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

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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
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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, decision making 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](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.
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• GEN John Campbell, USA, retired, former Vice Chief of Staff of the Army
• GEN Peter Chiarelli, USA, retired, former Vice Chief of Staff of the Army
• General Joseph Dunford, USMC, former Commandant of the Marine Corps, Chairman of the Joint Chiefs of Staff
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Chapter 1: Introduction

The Problem

In June 2007, now nearly a decade ago, the Department of Defense Task Force on Mental Health released its report titled “An Achievable Vision.” In that report, the task force stated:

[T]he system of care for psychological health that has evolved over recent decades is insufficient to meet the needs of today’s forces and their beneficiaries, and will not be sufficient to meet their needs in the future.¹

The need for the review of the task force was driven by multiple changes in the environment within which the Military Health System functions. The intensity and duration of the post-9/11 wars increased the need for overall health care capacity, and one of the most pressing issues became the increase in chronic illnesses that included psychological disorders such as major depressive disorder and post-traumatic stress disorder (PTSD). PTSD has risen in importance, to some degree supplanting injuries to service members that once would have been fatal but are now less so due to medical advances. But a significant fraction of returning service members, having survived physical injuries, are now confronting enduring psychological health problems linked to their personally experienced traumas. Regardless of whether one calls it behavioral health, psychological health, or mental health, the need could neither be denied nor ignored. (Note that while all three terms are used in military and civilian contexts, we opt for psychological health—as explained later in this chapter.) Widespread recognition that the military was not addressing the need well, coupled with loud calls for changes and improvements from both inside and outside the military, including not only from civilian leaders but also from the general public, made doing something an absolute imperative. Hence the establishment of the task force.

In response to these growing problems and intense pressure to address them more effectively, the task force articulated a transformative vision for the Military Health System that focused on “four interconnected goals.” It is a vision worth quoting in its entirety.

Maintaining the psychological health, enhancing the resilience, and ensuring the recovery of service members and their families are essential to maintaining a ready and fully capable military force. Towards that end, the Task Force’s vision for a transformed military system requires the fulfillment of four interconnected goals (emphasis in original):

1. **A culture of support for psychological health**, wherein all service members and leaders will be educated to understand that psychological health is essential to overall health and performance, will be fostered. Early and non-stigmatizing psychological health assessments and referrals to services will be routine and expected.

2. Service members and their families will be psychologically prepared to carry out their missions. Service members and their families will receive a **full continuum of excellent care** in both peacetime and wartime, particularly when service members have been injured or wounded in the course of duty.

3. **Sufficient and appropriate resources** will be allocated to prevention, early intervention, and treatment in both the Direct Care and TRICARE Network systems, and will be distributed according to need.

4. At all levels, **visible and empowered leaders** will advocate, monitor, plan, coordinate and integrate prevention, early intervention, and treatment.

Together, these interconnected and interdependent objectives define a vision of an achievable future. Until each goal is fulfilled, service members and their families will be inadequately served.²

However, this did not end the problems. A 2014 Institute of Medicine review of multiple studies concluded that PTSD prevalence among service members deployed after 9/11 is between 7 and 20 percent, and the proportion of service members with PTSD has increased from less than 1 percent in 2004 to more than 5 percent in 2012; in the Army and Marine Corps, the rates are

2 Ibid. p. ES-2.
even higher—10 percent in each service. Similarly, a 2010 review of studies on major depression disorder estimated values of 8.3 to 16 percent among active-duty soldiers who deployed to Iraq or Afghanistan. Other researchers found that 47 percent of Soldiers and 45 percent of Marines screened positive for alcohol misuse within a year after deployment to Iraq or Afghanistan, nearly twice as high as the 26 percent of Airmen and Sailors.

Psychological health problems, however, have not been limited those who have deployed. For instance, a study of 2,620 Marines preparing to deploy in 2010 or 2011 showed that rates of self-reported probable major depression and high-risk drinking were similar for those who had never deployed compared with those who had, and lifetime severity of PTSD symptoms was only slightly lower. Specifically, probable major depressive disorder was 12 percent for those who had not deployed versus 13 percent for those who had; high-risk drinking was 25 percent compared with 27 percent; and the score (ranging from 17 to 85) for lifetime severity of PTSD symptoms was 31 versus 36.

