Pre-Announcement, May 2025

PRE-ANNOUNCEMENT

"Sailor Post-Traumatic Stress Disorder (PTSD) Risk Prediction Model "

The Medical Technology Enterprise Consortium (MTEC) is excited to post this pre-announcement for a Request for Project Proposals (RPP) focused on utilizing a robust prediction algorithm prototype to detect post-traumatic stress disorder (PTSD) within the U.S. Navy. The prototype model should leverage existing data sources (e.g., Defense Manpower Data Center, Military Health System Data Repository, Defense Organizational Climate Survey), incorporating cutting-edge machine learning/artificial intelligence techniques, and prioritizing ethical considerations. The goal is to provide the Navy with a deployable data-driven capability to proactively identify at-risk Sailors, facilitate timely interventions, and mitigate the impact of PTSD on individual Sailors and the Fleet.

BACKGROUND:

Military service presents physical and psychological challenges, caused in part by prolonged and unpredictable deployment schedules, periods of separation from family, and inherently dangerous work environments, including combat exposure. As a result, some service members may exhibit maladaptive coping and negative emotional states leading to debilitating stress-related disorders, including post-traumatic stress disorder (PTSD). PTSD is typified by symptoms such as intrusive thoughts, avoidance, negative mood, heightened arousal and reactivity. PTSD poses a significant threat to a service members' well-being, readiness, and overall operational effectiveness. Recent medical surveillance data indicate significant year-over-year increases in incident diagnoses of PTSD across active components of the U.S. Armed Forces, with incidence rates for the Navy trailing only the Army during a five-year surveillance period (CY19-23). Whereas the Navy has enacted numerous programmatic efforts to address PTSD, including more ready access to mental health services and various resilience training initiatives, current diagnostic and treatment approaches often occur after post-traumatic symptoms manifest. Comparatively, primary and secondary intervention strategies enable proactive, preemptive management of risk and vulnerability prior to trauma exposure and post-traumatic symptom development, respectively. These types of targeted prevention and early intervention strategies require efficient, scalable means of identifying population-specific predictive markers of risk and vulnerability before the onset of symptoms.

This Request for Project Proposals will seek to utilize a robust prediction algorithm prototype to detect risk for PTSD within the U.S. Navy. The model should leverage existing data sources (e.g., Defense Manpower Data Center, Military Health System Data Repository, Defense Organizational Climate Survey), incorporate cutting-edge machine learning/artificial intelligence techniques, and prioritize ethical considerations. The goal is to provide the Navy with a deployable data-driven capability to proactively identify at-risk Sailors, facilitate timely interventions, and mitigate the impact of PTSD on individual Sailors and the Fleet.

TECHNICAL OBJECTIVE:

The objective of this effort is to deliver a minimum viable predictive model prototype for PTSD and associated stress-related mental disorders among active component Sailors that is functional in DoD analytics platforms and can be deployed to production in different data environments. Basic functionality should include a data dashboard indicating basic model performance parameters and risk probabilities (with modifiable thresholds) at the command level (e.g., Unit Identification Code).

SOLUTION REQUIREMENTS:

The U.S. Government is seeking a performer who shall:

