typical range of quarterly suicide deaths over the previous three years and does not portray a "spike" as reported in the media.

6. Jennifer Tucker, Derek J. Smolenski, and Carrie H. Kennedy, *DoDSER: Calendar Year 2018 Annual Report*, no. 4-B4E204C (Washington, DC: Defense Health Agency, July 2020), 12.

7. Larry D. Pruitt et al., *Department of Defense Suicide Event Report (DoDSER): Calendar Year 2017 Annual Report*, no. F-C3EE053 (Washington, DC: Defense Health Agency, July 2019), 18; and Defense Suicide Prevention Office, *Annual Suicide Report, Calendar Year 2019* (Washington, DC: Undersecretary of Defense for Personnel and Readiness, October 2020), 12.

8. Rennie Vazquez, *Department of Defense (DoD) Quarterly Suicide Report (QSR): 2nd Quarter, CY 2018* (Washington, DC: Defense Suicide Prevention Office, 2018), 3.

9. Joseph Logan et al., "Characteristics of Suicides among US Army Active Duty Personnel in 17 US States from 2005 to 2007," *American Journal of Public Health* 102, Supplement 1 (March 2012): S41; and Armed Forces Health Surveillance Branch, "Deaths by Suicide While on Active Duty, Active and Reserve Components, U.S. Armed Forces, 1998–2011," *Medical Surveillance Monthly Report* 19, no. 6 (June 2012): 8.

10. David S. C. Chu to Assistant Secretaries of the Military Departments for Manpower and Reserve Affairs, memorandum, "Standardized DoD Suicide Data and Reporting," June 2006, Under Secretary of Defense for Personnel and Readiness, Washington, DC.

11. Kenneth L. Cox et al., "An Examination of Potential Misclassification of Army Suicides: Results from the Army Study to Assess Risk and Resilience in Servicemembers," *Suicide and Life-Threatening Behavior* 47, no. 3 (June 2017): 261.

Reports prior to this time also relied primarily on medicolegal determinations by the Armed Forces Medical Examiner System and may have biased reporting toward accidents as a cause of death rather than suicide.[12] As a further complicating factor, policy changes during the Obama administration ensured Servicemembers' Group Life Insurance would be paid to designated beneficiaries regardless of line-of-duty determination for suicide deaths.[13] Taken together, these biasing factors make problematic any direct comparison of suicide rate data between time periods before and after systematic data collection.

Suicide Rates

In contrast to the US Army suicide rate, which has remained consistent since 2011, the suicide rate for the US population has significantly increased.[14] Recent statistics show suicide is now the tenth leading cause of death and accounts for approximately 45,000 deaths in the United States annually.[15] Despite these facts, the most common statement in the media is the military suicide rate is "well above the national rate" for the US population.[16]

Similarly, the academic literature frequently cites the statistic that the 2008 Army suicide rate exceeded the crude rate of the US population.[17] Due to demographic differences between the US population and the subset of the population that serve on active duty in the US Army, a direct comparison of crude or unadjusted suicide rates between the two groups is inaccurate—the military is generally younger than the overall US population and has a greater proportion of men.[18] Thus any statistical comparison between the two groups must be adjusted to be age- and sex-matched.[19] But no consensus has been reached or policy guidance provided on which methods should be utilized when comparing rates—for example, direct versus indirect standardization.[20]

An analysis of US Army suicide data from 2004 to 2015 using direct standardization to match age and sex to the US population showed

12. Joel R. Carr, Charles W. Hoge, and Robert Potter, "Suicide Surveillance in the U.S. Military—Reporting and Classification Biases in Rate Calculations," *Suicide and Life-Threatening Behavior* 34, no. 3 (Fall 2004): 233–41.

13. Cox et al., "Examination of Potential Misclassification," 261.

14. Deborah M. Stone et al., "Vital Signs: Trends in State Suicide Rates—United States, 1999–2016 and Circumstances Contributing to Suicide—27 States, 2015," *Morbidity and Mortality Weekly Report* 67, no. 22 (June 8, 2018): 617–24.