**MIT’s Involvement and Approach**

To support its efforts to achieve the vision quoted above, the DoD in 2012 signed a cooperative agreement with the Sociotechnical Systems Research Center at the Massachusetts Institute of Technology (MIT) to study the current organizational arrangements and options for improving the management and delivery of the military’s psychological health services. One might reasonably ask why military leaders would turn to MIT for assistance. After all, MIT has no medical school and no particular expertise in the organization of psychological health services. What attracted military leaders to MIT is the Institute’s expertise in and reputation for taking a *systems approach* to research and our hands-on, problem-solving culture. They hoped that working together with MIT researchers would help the military shift from a crisis-response approach to dealing with specific problems as they are identified or gain attention to beginning the design processes needed to achieve the systemic transformation called for in the 2007 vision.

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With that in mind, the present document is best viewed as a report on work in process. Much has been achieved by the Army and Marine Corps; much has been learned about the challenges and opportunities associated with designing new systems of health care and about the challenges encountered in implementing major transformations in practices; and much remains to be done to realize the benefits of the new systems’ designs. This report takes stock of what has been achieved, explores the lessons learned to date in implementing change, and describes the road that lies ahead as the transformation processes continue.

The MIT systems approach embodies a combination of engineering and management science, or what we call a “three-lens” perspective.\(^6\) 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 lens or perspective needs to be taken into account in efforts to change and improve complex organizational systems. These lenses are described in additional detail later in this Introduction.

MIT has a strong roll-up-your-sleeves way of doing research that focuses on solving problems. With our engineering-based norms and problem-solving culture, we value research that not only analyzes problems but that also works in partnership with leaders responsible for managing and improving the systems involved.\(^7\)

The MIT researchers were asked to work with military leaders to: (1) assess the current ways psychological 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 size and complexity of the military and resources available, we could not study the entire military health


system. This report, therefore, is a partial snapshot of the many different organizational components of that system, as well as the change and improvement efforts underway beginning in 2009 in the Army and the Navy–Marine Corps psychological health systems.

This introductory chapter presents our systems perspective and the basic methods of research we employed. It includes a summary of the progress made by the Army and Marine Corps to date in designing and implementing psychological health systems tailored to their missions, the lessons learned from their respective organizational transformation processes, and the challenges and opportunities for further progress that lie ahead for both services. Chapters 2 and 3 detail our analysis of the Army and Marine Corps systems, respectively, and chapter 4 presents the results of our simulation modeling exercises that capture the dynamics of these systems as individuals move from active duty to status as veterans. The MIT research team members with lead responsibilities in these specific areas authored chapters 2, 3, and 4. The concluding chapter 5 discusses opportunities for continual, mutual learning among military and civilian health care leaders and organizations. After all, the challenges of managing psychological health systems are not unique to the military.

Appendix 1 lists the major publications, working papers, and student theses created during the course of this study. They can be accessed on the PTSI project website at: http://hsi.mit.edu/ptsi.

Much of our work centered on developing and supporting the implementation of actionable recommendations, as is typically the case with the action orientation of MIT research. Over the course of this work, team members provided feedback to military leaders at the unit, Service, and DoD levels. Our findings and recommendations flow from the overall approach taken and particular methods employed in the research.

**Scope of the Psychological Health System**

The first task in analyzing any system is to identify that system’s scope and boundaries, both existing and what they ought to be. We were fortunate in that others who preceded our work addressed the features of a *comprehensive* system of psychological health care as it applies in the military, and thus provided a general outline of system requirements.8

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By “system,” we refer to a set of interdependent and interconnected processes that produce results or outputs to the larger context of the system’s environment. System boundaries can be permeable because there is much that comes from the environment into the system (people, money, raw materials, and information) and much that comes from the system back into the environment. For the military psychological health system, active-duty personnel and their families come into the system from the larger military system, providers come into the system from their professional institutions, money comes from the Department of Defense, and so forth; active-duty personnel and their families then exit the psychological health system when they are no longer in need or when they leave the military (and enter other systems).