- Coordinate with subject matter experts at Navy Medical Research and Development (NMR&D) and DoD investment stakeholders in relation to this project. At the time of award, the Government will provide the awardee with a POC at NMR&D to enable direct interactions.
- Obtain administrative data through DoD analytics platforms in collaboration with DoD POCs, including but not limited to military, medical, and organizational records. Potential data sources include the Defense Manpower Data Center, the Military Health System Data Repository, and the Defense Organizational Climate Survey. Offerors are encouraged to identify supplemental sources of data that can feasibly be implemented in production and improve model performance.
- Obtain local Institutional Review Board (IRB), Dept of Navy Human Research Protections Program (HRPP), and Military Health System Office of Human Research Oversight (OHRO) and other appropriate approvals as required for human use research protocols in accordance with DoD and institutional regulations for human subject research protections. Specifically, all data collection must be performed within the confines of the Health Insurance Portability and Accountability Act (HIPAA) and the subsequent HIPAA Security Rule as amended by the Health Information Technology for Economic and Clinical Health. If data satisfy the definition of deidentified, then exemptions to these laws must be granted and written confirmation submitted to the Dept of Navy points of contact.
- Apply state-of-the-art feature engineering and data processing to structure data across proposed datasets. Offerors are expected to resolve challenges associated with missing data values and potential degradation.
- Evaluate the predictive algorithm prototype for PTSD detection among active component Sailors on DoD analytics platforms. Offerors must demonstrate an awareness and strategic plan for addressing analytic challenges associated with a proposed data structure that might be longitudinal, geographical, and multilevel with respect to nesting in organizational units, or characterized by population churn and movement. This includes strategies to address the effects of outcome class imbalance and rare events on model performance.
    - Whereas multiclass labels and soft classification may be utilized during model refinement or as part of a pipeline, the model intended for deployment must have binary classification functionality.
    - Offerors are strongly encouraged to identify creative applications of novel and emerging techniques in machine learning or artificial intelligence to improve model performance; off-the-shelf solutions will not be competitive.
    - The ultimate criterion for success in any proposed model is high-skill classification, comprising both sensitivity and specificity.
    - Any modeling pipeline must be scalable to the Dept of the Navy.
- Minimum viable prototype must include a basic data dashboard that includes model performance indicators and modifiable probabilistic risk thresholds at the command level, classified by Unit Identification Code (UIC) or another identifier. Application functionality should include risk prediction, online and/or incremental batch learning, and model monitoring systems.

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POTENTIAL FUNDING AVAILABILITY AND PERIOD OF PERFORMANCE:
The U.S. Government (USG) currently has **up to $1.22M** available for the upcoming program. The USG may apply additional dollars for follow-on efforts via post-award modification to any resultant award(s) after the evaluation and acceptance of the work and cost plan. Dependent on the results and deliverables, additional time may be added to the period of performance for non-competitive follow-on tasks.

MTEC expects to make a **single award in FY25** to a qualified Offeror to accomplish the scope of work. If a single proposal is unable to sufficiently address the entire scope of the RPP, several Offerors may be asked to work together in a collaborative manner. The period of performance should not exceed **12 months**.

ACQUISITION APPROACH:
The upcoming RPP will be conducted using the Enhanced White Paper approach. In Stage 1, Offerors are invited to submit Enhanced White Papers using the mandatory format contained in the upcoming RPP. The Government will evaluate Enhanced White Papers submitted and make a selection based on the solution(s) that best meet its current priorities using the evaluation criteria described in the upcoming RPP. The Offeror(s) whose proposed solution is selected for further consideration based on the Enhanced White Paper evaluation will be invited to submit a full cost proposal in Stage 2. Notification letters will contain specific Stage 2 proposal submission requirements.

The upcoming RPP will be posted to the MTEC website (mtec-sc.org) and a summary version will be available on SAM.gov to notify interested parties. The RPP is expected to be released as soon as possible and will have a proposal preparation period of approximately 30 days. MTEC membership is required for the submission of an Enhanced White Paper in response to the upcoming MTEC RPP. To join MTEC, please visit http://mtec-sc.org/how-to-join/.

MTEC:
The MTEC mission is to assist the U.S. Army Medical Research and Development Command (USAMRDC) by providing cutting-edge technologies and supporting life cycle management to transition medical solutions to industry that protect, treat, and optimize Warfighters' health and performance across the full spectrum of military operations. MTEC is a biomedical technology consortium collaborating with multiple government agencies under a 10-year renewable Other Transaction Agreement (OTA), Agreement No. W81XWH-15-9-0001, with the U.S. Army Medical Research Acquisition Activity (USAMRAA). MTEC is currently recruiting a broad and diverse membership that includes representatives from large businesses, small businesses, "nontraditional" defense contractors, academic research institutions, and not-for-profit organizations.

POINT OF CONTACT:
For inquiries regarding this pre-announcement, please direct your correspondence to Dr. Lauren Palestrini, MTEC Chief Science Officer, lauren.palestrini@mtec-sc.org.

Sincerely,
MTEC Team

MTEC
Medical Technology Enterprise Consortium