

# Annual Technical Progress Report

## Front Cover

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<b>14. ABSTRACT</b> The primary aim of the proposed project is to develop a shortened version of the Suicide Cognitions Scale (SCS) and to evaluate its efficacy as a universal suicide prevention screen for use in military primary care clinics. We propose to achieve this aim by accomplishing the following objectives: (a) to develop a brief alert algorithm that can be used by primary care providers to accurately identify high-risk patients; (b) to improve the accuracy of universal suicide prevention screening methods by reducing false negative rates; and (c) to systematically quantify false negative rates across various patient subgroups (e.g., gender, race, age, deployment history, etc.) to identify those patient subgroups for whom the screening algorithm is most useful and accurate. Data collection is still in progress. There are no research findings to report at this time.					
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# 1. Introduction

The primary aim of the proposed project is to develop a shortened version of the Suicide Cognitions Scale (SCS) and to evaluate its efficacy as a universal suicide prevention screen for use in military primary care clinics. We propose to achieve this aim by accomplishing the following objectives: (a) to develop a brief alert algorithm that can be used by primary care providers to accurately identify high-risk patients; (b) to improve the accuracy of universal suicide prevention screening methods by reducing false negative rates; and (c) to systematically quantify false negative rates across various patient subgroups (e.g., gender, race, age, deployment history, etc.) to identify those patient subgroups for whom the screening algorithm is most useful and accurate.

## 2. Keywords

Suicide prevention, primary care, suicide screening

## 3. Accomplishments

### 3.1. What were the major goals of the project?

#### **Task 1: Obtain IRB approvals**

- 1a. Initiate IRB proposals (months 1-3)
- 1b. Complete quarterly and annual reports to all IRBs (months 1-48)
- 1c. Complete final report to IRB (month 48)

#### **Task 2: Hire and train staff**

- 2a. Hire and train research manager at University of Utah (months 1-3)
- 2b. Hire and train site evaluators (months 6-20)

#### **Task 3: Begin and complete baseline data collection**

- 3a. Begin enrollment and baseline data collection (months 12-26)
- 3b. Continue baseline data collection (months 13-42)
- 3c. Complete baseline data collection (month 42)

#### **Task 4: Begin and complete longitudinal tracking and follow-up assessments**

- 4a. Begin longitudinal tracking and follow-up assessments (month 18)
- 4b. Continue longitudinal tracking and follow-up assessments (months 19-48)
- 4c. Complete longitudinal tracking and follow-up assessments (month 48)

#### **Task 5: Data analysis, manuscript writing, report writing**

- 5a. Complete data analyses (months 26-48)
- 5b. Manuscript and report writing (months 28-48)

#### **Completion of tasks:**

- 1a. Complete
- 1b. Ongoing
- 1c. Not yet started
- 2a. Complete
- 2b. Complete
- 3a. Complete
- 3b. Complete
- 3c. Complete
- 4a. Complete
- 4b. Complete
- 4c. To be completed 1-OCT-2019
- 5a. Ongoing
- 5b. Ongoing

### 3.2. What was accomplished under these goals?

#### Major activities:

1. Baseline data collection concluded at all sites by 31-AUG-2018.
2. 6-month follow-up calls continued throughout the year and have now concluded.
3. Task 4 is ongoing. 12-month follow-up calls will continue until 01-OCT-2019.
4. Two additional NHRC personnel were added to assist with data acquisition and management: Aaron C. Del Re, PhD and Shannon Fitzmaurice.
5. To ensure we have one full year of follow-up data from the medical records, the medical record follow-up period was extended to 31-DEC-2019.
6. To ensure adequate follow-up time and adequate time to complete data acquisition, database merging, and data de-identification, study period of performance was extended to 31-DEC-2020.
7. Because AMRDEC SAFE has been replaced by DoD SAFE as the DoD's preferred data transfer technique, all references to AMRDEC SAFE were replaced with references to DoD SAFE.
8. Baseline data collection: 2,690 subjects were enrolled in this study.
9. Longitudinal tracking and follow-up assessments: A total of 186/2690 (7%) participants have withdrawn from the study thus far.
  - a. Overall follow-up rate: 1771/2690 (66%) participants due for a 12-month interview have completed either a 6 or 12 month follow up interview.
    - i. A total of 1420/2690 1-week follow up calls were completed. (53% completion rate).
    - ii. A total of 1335/2690 6-month follow up calls were completed (50% completion rate).
    - iii. A total of 1572/2690 12-month follow up calls have been completed thus far (58% completion rate)
10. Thus far, outcome events (e.g., suicidal behaviors during follow up) have occurred at the expected rate and in line with power calculations.