Systems typically have a hierarchical structure of sub-systems: for example, the military psychological health system can be subdivided by Service, geographical installation, type of care, and functional stage of care. Each subsystem also has interconnected processes that must connect to other subsystems. Within the military psychological health system, there are key systemic disconnects. Given this understanding of “system,” a “disconnect” is a flaw in a connection within and between subsystems, or between the system and its environment—in other words, a flawed interface. Identifying disconnects has been an integral part of our study. It is important to note that interfaces do not all have to be highly interdependent or tightly coupled; good design of organizational structures and processes requires recognition of which components should be tightly coupled and which should be relatively autonomous or loosely coupled. Overly tight coupling may interfere with efficiency, flexibility, and innovation.

Beyond an abstract definition, it helps to clarify the scope of the system in terms of boundaries and of representations such as possible states of people in the system. This requires clear, unambiguous definitions and concepts, ideally with one meaning per word, and one word for each meaning.

Developing such definitions was not easy to do in our project. To begin with, there is no general agreement on the definitions of mental health, behavioral health, and psychological health. So, we began with the broadest definition we could find—the World Health Organization definition of mental health: “A state of well-being in which every individual realizes his or her own potential,

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can cope with the normal stresses of life, can work productively and fruitfully, and is able to make 
a contribution to her or his community.”\textsuperscript{10} It is very similar to the definition of behavioral health 
given by the Substance Abuse and Mental Health Services Administration (SAMHSA) of the 
U.S. Department of Health and Human Services: “a state of mental/emotional being and/or choices 
and actions that affect wellness,”\textsuperscript{11} as well as to the military’s own definition, found on the Military 
Health website: “Mental health, or psychological health, encompasses the well-being of mind, body 
and spirit, and contributes to overall health and resilience.”\textsuperscript{12}

In the non-Service-specific chapters of this report, we use the term psychological health to refer 
to this broad scope, as the Army and Navy use the terms behavioral health and mental health in more 
specific contexts. The Army provides integrated psychological health care to its beneficiaries using 
its Behavioral Health System of Care (see chapter 2). Navy Medicine provides mental health 
services to Sailors and Marines (see chapter 3). The Marine Corps has also adopted the term 
psychological health to refer to this broad definition.\textsuperscript{13}

SAMHSA’s definition continues: “Behavioral health problems include substance abuse or 
misuse, alcohol and drug addiction, serious psychological distress, suicide, and mental and substance 
use disorders. This includes a range of problems from unhealthy stress to diagnosable and treatable 
diseases like serious mental illnesses and substance use disorders, which are often chronic in nature 
but that people can and do recover from.” A comprehensive set of services to support psychological 
health and help people manage psychological health problems, then, includes “the promotion of 
emotional health, the prevention of mental and substance use disorders, substance use, and related 
problems, treatments and services for mental and substance use disorders, and recovery support.” 
These system functions should be cost effective and of high quality. The military has labeled these 
objectives: better care, better health, lower cost, and increased readiness, the “Quadruple Aim.” The 
primacy of the Readiness goal of the military health system differentiates the military from civilian 
health care systems.

\textsuperscript{10} See \url{http://www.who.int/features/factfiles/mental_health/en/}, accessed February 26, 2016.
\textsuperscript{13} See, e.g., MCRP 6-11C / NTTP 1-15 M: COMBAT AND OPERATIONAL STRESS CONTROL 20Dec 2010. 
The Institute of Medicine has visualized the set of services encompassing psychological health care using the Continuum of Care framework shown in figure 1-1.

![Figure 1-1: IOM Continuum of Care Framework](image)

Figure 1-2 shows a complete psychological healthcare system covering the lifecycle of service members. It includes both active-duty military and post-military states (i.e., veteran, National Guard member, or reservist). Within each state, a person may be healthy, ill but undiagnosed, or diagnosed and offered treatment. Treatment of a diagnosed person (including treatment and rehabilitation or relapse prevention) results either in a return to a healthy state or separation from the Service due to a psychological health condition. Service members may also separate while in a healthy or undiagnosed state.

![Figure 1-2: Psychological Health System States for Service members](image)

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However, since we are interested in understanding more than the states through which users pass—in particular, how they move through these states—we added detail to figure 1-2’s Active Duty Military component (see figure 1-3).