15. Centers for Disease Control and Prevention, "Web-Based Injury Statistics Query and Reporting System: Leading Causes of Death Reports 1981–2016," Centers for Disease Control and Prevention, accessed November 28, 2018.

16. Gregg Zoroya, "U.S. Military Suicides Remain High for 7th Year," *USA Today*, updated May 4, 2016, https://www.usatoday.com/story/news/nation/2016/04/01/us-military-suicides-remain-stubbornly-high/82518278/.

17. Griffith and Bryan, "Preventing Suicides," 251.

18. Larry D. Pruitt et al., "Suicide in the Military: Understanding Rates and Risk Factors across the United States' Armed Forces," *Military Medicine* 184, no. 3/4, Supplement 1 (2019): 432–37; and Pruitt et al., *(DoDSER): Calendar Year 2016*, 21.

19. Pruitt et al., *(DoDSER): Calendar Year 2016*, 22.

20. Eren Youmans Watkins et al., "Adjusting Suicide Rates in a Military Population: Methods to Determine the Appropriate Standard Population," *American Journal of Public Health* 108, no. 6 (June 1, 2018): 770.

the US Army rate was below the comparable civilian rate for 8 of the 12 years included in the data.[21] The annual DoDSER utilizes indirect standardization to make similar comparisons of suicide rates between the two groups in order to account better for age differences.[22] These data show the age- and sex-adjusted suicide rates in the US Army did not significantly differ from the rates for the US population for calendar years 2013, 2014, 2015, and 2017.

For three reporting years—calendar years 2011, 2012, and 2016—the adjusted US Army suicide rates were slightly higher than the US population rates.[23] The magnitude of difference between the rates may also be of importance when considering these exception years. When comparing the calendar year 2012 data—the year in which crude rates for the Army differ most from the civilian population—there is only a one-hundredth of 1 percent difference between the two rates.[24] These findings cast doubt on reports suggesting suicides in the US Army significantly exceed those for the US population.

Predictive Models

Models purporting to identify suicide deaths accurately are unlikely to show sufficient predictive power to be useful for developing suicide prevention programs. As the number of identified potential risk factors for suicide increases and these factors are better measured, the number of false positives will statistically increase due to the poor specificity of predictors.[25] In fact, the likely upper limit of positive predictive power (the likelihood that an identified "positive" case will actually engage in suicide behavior) for suicide assessment instruments is 78 percent based on simulation studies among civilian psychiatric patients with a history of self-inflicted injury.[26]

Thus even in the best identified statistical scenarios in high-risk populations, false positives on validated screening measures will occur 22 percent of the time. In civilian settings, a false positive prompting additional psychiatric evaluation may be considered a minor cost compared to potentially lifesaving intervention.[27] But in the Army context, a false positive identification of suicide risk may inappropriately preclude assignment to certain missions such as recruiting duty, flight status, or assignments requiring a security clearance. These stigma-increasing outcomes are in addition to the cost of the evaluation and the opportunity cost of lost training associated with unneeded, additional

21. Watkins et al., "Adjusting Suicide Rates," 771.
22. Pruitt et al., *(DoDSER): Calendar Year 2016*, 13.
23. Pruitt et al., *(DoDSER): Calendar Year 2017*, 33.
24. Watkins et al., "Adjusting Suicide Rates," 776.
25. Joseph C. Franklin et al., "Risk Factors for Suicidal Thoughts and Behaviors: A Meta-Analysis of 50 Years of Research," *Psychological Bulletin* 143, no. 2 (2017): 188.
26. Bradley E. Belsher et al., "Prediction Models for Suicide Attempts and Deaths: A Systematic Review and Simulation," *JAMA Psychiatry* 76, no. 6 (2019): 646.
27. Peter Denchev et al., "Modeling the Cost-Effectiveness of Interventions to Reduce Suicide Risk among Hospital Emergency Department Patients," *Psychiatric Services* 69, no. 1 (January 2018): 23.