#### Specific objectives:

1. Continue analyses and reporting on baseline data.
2. Complete data cleaning and begin data analysis for follow up data.
3. Complete medical record data extraction, merging, and analysis.

Objectives 1, 2 and 3 are all ongoing.

#### Findings

Data collection and preparation have been partially completed. Data analyses are ongoing. Preliminary findings indicate that the sample reflects a good balance of currently serving military personnel, retirees, and dependents. There is also good representation of gender, racial and ethnic minorities, and military branch. The full sample's demographic profile is summarized in the table below. Preliminary findings further indicate that the Suicide Cognition Scale (SCS) is a unidimensional construct with high reliability and validity, and can be meaningfully shortened for use in primary care. Finally, we have examined firearm availability among military personnel and found suicidal military personnel are less likely to have a firearm in the home, but if a firearm is present, suicidal military personnel are less likely to use safe storage practices (i.e., storing firearms locked up and unloaded).

Age	M (SD) Range	40.4 (19.7) 18-85
Gender, n (%)	Male Female Other Prefer not to Answer	1362 (51.4) 1267 (47.8) 8 (0.3) 14 (0.5)
Race, n (%)	White / Caucasian Black / African American Asian Native Amer. / Alaska Native Pac. Isl. / Native Hawaiian Other	1791 (67.5) 498 (18.8) 115 (4.3) 122 (4.6) 43 (1.6) 270 (10.2)
Hispanic / Latino, n (%)	Yes No Other Prefer not to Answer	414 (15.6) 2172 (81.9) 17 (0.6) 48 (1.8)
Military Service, n (%)	Yes, current member Yes, in the past No	1646 (62.1) 435 (16.4) 568 (21.4)
Branch of Service, n (%)	Air Force Army Coast Guard Marines Navy	231 (11.1) 398 (19.1) 3 (0.1) 283 (13.6) 1164 (56.0)
Deployment History, n (%)	Yes No	1344 (64.6) 735 (35.4)

Please see details of publications and findings in section 6.

**3.3. What opportunities for training and professional development has the project provided?**

**3.4. How were the results disseminated to communities of interest?**

Initial findings from analyses of baseline data were presented at the Association for Behavioral and Cognitive Therapies Conference (November 2018) and the Military Health Sciences Research Symposium (August 2019). Two papers have been published and one is under review. Please see below for details.

**3.5. What do you plan to do during the next reporting period to accomplish the goals?**

During the next reporting period final follow up interviews will be complete. Data cleaning will be completed. Data analysis and manuscript preparation will continue.

**4. Impact**

**4.1. What was the impact on the development of the principal discipline(s) of the project?**

Nothing to Report.

**4.2. What was the impact on other disciplines?**

Nothing to Report.

**4.3. What as the impact on technology transfer?**

Nothing to Report.

**4.4. What as the impact on society beyond science and technology?**

Nothing to Report.

**5. Problems/Issues:**

**5.1. Changes in approach and reasons for change**

To ensure adequate follow-up time and adequate time to complete data acquisition, database merging, and data de-identification, study period of performance was extended to 31-DEC-2020 .

**5.2. Actual or anticipated problems or delays and actions or plans to resolve them**

There are no anticipated problems or delays at this time.

**5.3. Changes that had a significant impact on expenditures**

Nothing to Report.

**5.4. Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents**

Nothing to Report.

