PTSI Final Report Executive Summary: Transforming the Psychological Health System of Care in the US Military

Thomas A. Kochan, Principal Investigator
John Carroll, Co-Investigator
Amy K. Glasmeier, Co-Investigator
Richard C. Larson, Co-Investigator
Anne Quaadgras, PhD Researcher
Jayakanth Srinivasan, PhD Researcher

Contact: Dr. Anne Quaadgras, aquaad@mit.edu
Sociotechnical Systems Research Center
Massachusetts Institute of Technology
77 Massachusetts Avenue, E38-632
Cambridge, MA 02139

Executive Summary

MIT's research project *Military Psychological Health Enterprise: Post-Traumatic Stress Innovations* (PTSI) began in February 2012 and ran through January 2016.

The project origins can be traced back to 2007, when the Department of Defense (DoD) Task Force on Mental Health articulated a transformative vision for the Military Health System to create a culture of support for psychological health, provide a full continuum of care, and ensure sufficient and appropriate resources, championed by visible and empowered leaders.

Approach

MIT's systems approach focuses on solving problems, working in partnership with leaders responsible for managing and improving the systems involved. It embodies a combination of engineering and management science in a "three-lens" perspective. We see systems as having: (1) structural or design features derived directly from the mission of the organization and the strategies used to achieve it; (2) political features reflecting the mixture of interests and stakeholders that interact to carry out the mission and strategy; and (3) cultural features that build up over time to shape the norms, values, and implicit or explicit assumptions that influence human behavior in social and organizational settings. Each perspective must be taken into account in efforts to change and improve complex organizational systems.

We were asked to work with military leaders to: (1) assess the current ways behavioral health of active-duty service members is managed and help identify opportunities for improvement; (2) determine the levers for change; (3) create strategies and structures so the military can better meet the quadruple aims of service member readiness, better health, better care, and lower cost; and (4) prioritize and guide actions to achieve the desired future system.

Given the military's complexity and resources available, we could not study the entire military health system. Rather we focused on garrison-based care in the Army and Marine Corps, the two Services with the greatest need, and used simulation modeling to analyze the broader impact of post-traumatic stress disorder (PTSD) policies and changes on both active-duty military and veteran systems.

Systemic problems identified early on

- Rather than a coordinated system of care, the Services had many uncoordinated programs.

- Absent a DoD-wide understanding or strategy for managing population health, local personnel reacted to critiques of problems with PTSD and other behavioral health issues by adding programs or putting more resources into existing programs—even if those programs were the subject of the criticism.

- Cultural problems with stigma and perceived overuse of mental health services were widespread.

- With respect to Command-Medical relationships, there were different interests, priorities, and norms, with little shared understanding.

- The Services suffered from a lack of meaningful data and metrics, coupled with inadequate information technology infrastructures to track system performance and provide feedback and learning capacity.

- There was little cross-Service learning, or even learning across installations within the same Service. There was also little learning from civilian behavioral health systems, which could be a rich source of information.

- There were many specific system disconnects, especially at two interfaces: (1) medical and non-medical personnel and components, and (2) links between direct care provided within the military services and purchased care provided by outside contractors.

- Both the Army and Marine Corps relied on implementing change through tools of the structural lens, by implementing new programs and revising roles and responsibilities, without attending to the political and cultural realities of installations and professions.

Findings and impact from our work with the Army

In 2010, the Army established a campaign plan to implement an Army-wide system of care. Over the last five years, the campaign plan has helped spur development of a standard system that is expected to be implemented across all Army installations. Our research focused on the transformation effort with Embedded Behavioral Health (EBH) as the focal point at four Army sites. In EBH, care is provided within a unit rather than at a central site. We compared implementation processes and subsequent systemic and outcome changes across the four study sites.

We used both qualitative data from interviews and observations, as well as administrative healthcare data from FY2003–FY2014 that captured when a beneficiary was seen and the diagnostic and procedure codes associated with each visit. This gave us a deeper understanding of stakeholder

perspectives—including disconnects between perceptions at the installation, Army, and DoD—than those based on field research alone.

Overall, we concluded that improvement of the direct care system requires design of a clinically coherent, appropriately sized, culturally competent, recovery-oriented, and operationally responsive system of care. Such a system must also have a management framework that enables inspection of care processes and care outcomes and drives quality improvement efforts by providers, installations, and the Army.

The Army is making significant progress. By designing an Army-wide system of care, establishing care pathways, standard sets of programs with customization guidelines, and roles for team care, clinical coherence is increased. By developing supply, demand, and population health metrics along with workload standards, the Army can better size the system. The Army has increased cultural competence for providers and command teams through training, increasing case management to support Soldiers' transitions between direct and purchased care, using treatment plan meetings involving key clinical stakeholders, creating visibility on the occupational/deployment environment, and increasing care coordination meetings within teams. Recovery orientation is enhanced by managing stigma through education and change management. By designing more effective command/provider relationships and permanent change of station and deployment transition management processes, the Army becomes more operationally responsive. Finally, the Army is building a performance management system that enables inspection of care processes and care outcomes to drive quality improvement efforts by providers, installations, and the Army as a whole.