![Diagram of Active Duty Military user states](image)

**Figure 1-3: Active duty user states**

Figure 1-3 not only makes user states explicit, but also illustrates how users move from one state to another via the set of services in the IOM model (shown in bold).\(^{15}\) Such a system will include many types of specific services offered in different settings by a variety of professionals, including psychiatrists, medical doctors, psychologists, social workers, therapists, and others.

Throughout this report, we sometimes refer to the distinction between “medical” and “non-medical” services or care. This distinction is important in practice because insurance programs sometimes pay only for medical care (but not other care), some locations specialize in providing medical services, and some locations are legally prohibited from providing medical services. Organizations and the licensed providers working for them may be limited in what services they can provide either by reporting rules or specific credentialing and privileging rules.

\(^{15}\) Note that not all transitions map to the IOM services, and not all possible transitions are shown in the diagram.
The military seeks to address the ambiguity around medical and non-medical by defining *non-medical counseling* as follows, from which we take our working definition:

Non-medical counseling is aimed at preventing the development or exacerbation of psychological challenges that may undermine military and family readiness. Issues addressed by non-medical counseling include, but are not limited to: relocation adjustment, separation, reintegration, relationship issues, parenting skills, communication, anger management, grief, stress, adjustment, deployment, life skills, coping skills, interpersonal skills, and academic or occupational problems. …

Issues not amenable to non-medical counseling include, but are not limited to the following: active suicidal or homicidal thought or intent or other threats of harm to self or others, sexual assault, child abuse/neglect, domestic violence, alcohol and substance abuse, mental health conditions that yield recurring in-patient hospitalizations, conditions treated with psychoactive medication, individuals receiving therapy by multiple practitioners, fitness for duty evaluations and court ordered counseling. Situations meeting the diagnostic criteria for common mental disorders in the Diagnostic and Statistical Manual of Mental Disorders—Fifth Edition will be referred via a warm handoff to military mental health care providers, TRICARE, or other mental health care professionals.16

While this helps, it is admittedly still confusing, and offers limited guidance for practitioners. Using the above definitions and diagrams, we can illustrate the scope of each of the research chapters in our report.

The Army research (chapter 2) focused on the qualitative and quantitative examination of the design, implementation and management of the Behavioral Health System of Care across the Army. This new integrated delivery system provides all clinical psychological healthcare in the Army, with the exception of first-level substance use care. The only documented “non-medical” services in the Army are substance use care. Other non-medical services, such as Military Family Life Counselors and Military One Source, provide complete patient confidentiality with documented exceptions for self-harm or harm to others. The initial rounds of field research focused on mapping the system of

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care (see figure 1-4) and identifying levers of change at each of the 19 we installations visited. Subsequent rounds of field research focused on developing improvement strategies at the installations and for the Army, and working with Army leaders to implement changes. Our quantitative analysis supported our baseline development and further supported the rationale for change in the Army.

Figure 1-4: Army scope of research

The Marine Corps/Navy vision includes the full scope of active duty care and a desire to understand all of the user states, and our 2013 qualitative work touched on all of these areas. Our 2015 work focused on the relationship between medical and non-medical care, and was almost entirely qualitative. Both efforts are detailed in chapter 3; figure 1-5 is an overview of the Marine Corps system.
The scope of the simulation modeling work described in chapter 4 covered all the states shown in the initial system scope diagram (figure 1-2), but focused only on PTSD diagnosis and treatment, estimating disease burden and cost to both the military health system (active duty) and the VA (post-military).

**Our Overarching Three-Lens Analytic Model**

The complexities of management and the richness of organizational life cannot be reduced to a simple model or single theory of behavior. Hence, central to our work is the three-lens framework introduced above—structural or design features, political features, and cultural features—to analyze and interpret a system’s features and the change processes used to develop and implement them. Each lens, or perspective, distills the essence of related theories that share ideas about human nature, the functions of organizations, the meaning of organizing, and the information needed to make sense of an organization. By using all three lenses to analyze an organization or a problem, we gain new insights and a richer understanding.