assessments.[28] Furthermore, false negatives may provide a false sense of security for commanders and clinicians who assume a particular soldier is not at risk.[29]

The relatively low base rate of suicides also prevents adequate verification or cross-validation of predictive models. In order to appropriately develop predictive models, the base rate in an initial sample should be approximately 50 percent.[30] Problems with predictive models are further exacerbated when trying to expand predictive models to groups with fewer risk factors or lower rates. Considering only crude rates, the 2016 US Army suicide rate was 27.4 per 100,000, but patients with a history of inpatient psychiatric admission have an average suicide rate of 646 per 100,000.[31] This difference in base rates makes the use of previously validated scales for any prediction problematic.[32]

The false positive problem is pervasive across studies of servicemembers and veterans and limits the utility of most clinical risk assessment techniques.[33] Even the *Army Study to Assess Risk and Resilience in Servicemembers* (Army STARRS), the large longitudinal study of prospective suicide risk, showed an overwhelming number of false positives—96.3 percent—when attempting to model high-risk prediction.[34]

The US Army has recently adopted the Columbia-Suicide Severity Rating Scale (C-SSRS) as a primary suicide risk assessment measure.[35] The C-SSRS is a mandatory suicide risk screening used in a variety of Army medical settings including emergency departments, inpatient psychiatric facilities, and outpatient clinics.[36] Nonetheless, the designation of this measure by the Defense Suicide Prevention Office and other civilian hospital settings as the gold standard for suicide risk assessment may communicate a false sense of assurance.[37] Screening samples from the C-SSRS indicate only 8 percent of the individuals who go on to engage

28. AC Davis, "How Classroom Training is Hindering Army Readiness," *Task & Purpose*, January 20, 2016.

29. Jacinta Hawgood and Diego De Leo, "Suicide Prediction—A Shift in Paradigm Is Needed," *Crisis* 37, no. 4 (2016): 252.

30. Takaya Saito and Marc Rehmsmeier, "The Precision-Recall Plot Is More Informative than the ROC Plot When Evaluating Binary Classifiers on Imbalanced Datasets," *PLoS ONE* 10, no. 3 (2015): e0118432, 3.

31. Pruitt et al., *(DoDSER): Calendar Year 2016*, 24; and Matthew Michael Large and Nav Kapur, "Psychiatric Hospitalisation and the Risk of Suicide," *British Journal of Psychiatry* 212, no. 5 (May 2018): 269.

32. Belsher et al., "Prediction Models for Suicide," 646.

33. Heidi D. Nelson, et al., "Suicide Risk Assessment and Prevention: A Systematic Review Focusing on Veterans," *Psychiatric Services* 68, no. 10 (October 2017): 1003–15.

34. Olav Nielssen, Duncan Wallace, and Matthew Large, "Pokorny's Complaint: The Insoluble Problem of the Overwhelming Number of False Positives Generated by Suicide Risk Assessment," *BJPsych Bulletin* 41, no. 1 (February 2017): 18–20.

35. US Army Medical Command (MEDCOM), *Behavioral Health At-Risk Management Policy*, MEDCOM Policy Memo 16-096 (Fort Sam Houston, TX: MEDCOM, 2016), 8.

36. MEDCOM, MEDCOM Policy Memo 16-096.

37. Tim Hoyt and Diana M. Repke, "Development and Implementation of U.S. Army Guidelines for Managing Soldiers at Risk of Suicide," *Military Medicine* 184, no. 3/4, Supplement 1 (November–December 2019): 428.

in suicide behaviors would be identified by this screening, and 4 percent of individuals would be identified as false positives.[38]

Other studies using this assessment measure have shown similar findings, namely, the potential for classification errors and missed cases of suicide attempts.[39] Thus, leaders receiving risk recommendations from sources utilizing the C-SSRS must know the likelihood of false positives and false negatives. Moreover, more recent techniques (such as machine learning and predictive modeling) do not overcome the inherent weaknesses caused by a low base rate event and poor predictive power.[40]