As a result, there is now an Army-wide standard system of care design that clearly specifies the desired patient flow across levels of care. The shift from a disciplinary-based to a mission-based design has enabled the creation of care teams centered on specific beneficiary groups. The shift from a volume-based to a more holistic capacity estimation approach accounts explicitly for the unique needs of military medicine such as command engagement and occupational assessments. The Army has focused on providing culturally appropriate Soldier care and is working to ease the capacity limitations of providing family care in the direct care system. Command teams play a significant role in enabling access to behavioral health services and in creating an occupational environment conducive to recovery. The new system of care design encourages collaborative relationships

between command teams and providers. It focuses on appropriate information systems, policy changes that address the stigma associated with seeking mental health services, and improving communication between providers and command teams. The transformation is ongoing and requires active management of the structural, political, and cultural aspects of the change to institutionalize this new system of care.

Of course, there remains critically important work to be done. Specifically:

- Continue to manage the implementation of the behavioral health system of care with an eye to the political and cultural features that require attention, such as the role of the Installation Director for Psychological health and the downsizing of the Army.
- Address key transitions within the clinical care system that are not managed by the behavioral health system of care, such as the emergency room, traumatic brain injury care, and other specialty care services.
- Work with the Defense Health Agency to standardize and improve the documentation requirement in TRICARE, the insurance component of the Military Health System, to enable quality assessment of purchased care providers.
- Continue to learn from other Services' innovations such as integrated substance abuse care in the Navy/Marine Corps and primary care behavioral health colocation.
- Use the new data systems in place to assess, provide feedback, promote learning and continuous improvement, and disseminate to all interested audiences the performance of the new system as it continues to develop and be sustained.

Findings and impact from our work with the Marine Corps and Navy Medicine

The Marine Corps system consists of myriad services provided by disconnected Navy medical and Marine Corps non-medical organizations. Our fieldwork in late 2011 and mid-2013 highlighted the resulting systemic issues. A 2013 Memorandum of Understanding (MOU) between these organizations has become the impetus for systemic improvements, and in early 2015 we were asked to analyze the effects of MOU implementation.

We applied the three-lens perspective and framed our research using coordination as our umbrella systems concept. Coordination requires taking a systemic perspective, and is both complex and nuanced when used in this context. This framing enabled us to highlight systemic impacts of

local variations in MOU implementation and communicate the systemic potential of installation-level innovations.

When viewed through the lens of coordination, our analysis suggested that the Marine Corps needs a more comprehensive psychological health system that better links its many services and programs. The MOU is a partial blueprint, and Marine Corps installation-level innovations are consistent with the types of coordination innovations and experiments occurring in civilian systems. While clear progress is being made, challenges remain—in particular around system-level measurement. Our recommendations focus on ways to meet these challenges:

- Understand local commander and provider needs, and find local innovations. With the addition of explicit measures, convert innovations into experiments and test their feasibility. Adapt successful experiments system-wide.

- Create system measures for inputs, processes, and outcomes. Include not only clinical outcomes, but also measures of access, utilization, satisfaction, and changes in risky behaviors; these will guide system development, learning, and adaptation and support decisions about users, programs, links, and the system itself.

- Build up a governance capability that includes all stakeholders (commanders, prevention personnel, community support, and medical) at both headquarters and local levels and enables them to make shared, evidence-based decisions that maximize the Marine Corps' human capabilities in a resource-constrained environment.

- Institutionalize a system design process that integrates successful experiments, actionable measures, and a systems perspective with Marine Corps goals for the future force. Design goals include balancing standardization and customization, ease of use, transparent decisionmaking, and adaptability to changing conditions. The design process will build on successes from experiments and local system building efforts.

- Continue to learn from the Army's experience in defining and implementing its system.

Many aspects of these recommendations are currently being implemented via the new USMC Psychological Health Advisory Council and its working groups.

Findings from simulation modeling

We used simulation modeling to gain insights into the system of psychological health care—primarily for PTSD—for service members over their entire lifecycle, both while on active duty and after discharge. Simulation models are especially well suited to addressing complex time dynamics, decisionmaking under uncertainty, and the broad array of actors with complex sets of incentives interacting across a system. They can support "what if" experiments and workload projections, as well as helping improve systems understanding.