**6. Products:**

**6.1. Publications, conference papers, and presentations**

1. A manuscript describing the study's methodology was published: Bryan, C.J., Allen, M.H., Thomsen, C.J., May, A.M., Baker, J.C., Harris, J.A., Bryan, A.O., & Russell, W.A. (in press). The PRImary care Screening Methods (PRISM) study: rationale and design considerations. *Contemporary Clinical Trials*

2. A manuscript investigating firearm access and safe storage practices was published: Bryan, C.J., Bryan, A.O., Anestis, M., Khazem, L.R., Harris, J.A., May, A.M., & Thomsen, C. (in press) *Firearm availability and storage practices among military personnel who have thought about suicide. JAMA Network Open*  
 Results suggest that approximately 1/3 have a firearm at home. Participants with a lifetime and with a recent history of suicidal ideation were less likely to use safe storage methods.

3. A manuscript examining the structure and scoring of the Suicide Cognitions Scale was submitted for review: Bryan, C. J., May, A. M., Thomsen, C. J., Allen, M. H., Cunningham, C. A., Wine, M. D., & Taylor, K. B., et al. *Measurement invariance and item response theory modeling of the Suicide Cognitions Scale*  
 We have completed data analyses using baseline data to investigate the psychometric properties of the Suicide Cognitions Scale, our primary variable of interest. Results support the use of the SCS as a unidimensional scale and support the scales measurement invariance across different subgroups (i.e., the scale operates and performs similarly across subgroups). We have also used Graded response modeling suggests a much shorter version of the scale could be used as a suicide risk screener.

This work was also presented as a poster at the annual meeting of the Military Health Sciences Research Symposium, Orlando, FL: Baker, J.C., Bryan, C.J., May, A.M., Allen, M.H., Cunningham, C.A., Wine, M.D., Bryan, A.O., Harris, J.A., & Russell, W.A. (2019, August). *Measurement invariance and item response theory modeling of the Suicide Cognitions Scale.*

4. Preliminary results investigating the relationship between PTSD symptom clusters, fearlessness and suicide risk was presented at the Association for Behavioral and Cognitive Therapies: May, A. M., Allen, M., Harris, J., Bryan, A., Storms, M., Fullerton, C., Enright, B., Taylor, K., Wine, M., & Bryan, C. (2018, November). *Understanding the relationship between posttraumatic stress disorder symptoms, fearlessness about death, and suicidal thoughts, and behaviors.*  
 Results suggest that while both fearlessness about death and PTSD symptoms are related to increasingly severe suicide histories, people with hypervigilance may show a different relationship between fearlessness and suicidal behavior than is typically observed.

**6.2. Website(s) or other Internet site(s)**

Nothing to Report.

**6.3. Technologies or techniques**

Nothing to Report.

**6.4. Inventions, patent applications, and/or licenses**

Nothing to Report.

**6.5. Other products**

Nothing to Report.

**7. Participants & Other Collaborating Organizations**

**7.1. What individuals have worked on the project?**

Personnel	Role	Percent Effort
Bryan, Craig	Principal Investigator	0.19

Harris, Julia	Research Manager	1.00
Bryan, AnnaBelle	Evaluator	0.75
Williams, Sean	Evaluator	1.00
Cheney, Tyler	Evaluator	0.90
Arne, Kim	Evaluator	0.90
Young, Johnnie	Research Associate	0.90
Oakey-Frost, D.	Research Manager	0.75
Fuessel-Herrmann, D.	Executive Assistant	0.10
Roberge, Erika	Evaluator	1.00
Rugo, Kelsi	Evaluator	0.64
Tabares, Jeffrey	Research Associate	0.25
Bryan, Craig	Principal Investigator	0.19
Harris, Julia	Research Manager	1.00
Bryan, AnnaBelle	Evaluator	0.75

**7.2. Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?**

The PI (Bryan) has received several new grants during the past year. Updated effort distributions have been submitted to the Scientific Officer as a part of those grant awards. These new grants do not impact the PI's commitment or work effort on the present project.

**7.3. What other organizations were involved as partners?**

Naval Health Research Center  
Navy Bureau of Medicine