Role of Leaders

For the reasons discussed, identifying risk factors through mass screening may be of little utility in predicting the acute suicide risk of an individual soldier.[41] In contrast, leaders should focus on the core drivers of suicide—stressors an individual associates with suicidality, which may acutely increase suicide risk.[42] For example, at the individual soldier level, financial problems such as loss of pay due to misconduct or reduction in rank could be a significant driver.[43]

In one of the few direct comparison studies of potential drivers for suicide death among soldiers, researchers compared groups of soldiers who died by suicide, and those who attempted suicide but did not die, with demographically matched control soldiers.[44] The study identified that soldiers who exhibited suicide behaviors (both suicide deaths and nonfatal suicide attempts) had greater odds of experiencing legal and substance-abuse problems and failed intimate relationships in the 90 days preceding the incident, with legal problems the most significant differentiator of those servicemembers who died by suicide.[45] Occupational problems such as nonselection for promotion or poor performance evaluations were significantly associated with nonfatal suicide attempts.[46]

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38. John H. Greist et al., "Predictive Value of Baseline Electronic Columbia-Suicide Severity Rating Scale (eC-SSRS) Assessments for Identifying Risk of Prospective Reports of Suicidal Behavior during Research Participation," *Innovations in Clinical Neuroscience* 11, no. 9–10 (September–October 2014): 26.

39. Kelly L. Zuromski et al., "Assessment of a Risk Index for Suicide Attempts among US Army Soldiers with Suicide Ideation: Analysis of Data from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)," *JAMA Network Open* 2, no. 3 (2019): e190766.

40. Belsher et al., "Prediction Models for Suicide," 642–51.

41. John Sommers-Flanagan and Sidney L. Shaw, "Suicide Risk Assessment: What Psychologists Should Know," *Professional Psychology: Research and Practice* 48, no. 2 (2017): 99.

42. Raymond P. Tucker et al., "Risk Factors, Warning Signs, and Drivers of Suicide: What Are They, How Do They Differ, and Why Does It Matter?" *Suicide & Life-Threatening Behavior* 45, no. 6 (2015): 681.

43. Caitlin A. Goodin et al., "Financial Hardship and Risk of Suicide among U.S. Army Personnel," *Psychological Services* 16, no. 2 (May 2019): 287.

44. Nancy A. Skopp et al., "Risk Factors for Self-Directed Violence in US Soldiers: A Case-Control Study," *Psychiatry Research* 245 (November 2016): 196–97.

45. Skopp et al., "Case-Control Study."

46. Skopp et al., "Case-Control Study."

These drivers of suicide behavior—financial, legal, relationship, substance-abuse, and occupational problems—are not novel, but each issue provides leaders with a potential opportunity to mitigate emerging risk.[47] As soon as the financial or legal problems of a soldier are identified, leaders can ensure protected time during duty hours for soldiers to resolve these issues before they become drivers of suicide behavior. Also, leaders can assign unit mentors to check in regularly with soldiers facing relationship or occupational problems to ensure these stressors have not overwhelmed them.

Commanders can also take steps to decrease risk when soldiers experience an acute driver of suicide. Throughout the past decade, personally owned firearms are the leading mechanism of injury in military suicides, accounting for 68.7 percent of all calendar year 2017 suicide deaths in the US Army.[48] This statistic is complicated by recent findings that only one-third of servicemembers store personal firearms in their homes in a safe manner—locked and unloaded. Servicemembers reporting recent thoughts of suicide were significantly less likely to follow safe storage practices.[49]

Restriction of firearms has been shown to reduce the risk of some suicides, but significant cultural and readiness barriers impede such restrictions for soldiers experiencing stressful life events (that may or may not become drivers for suicide).[50] Still, commanders can mitigate this risk by emphasizing safe storage practices for personally owned firearms and by offering (rather than directing) temporary storage of these firearms in unit arms rooms when soldiers experience potential drivers of suicidal behavior.[51] These actions can decrease the likelihood a soldier will act impulsively during a moment of crisis, as any delay allows more opportunity for the soldier to seek help.[52]

Prevention and Treatment Programs

Outside the Clinic

The Army has invested significant time and resources on suicide prevention programs provided outside behavioral health clinics. As such, these programs should be evaluated for efficacy in preventing suicide deaths. Until May 2018, mandatory suicide prevention training was conducted using the Ask, Care, and Escort program, and gatekeepers—commanders, medical personnel, and chaplains—additionally received

47. Tim Hoyt et al., "Development of a Leader Tool for Assessing and Mitigating Suicide Risk Factors," *Military Medicine* 185, Supplement 1 (January-February 2020).