**The Strategic Design Lens.** The strategic design lens views an organization as a set of rational structures that have been designed to achieve *goals* by carrying out *tasks*. The U.S. Army and Marine Corps, for example, each have longstanding missions or purposes and *strategies* for achieving them based on an assessment of opportunities, threats, and capabilities. To enact those strategies, recruits are enlisted and trained, grouped into brigade combat teams and other units, given
missions and plans, monitored for their performance, and rewarded with good assignments, medals, and promotions. People, money, equipment, and information are assigned using logical principles of efficiency and effectiveness to achieve organizational goals.

Every organization uses *grouping* of people and tasks, typically by specialty, geography, product, or customer, to facilitate the flow of materials and information. When people are grouped together, information is transmitted across boundaries using *linking mechanisms*, including command hierarchy, liaison roles, task forces, accounting and information technology systems, planning processes, and meetings. Since specific individuals and groups may have different values and goals, *alignment mechanisms* coordinate the efforts of diverse individuals and groups using incentive systems, resource allocation decisions, and human resource development processes around hiring, training, mentoring, and job rotation. Indeed, the origins of the strategic design/structural perspective on organizations and the tools used to implement and evaluate it have their roots in military organizations and scholars who studied them. So, it is natural for military leaders (and most other organizational leaders) to see the task of organizational change through this lens and favor use of these tools for implementing change.

**The Political Lens.** The political lens views the organization as composed of multiple *stakeholders* with different goals and underlying *interests*. These stakeholders mobilize and use *power* in interactions with each other to achieve their particular interests and carry out their responsibilities to the overall organization. Groups with similar interests and goals combine into *coalitions* that advocate their sides of important issues. Goals and strategy are either imposed by a guiding coalition or *negotiated* among interest groups. Individuals and groups have different sources of power or *power bases*, including formal position or authority, control over scarce resources, rules and regulations, information and expertise, alliances with others, skill at manipulating symbols and persuading others, and personal energy and charisma. As the environment shifts or new strategies are developed, groups come to the fore that have the capabilities to deal with these new demands, but existing power holders may resist losing their power and status by delaying and subverting any change. Since “politics” often carries a negative connotation in organizational interactions, and organizational leaders tend to overestimate their ability to use their structural sources of power to

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change behaviors, there is often less attention paid to addressing the political elements of behavior in organizations. Failure to do so, however, carries the risk that changes designed into the structure will fall short of their objectives and often lead to unintended consequences.

Attending to political aspects of a change process is especially important in complex organizations such as the military in which authority for health is shared between commanders and medical professionals who, because of their different role and responsibilities, will assign different priorities to the different goals embedded in the Quadruple Aim. Both commanders and health providers share the overall goal of having a healthy and ready military. However, commanders’ first priority will and should be to maintain readiness, whereas medical professionals’ first responsibility and priority will and should be to ensure their patients are healthy. Managing this mixture of shared overall objectives and different priorities has produced some creative solutions that are now in place in some installations, as we describe in this report.

**The Cultural Lens.** The cultural lens assumes people take action as a function of the *meanings* they assign to situations. Meanings are not given, but rather are constructed from the bits and pieces of social life. Cultural elements—the *symbols*, stories, and experiences from which meanings are derived—are shared among members of a culture and transmitted to new members. Cultures develop over time as groups address important problems and pass on their traditions. Culture is a way of life; it is what we do around here and why we do it. Organizational cultures may be relatively uniform or fragmented into geographical, hierarchical, occupational, or departmental subcultures.

Cultures can be thought of in layers, with visible symbols or *artifacts* that are easily observed, articulated *attitudes and beliefs* that are written and discussed, and underlying *assumptions* and meanings that are more difficult to surface. For example, military personnel wear rank and service symbols on their uniforms that tell others their status and history. General officers espouse beliefs about the importance of the mission and strategic plans, whereas lower-level officers, Soldiers, and Marines live in the everyday reality of training and deployment. Psychological health diagnosis and treatment is complicated by cultural assumptions about toughness, stigma of mental illness, and—for some—by worries of “malingering,” that is, belief that claims of psychological health problems may be made to avoid combat or other difficult assignments.

