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WRAIR MSAR

Evidence-Based Analytics for Military Readiness

The Medical Standards and Research (MSAR) program at the Walter Reed Army Institute of Research (WRAIR) provides epidemiological and advanced statistical analytics in support of Department of Defense (DoD) medical policy decisions.

With 30 years of longitudinal data and expertise, MSAR informs updates to medical standards that directly impact recruitment, retention and disability decisions across the Services.

Led by WRAIR's Statistics and Epidemiology Branch and supported by MANTECH's Health Division, the MSAR team includes experts in epidemiology, biostatistics, public health, data science, artificial intelligence (AI) and military health data systems.

Our Work

MSAR conducts comprehensive research across the full Service lifecycle, from applicant to veteran, to evaluate how medical conditions impact accession, retention and disability outcomes. Our three coordinated workstreams are:

- Accession Medical Standards Analysis and Research Activity (AMSARA) provides evidence-based evaluations of accession medical standards to inform DoD policy and reduce adverse attrition. The team conducts longitudinal analyses of accession and attrition data, validates screening tools and standards and assesses the impact of medical waivers and pre-existing conditions on service outcomes.
- Retention Medical Standards Analytics and Research (RMSAR) delivers advanced analytics and epidemiological research for retention standards across the DoD. The team maps medical codes to retention policies, analyzes Physical Evaluation Board (PEB) data and publishes reports to guide decisions on Service Member fitness and deployability.
- Disability Evaluation System Analysis and Research (DESAR) conducts analytics to inform DoD disability policy and improve Warfighter readiness and retention. The team analyzes tri-service disability evaluation systems, identifies risk factors for disability retirement and supports efforts to streamline the evaluation process and reduce attrition-related costs.

Impact & Contributions

Our work informed the Accession and Retention Medical Standards Working Group (ARMSWG) and Disability Advisory Council (DAC), including major updates to DoD accession, retention and disability policies, including:

- Millions of service applicants and members analyzed across accession, retention and disability evaluations, spanning all branches.
- While a relatively small percentage of applicants are medically disqualified, up to two-thirds of these individuals pursue waivers, with most waiver requests approved, a process that enables the military to expand access while managing medical and readiness risks systematically.
- Musculoskeletal, psychiatric and neurological disorders consistently account for most medical evaluations and discharges and are key areas where MSAR's analysis informs both targeted prevention, treatment and evaluation standards.

- Psychiatric conditions, including PTSD and mood disorders, are growing causes of concern, underscoring the critical need for continuous, data-driven evaluation. Some behavioral conditions, such as ADHD, show complex outcomes where waivered individuals may perform better than average, underscoring why MSAR rigorously measures real-world outcomes and trends closely over time.
- Early attrition rates during the first 90 days of service are a critical window where medical and non-medical factors greatly influence retention and readiness and are driving a new focus on leading indicators that blur the lines between traditional longitudinal research and operational analytics.

Domain Expertise

MANTECH combines deep domain knowledge of military medical standards with advanced analytical and epidemiological expertise to deliver actionable insights. We excel in:

- Managing and analyzing massive, complex longitudinal datasets covering millions of service members.
- Designing rigorous cohort studies and leveraging predictive modeling to uncover patterns in health, performance and attrition.
- Applying advanced statistical methods to validate medical standards and measure policy impacts with precision.
- Translating multifaceted data into clear, evidence-based recommendations that inform DoD decision-making and optimize force readiness.
- Collaborating to integrate clinical, personnel and operational data for holistic insights that provide practical guidance to both high-level policy and low-level operational implementation.
- Continuously refining methods to address data gaps, reduce bias and support robust, reproducible research and analytics outcomes.

Our deep understanding of personnel data, policies and procedures and longitudinal outcomes enables us to support a wide range of programs—whether focused on readiness, workforce resilience, health outcomes or system modernization.

Data Sources & Technical Capabilities

Our team leverages a broad mix of data from entities including the Department of Defense Medical Evaluation Review Board (DoDMERB), US Military Entrance Processing Command (USMEPCOM), all Service accession medical waiver authorities, basic training centers, all Service disability agencies, DHA clinical data sources and the Defense Manpower Data Center (DMDC). We use a mix of traditional public health research software with cloud-native tools to perform complex data management, statistical modeling and longitudinal analysis on large-scale datasets. We continue to expand our toolkit, including:

RESEARCH AREAS

- **Injury & Musculoskeletal Health**
- **Behavioral & Mental Health**
- **Sleep & Fatigue**
- **Cardiometabolic Risk**
- **Infectious Disease Impact**
- **Medical Standards Evaluations**

- Building scalable data pipelines on the Military Information Platform (MIP) to streamline data ingestion, transformation and quality assurance.
- Employing automation and scripting to enhance reproducibility, reduce manual processing and improve quality of meta-data to support strategic governance efforts across DHA and DoD.
- Leveraging machine learning frameworks to augment predictive capabilities and uncover deeper and counter-intuitive insights within specific sub-populations.

Our blend of proven statistical expertise and cautious adoption of new tools enable our team to deliver timely, accurate and actionable intelligence – and expand our scope/value incrementally over time without a proportional increase in headcount or budget.

MANTECH Team Contributions

- ✓ 60+ articles in peer-reviewed medical journals
- ✓ 40+ annual reports
- ✓ 100+ high-priority Requests for Information (RFI) from other high-level agencies
- ✓ 60+ system reviews for the Accession and Retention Medical Standards Working Group (ARMSWG) or Disability Advisory Council (DAC)

In business more than 57 years, MANTECH excels in cognitive cyber, AI, data collection & analytics, enterprise IT, systems engineering and software application development solutions that support national and homeland security.

LEARN MORE

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