48. Pruitt et al., *(DoDSER): Calendar Year 2017*, 74.

49. Craig J. Bryan et al., "Firearm Availability and Storage Practices among Military Personnel Who Have Thought about Suicide," *JAMA Network Open* 2, no. 8 (2019): e199160.

50. Tim Hoyt and Vicki Duffy, "Implementing Firearms Restriction for Preventing U.S. Army Suicide," *Military Psychology* 27, no. 6 (2015): 386.

51. Department of Defense (DoD), *Defense Suicide Prevention Program*, DoD Instruction (DoDI) 6490.16 (Washington, DC: DoD, November 2017), 19.

52. Hoyt and Duffy, "Implementing Firearms Restriction," 386.

Applied Suicide Intervention Skills Training (ASIST).[53] (The requirement for mandatory suicide prevention training was eliminated in May 2018, replaced with command discretion regarding such training.)[54]

Despite these training requirements, none of these intervention programs have been systematically evaluated in military settings, and there is minimal evidence regarding their effectiveness.[55] The evidence base is limited to several small-scale studies related to the facilitation of suicide prevention training. One study evaluated the use of ASIST in a small reserve unit sample and found the training was minimally effective in reducing hopelessness among participants.[56]

Another study showed over 90 percent of Army chaplains and chaplain assistants had received mandatory gatekeeper suicide prevention training—ASIST—over the course of a year, and these gatekeepers reported greater efficacy in responding to suicide risk among soldiers than noncommissioned officers with similar gatekeeper training.[57] A study of noncommissioned officers showed they had a greater ability to intervene than trained civilians in similar settings, such as resident advisers receiving gatekeeper training in university residence halls.[58]

These same noncommissioned officers, however, indicated more reluctance to intervene than gatekeepers in university settings due to the perception they would be blamed for the death of an at-risk soldier, or that their intervention could have deleterious effects on the soldier's career.[59] These findings notwithstanding, there is no evidence gatekeeper training has a direct effect on suicide rates.[60] Thus the implementation of gatekeeper training in the US Army should be clear regarding intended outcomes: whereas the training may increase knowledge, it may not necessarily increase likelihood of intervention and cannot be assumed to reduce suicide deaths.

Clinical Treatment Settings

The treatment of suicidality in US Army clinical settings generally focuses on soldiers experiencing acute or chronic suicidal ideation, plans, or intent.[61] This focus can limit the applicable scope of these activities

53. Headquarters, Department of the Army (HQDA), *Army Health Promotion*, Army Regulation (AR) 600-63 (Washington, DC: HQDA, April 2015), 20–21.

54. Mark Esper, *Prioritizing Efforts—Readiness and Lethality Update 7* (Washington, DC: Secretary of the Army, May 25, 2018).

55. Rajeev Ramchand et al., "Noncommissioned Officers' Perspectives on Identifying, Caring For, and Referring Soldiers and Marines at Risk of Suicide," *Psychiatric Services* 66, no. 10 (October 2015): 1057.

56. Alexa Smith-Osborne, Arati Maleku, and Sarolyn Morgan, "Impact of Applied Suicide Intervention Skills Training on Resilience and Suicide Risk in Army Reserve Units," *Traumatology* 23, no. 1 (2017): 49–55.

57. Rajeev Ramchand et al., "Army Chaplains' Perceptions about Identifying, Intervening, and Referring Soldiers at Risk of Suicide," *Spirituality in Clinical Practice* 2, no. 1 (March 2015): 36–47.