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Changing cultures that are deeply embedded in the implicit or explicit values and norms of an organization is perhaps the most difficult of all changes to achieve. While it may appear on the surface that change has been implemented successfully, over time behaviors will revert back to prior patterns unless the unstated traditions, norms, and values have been addressed.

**Research Methods and Timeline**

The methods we employed in our Army and Marine Corps research share several common features. The scope and focus of the research projects were negotiated jointly with our Army and Marine Corps sponsors and adapted as initial projects were completed and results and feedback discussed with sponsors, following the action research model. Interviews with line officers and medical professionals were the primary ways through which we generated qualitative data. Due to concerns regarding human subjects (per the Institutional Review Board), researchers did not interview Soldiers, Marines, or family members seeking care.

**Army Research.** Specifically, beginning in an earlier project in 2010, we carried out exploratory research into the Army’s clinical system of care and then, in 2012, began to work closely with Army leaders as they designed a clinically coherent, appropriately sized, culturally competent, operationally responsive, recovery-oriented, safe system of care. The research design incorporated field research methods, participatory action approaches, simulation modeling, and quantitative data analysis to enable implementation of an Army-wide integrated psychological healthcare delivery system.

The Army research focused on understanding the Behavioral Health System of Care at three levels: the macro level across the Army as a whole; the program level by studying the implementation of one of the components of the system of care called Embedded Behavioral Health (EBH); and the micro level, focusing on practice improvement. The macro- and micro-level research captured data from 19 Army installations, while the program-level research design sampled four installations longitudinally, including the original pilot site for implementing EBH.

The overall goal for the Army research was to capture the current system of care at each installation and improve that local system collaboratively, while simultaneously implementing policy to diffuse identified best practices across the Army. Primary data were collected through interviews and focus groups with key stakeholders drawn from the line (capturing perspectives at the senior commander, brigade, battalion, company, and senior non-commissioned officer levels),
installation (capturing key services including substance dependence, suicide prevention, community health promotion, other Army community services programs), and medical (leaders of all components of the system of care, care providers, EBH teams, support staff). The wide-ranging interviews addressed four major topic areas: the design of the system of care; coordination of care services; coordination of line and medical; and gaps in the system of care. The team walked from unit locations to the various care delivery locations, going through all the steps a Soldier would take so we could understand the logistical challenges of seeking and receiving care.

The Army research flowed from exploratory research on psychological health in the Army done under a previous contract in 2010–2011. The research questions were designed to uncover major barriers to effective and efficient psychological health care provision. The method used was key informant interviewing of the command, installation, and provider leadership at seven installations. The interviews were analyzed for common themes, which were then validated by Army leadership from both line and medical commands.

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.

Thus, the Army research under the current cooperative agreement was focused on understanding how the system of care (including Embedded Behavioral Health and the reduction of clinical programs related to psychological health from 212 to 11) was being implemented across installations. The research is also directly coupled to the ongoing work in the Army to synchronize the multiple programs and services related to readiness and resilience under the Ready and Resilient Campaign plan.

**Marine Corps Research.** The research on the Marine Corps began with an initial visit to Camp Lejeune, North Carolina, in late 2011. This was followed up in late 2012 with an exploration of psychological health care delivery relating to treatment for PTSD and other related diagnoses at Camp Lejeune and surrounding Marine Corps installations, which culminated in our 2013 analysis of the systemic issues, focusing on the North Carolina region. A key difference from the Army system was the importance of non-medical care provided by Marine & Family Programs and others, and the difficulties experienced in linking the Navy’s medical care provision and non-medical care into a coherent psychological health system of care.
The 2013 Psychological Health System analysis used a multidisciplinary systems approach. Four dimensions of variation drove our respondent sampling strategy: location (e.g., Camp Lejeune, Cherry Point), function (e.g., Division, Marine Aviation Wing), role (e.g., line leader, various types of providers), and rank (General to Lance Corporal). We collected evidence during a weeklong site visit in June 2013 through interviews, surveys, observations, and internal documents. Ninety group interview sessions were conducted, with a total of more than 270 participants. Observation was formally conducted in six settings, including two aid stations, two Marine Centered Medical Homes, and two clinics. Finally, internal documents such as policies, program descriptions, and program statistics were also reviewed.