We built three models for this project:

1. A conceptual model that uses a system dynamics framework to map feedback mechanisms that may inhibit PTSD burden mitigation. This approach promotes insight by organizing key psychological, social, and political factors into a coherent framework.
2. A quantitative system dynamics model to predict population changes with respect to the rate of PTSD and care seeking as a result of deployment from 2000 to 2025.
3. A Monte Carlo simulation to predict PTSD prevalence and clinical demand to 2064.

Model 1 was a first step, framing the problems and complexities surrounding any service member with PTSD. In Models 2 and 3, we quantified effects of interventions on PTSD prevalence, asking questions about PTSD population trends, policies to help mitigate PTSD effects, and the costs of policies. We found the following:

- Model 1 proposes five major vicious cycles that make PTSD treatment complex. These begin with cascading untreated illness, which leads to: (1) increasing medical complexity, (2) exclusion from family and friends, (3) stigma and social exclusion, (4) self-fulfilling prophesy, and (5) stigma from perceived malingering, all of which lead to increased untreated illness. As time passes, these cycles make it less likely that a person with PTSD will get effective treatment, making early screening and resilience interventions that much more important.
- Model 2 predicted that the number of patients and system costs are very sensitive to U.S. involvement in future wars and that, in comparison, screening and treatment policy interventions have marginal effects. In an optimistic scenario, Model 2 estimated PTSD prevalence (active cases in a year) among veterans in 2025 to be 10 percent, including undiagnosed cases.
- Based on recent empirical studies, Model 3 suggests that 29 percent of combat veterans who

served between 2003 and 2014 will experience PTSD at some point in their lives. Under best-case care-seeking assumptions, 80 percent of them will seek treatment at some point, and under best-case treatment efficacy assumptions, 59 percent of those will achieve remission from PTSD. Under more realistic assumptions, remission drops to 21 percent.

- PTSD-related healthcare costs depend on U.S. involvement in future wars. In an optimistic scenario in which only 1 to 2 percent of U.S. military personnel deploy to combat zones during the next decade, Model 2 estimates annual direct healthcare costs through 2025 of $130 to $160 million/year (2012 dollars) for PTSD treatment for active-duty personnel, with costs for veterans at $2.9 to $3.2 billion/year. For a deployment rate of 5 percent, costs rise to $260 million/year for active-duty personnel and $3.6 billion/year for veterans.
- These models suggest that it takes more than 40 years to overcome the psychiatric consequences of a war—data consistent with empirical data on Vietnam War-era PTSD patients.

Research outputs

The PTSI research team has produced six publications and is at work on 25 others. Our students have completed eleven master's theses and one doctoral dissertation. We interacted regularly with and briefed senior military leadership both to seek counsel and share findings, comprising more than 90 meetings across the Army, Marine Corps, Health Affairs, and the Defense Health Agency. Our working papers can be accessed on the PTSI project website at: http://hsi.mit.edu/ptsi.

Summary of overall conclusions

At the Services level:

1. While many aspects of system design can be consistent across Services, the specific program portfolios and governance requirements will vary.
2. The relative maturity of the Army implementation provides potential learning opportunities for the other Services in implementing a clinical system of care.
3. Marine Corps innovations in coordination with the Navy, especially between medical and non-medical programs and organizations, can be a source of learning for the other Services.
4. Our Army and Marine Corps evidence shows two distinctly different systems whose true costs and benefits (outcomes), while beginning to be measured in various ways, are not yet developed or reported in ways that map to or track progress toward achieving the four dimensions of the

Quadruple Aim.

At the DoD level:

1. Without active attention and performance measurement, systems diverge and degrade. This attention should include change management, negotiation, and adaptation to new circumstances.
2. However many systems exist, the variations across them provide opportunities for learning. Development of a robust learning culture and processes would be a worthwhile effort.
3. Any system design must pay careful attention to transitions; major challenges for the military are in the transition of active-duty personnel to post-military status.
4. Our evidence shows that the extent of IT support of all types in military psychological health systems across the Services lags civilian systems.
5. Performance management should be incorporated in all design, implementation, and change efforts.

In summary, the value of MIT's systems approach is apparent in many ways. Our researchers perceived common themes and identified gaps and best practices at multiple organizational levels, and articulated how a systems approach can be applied to improve the continuity of care at the levels of hospitals and clinics, off-base providers, installations, and Services. Perhaps the best evidence is the acceptance and adoption of our project findings and recommendations by local and Service leaders in the Army, Marine Corps, and DoD overall.

Perhaps most important with respect to the systems approach is the understanding that the actual system for attending to the ongoing psychological health needs of military personnel and their families has boundaries well beyond the individual Services and even the DoD. Eventually, it extends to the Veterans Administration and civilian services. The biggest challenge, which we only begin to address in this report, is how to capture the opportunity to improve the psychological health and wellbeing of military personnel—along with their families—well beyond the time of their service to the nation, and in a manner befitting their sacrifice.