58. Ramchand et al., "Noncommissioned Officers' Perspectives," 1061.

59. Ramchand et al., "Noncommissioned Officers' Perspectives," 1059.

60. Crystal Burnette, Rajeev Ramchand, and Lynsay Ayer, "Gatekeeper Training for Suicide Prevention: A Theoretical Model and Review of the Empirical Literature," *RAND Health Quarterly* 5, no. 1 (2015): 16.

61. MEDCOM, MEDCOM Policy Memo 16-096.

for the Army since less than half of soldiers that died by suicide between 2004 and 2009 had sought behavioral health care.[62] Notwithstanding this limitation, several interventions have shown empirical support in reducing suicide behavior in clinical settings.[63]

Several former military officers developed a type of brief cognitive behavioral therapy to address suicide behavior among soldiers who had been treated for suicidality in an inpatient psychiatric facility.[64] Soldiers who received this intervention in addition to the usual standard of care showed significantly lower rates of suicide attempts over the two years following treatment compared to soldiers receiving the usual treatment.[65] A core component of this military-specific intervention is the development of an individualized safety or crisis response plan for each soldier.[66]

These safety plans are developed collaboratively and individually with each soldier, often in consultation with command, and identify coping strategies and sources of support that have proven effective in reducing distress.[67] The implementation of safety and crisis response plans are not the sole purview of treating clinicians. Army policy requires a safety plan for any soldier identified with any significant suicide risk in behavioral health care and encourages working collaboratively with command to ensure safety plans do not overly limit a soldier's gainful employment in the unit.[68] The overall goal of a safety or crisis response plan is to ensure the soldier has a tangible, concrete plan of action when facing a distressing situation.[69]

A similar approach—the Collaborative Assessment and Management of Suicidality (CAMS)—also has shown promise in the scientific literature, including with military populations.[70] This integrative treatment emphasizes a problem-focused approach, developing a treatment plan that reduces the underlying hopelessness and stress that drive suicide behavior.[71] Clinical trials have shown the CAMS approach can significantly reduce suicidal ideation in

62. Ronald C. Kessler et al., "Predicting Suicides after Outpatient Mental Health Visits in the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)," *Molecular Psychiatry* 22, no. 4 (April 2017): 544–51.

63. Esther L. Meerwijk et al., "Direct versus Indirect Psychosocial and Behavioural Interventions to Prevent Suicide and Suicide Attempts: A Systematic Review and Meta-Analysis," *Lancet Psychiatry* 3, no. 6 (June 2016): 544–54.

64. M. David Rudd et al., "Brief Cognitive-Behavioral Therapy Effects on Post-Treatment Suicide Attempts in a Military Sample: Results of a Randomized Clinical Trial with 2-Year Follow-Up," *American Journal of Psychiatry* 172, no. 5 (May 2015): 441–49.

65. Rudd et al., "Brief Cognitive-Behavioral Therapy Effects," 445.

66. Rudd et al., "Brief Cognitive-Behavioral Therapy Effects," 444.

67. Craig J. Bryan et al., "Effect of Crisis Response Planning vs. Contracts for Safety on Suicide Risk in U.S. Army Soldiers: A Randomized Clinical Trial," *Journal of Affective Disorders* 212 (April 2017): 64–72.

68. MEDCOM, MEDCOM Policy Memo 16-096, 5.

69. Bryan et al., "Effect of Crisis Response Planning," 67.

70. David A. Jobes, Rene Lento, and Katherine Brazaitis, "An Evidence-Based Clinical Approach to Suicide Prevention in the Department of Defense: The Collaborative Assessment and Management of Suicidality, (CAMS)," *Military Psychology* 24 (2012): 607.

71. Jobes, Lento, and Brazaitis, "An Evidence-Based Clinical Approach," 606.

soldiers and reduce emergency department visits related to suicide and psychiatric hospitalization.[72]

Despite these findings, military clinicians have been slow to adopt these collaborative approaches and similar empirically supported clinical techniques.[73] Strategic leaders must emphasize training in these modalities to reduce the impact of suicide behavior on readiness. Population-wide meta-analysis indicates the most powerful strategies for suicide prevention (for example, gatekeeper training and psychosocial treatment) each could account for up to a 7 percent reduction in suicide deaths.[74] These tailored treatments are more effective than broad treatments that include suicide behavior as a secondary treatment target.[75]

Indeed, former Air Force officer and leading military suicide researcher Dr. Craig Bryan indicates it is unlikely new treatments are needed to address the current rates of suicide in the Army, and "the next step in suicide prevention should be to adapt and refine what already works to make [treatment] work even better."[76] But meta-analysis also suggests these treatments may be most effective for up to three months following cessation of treatment.[77] Leaders cannot, therefore, assume a soldier's risk of suicide has been resolved simply because the soldier has successfully terminated treatment and is no longer required to be on a duty-limiting profile.[78]

Suicide Reduction

Zero suicides have been the stated goal of many suicide reduction initiatives during the past two decades.[79] Since suicide rates in the US Army have not significantly changed since 2011, it may be more reasonable to focus on a strategic target for reduction supported by the empirical literature. As discussed, small year-to-year changes in the suicide rate should not be interpreted as a significant increase or decrease unless backed by statistical analysis that demonstrates an index of reliable change. For example, when comparing the suicide rate for 2016 against the average rate for the previous three-year period, in order to reliably identify a statistical decrease in the US Army suicide rate, the total number of suicide deaths would need to be reduced from

72. David A. Jobes et al., "A Randomized Controlled Trial of the Collaborative Assessment and Management of Suicidality versus Enhanced Care as Usual with Suicidal Soldiers," *Psychiatry: Interpersonal & Biological Processes* 80, no. 4 (2017): 339–56.

73. David A. Jobes, "Clinical Assessment and Treatment of Suicidal Risk: A Critique of Contemporary Care and CAMS as a Possible Remedy," *Practice Innovations* 2, no. 4 (2017): 212.

74. Helen Christensen, Pim Cuijpers, and Charles F. Reynolds III, "Changing the Direction of Suicide Prevention Research: A Necessity for True Population Impact," *JAMA Psychiatry* 73, no. 5 (May 2016): 435–36.

75. Meerwijk et al., "Direct versus Indirect," 550.

76. Craig J. Bryan, "Adjusting Our Aim: Next Steps in Military and Veteran Suicide Prevention," *Spirituality in Clinical Practice* 2, no. 1 (2015): 84–85.

77. Meerwijk et al., "Direct versus Indirect," 550.

78. MEDCOM, MEDCOM Policy Memo 16-096, 9.

79. David W. Covington and Michael F. Hogan, "Zero Suicide: The Dogged Pursuit of Perfection in Health Care," *Psychiatric Times* 36, no. 1 (January 2019).

127 (2016) to 92 (in a future year) assuming an equivalent military end strength for that year.[80]

To put this difference in context, a reliable 28 percent decrease would be required; this decrease would be equivalent to comparing the highest recent count of 164 suicides in 2012 to the lowest recent count of 120 suicides in 2015 (a 27 percent change).[81] This reduction target should be considered in the context of the overall literature on suicide prevention techniques. Indeed, a recent meta-analysis on reducing the population suicide rate detailed a statistical model that combined all current, evidence-based suicide prevention strategies into a single, integrated strategy.[82] If implemented with perfect fidelity, these data suggest a multiyear strategy hypothetically could reach a 25 percent reduction.

Recommendations

In summary, the data on US Army suicides differs from the typical narrative in popular media: the rate of soldier suicide does not differ from the general US population and has been at a steady state since 2011.[83] This steady state indicates Army-wide interventions to decrease suicide have been ineffective at reducing the suicide rate despite the lack of specific studies evaluating the impact of prevention efforts. It is possible the comparison of trends between the US population suicide rate, which has increased over the past decade, and the US Army suicide rate, which remains steady, could be interpreted as US Army efforts being successful in preventing a corresponding increase.

But due to the very low base suicide rate in the Army, the relatively small population of soldiers compared to the general population, and year-to-year measurement error over a relatively short period, the most likely interpretation of this data is in line with more robust research findings that the US population suicide rate does not differ from the US Army suicide rate. Leaders must strive to understand that current suicide rates in the United States are not unique to the military and are occurring as part of broader societal trends. In pursuit of this goal, the authors offer four recommendations.

Research

First, despite demands for increasingly immediate data, any suicide rate calculations should focus on annual numbers, not quarterly reporting, and trends should only be interpreted based on multiyear comparisons rather than year-to-year variation. As the US Army seeks to eliminate suicide, interim targets for significant decreases should be set.

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80. Pruitt et al., *(DoDSER): Calendar Year 2016*, 31.

81. Larry D. Pruitt et al., *Department of Defense Suicide Event Report (DoDSER): Calendar Year 2015 Annual Report*, no. E-6A4ED71 (Washington, DC: Defense Health Agency), 17.

82. Christensen, Cuijpers, and Reynolds, "Changing the Direction," 435–36.

83. Pruitt et al., *(DoDSER): Calendar Year 2016*, iv.

Second, prevention efforts must be validated before widespread implementation. Whereas unit-wide suicide prevention training programs have raised awareness during the past two decades, none have been shown to reduce suicide behavior or suicide deaths.[84] Additional prevention programs should not be emphasized; instead, research should be dedicated to clear demonstrations of program efficacy and adherence to implementation science practice.

Prevention

Third, the Army must continue to address the drivers for suicide at the individual level. The recent elimination of mandatory suicide prevention training requirements at the unit level provides leaders with an opportunity to focus on risk mitigation among those soldiers facing the greatest occupational, interpersonal, and social risks. Emerging tools to assist leaders in addressing suicide concerns among servicemembers similarly focus on a one-on-one assessment that mitigates risk at the individual level.[85] Like airmen in the Air Force Limited Privilege Suicide Prevention program, soldiers facing investigations or other legal problems should be allowed to seek behavioral health support during crises without this information becoming admissible as part of the medical record or adversely affecting the soldier during legal or administrative proceedings.[86]

Furthermore, formal unit-level mentoring programs for soldiers facing divorce or occupational problems can ensure individuals are aware of support options such as legal, financial, and housing assistance.[87] The Army should mandate empirically supported treatment techniques in clinical settings with an emphasis on individualized safety planning that involves collaboration between the servicemember, the chain of command, and treatment providers.[88]

Fourth, the US Army must become a learning organization in its approach to suicide prevention. The effectiveness of some prevention efforts during the past decade may have been hampered by frontline leaders assuming they would be held responsible if they intervened and the soldier subsequently died by suicide.[89] Commanders at all levels cannot abdicate responsibility for suicide deaths in their formations, but their accountability must remain within the bounds of their control. Commanders' critical incident reporting and fatality review boards can focus on best practices to mitigate risk associated with known drivers of suicide behavior.

Additionally, professional military education programs should set aside time for seminar discussions about frontline approaches to suicide

84. Burnette, Ramchand, and Ayer, "Gatekeepers Training for Suicide Prevention," 16.
85. Hoyt et al., "Development of a Leader Tool."
86. Department of the Air Force, *Medical Operations: Mental Health*, Air Force Instruction 44-172 (Washington, DC: Department of the Air Force, 2015), 39.
87. Hoyt et al., "Development of a Leader Tool."
88. Hoyt and Repke, "Managing Soldiers at Risk," 429.
89. Ramchand et al., "Noncommissioned Officers' Perspectives," 1059.

risk mitigation. It is the authors' experience that all senior leaders have direct familiarity with individual cases of suicide behavior in their formations. Leaders must share the successes and failures of frontline approaches to risk mitigation in order to disseminate best practices and drive innovative approaches. By addressing these areas through a culture of learning, strategic leaders may be able to facilitate a reliable decrease in the number of suicide deaths in the US Army.

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