In 2015, we were asked to take another look at the Marine Corps system, focusing on implementation of the Memorandum of Understanding (MOU) between Navy Medicine, Marine Corps Health Systems, and Marine Corps Community Services that was designed to create an integrated health system. We were also asked to search the research literature for relevant findings relating to medical/non-medical care in civilian systems. In this work, we examined policy documents related to the MOU and interviewed 45 medical and non-medical leaders and providers at three installations (Camp Pendleton, Camp Lejeune, and MCAS Cherry Point).

Simulation Modeling Research. We used simulation modeling over the course of the project 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 (delivered mainly through the Military Health System) and after discharge, delivered through the Veterans Administration. Simulation modeling refers to the use of a computational model based on mathematical representations of a real-world system and the relationships among its constituent factors.

Simulation modeling methods have increasingly been used to understand health care systems and inform policy decisionmaking. Simulation models are especially well suited to addressing the complex time dynamics, decisionmaking under uncertainty, and broad array of actors with complex sets of incentives that interact across a system of systems such as military psychological health. In

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particular, simulation models help organize the causal processes identified by other forms of analysis and identify unexpected properties that may emerge when many different processes interact.

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 is intended to promote understanding and insight by organizing key psychological, social, and political factors from across the military psychological health system into a coherent framework;

2. A system dynamics model to predict population changes over the 2000–2025 period with respect to the rate of PTSD and care seeking in the military and veteran communities as a result of deployment during Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF); and

3. A Monte Carlo simulation to predict PTSD prevalence and clinical demand over five decades following OEF/OIF.

**Overview of Findings, Achievements, and Recommendations**

Neither the Army, Marine Corps, nor modeling research alone provides an overall understanding of the dynamics of value creation and delivery to stakeholders across the military health system; rather, in the case of the two Services, the information that emerges is particular to the Services. Nevertheless, while the research is not directly comparable in all respects, it is important to gaining an overall understanding of the directions these Services are heading with their psychological health care enterprise. Further, several common themes emerged from the different studies; these have implications for the future of the organization and management of psychological health in the military and, perhaps in some cases, also in civilian health care systems.

For this Introduction, we focus on summarizing our findings, and hence they appear to some degree in list form. We offer some of the conclusions and implications that cut across the component studies of the individual Services. We then suggest some additional steps that need to be taken to continue building on the progress made thus far to improve the management of the psychological health of U.S. military personnel and their families while in active-duty status and beyond. We discuss our findings in much greater detail in the chapters that follow.
Problems Identified Early in the Research

Through the MIT research team’s collaborative work with military leaders, several problems and challenges were discovered jointly early on in the project and identified as issues needing to be addressed. These included the following.

- Rather than a “system of care,” the Services had multiple uncoordinated programs.
- In the absence of a DoD-wide understanding or strategy for managing population health, leaders at local levels reacted to critiques and exposes of problems with PTSD and other mental/behavioral health issues by adding additional 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 psychological health services were widespread.
- With respect to Command-Medical relationships, there were different interests, priorities, and norms, with little understanding or appreciation of each other.
- Due in part to this lack of understanding, the division of responsibilities between the Navy and Marine Corps was not working.
- 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 were many specific system disconnects, especially at two interfaces: (1) medical and non-military personnel and components, and (2) links between direct care provided within the military services and purchased care provided by outside contractors.
- There was not widespread learning throughout all the services from civilian psychological health systems, which could be a rich source of information.
- Both Services relied too much on implementing change through the 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.
Achievements To Date:

Over the course of MIT’s involvement in this research project, both the Army and Marine Corps have taken a more complete systems approach to meeting their psychological health challenges and have thus have made progress towards solving the systems problems that compelled the DoD to engage us in the first place.

The following are the main achievements of the Army.

- The Army has mapped out its clinical care system and established consistent points of entry into the clinical system of care.
- The Army has defined a standard clinical psychological health system of care for the direct care system, and actively manages purchased care use by Army beneficiaries.
- The Army has put in place a measurement system for tracking both system performance and clinical care outcomes. These metrics provide feedback and learning capacity.
- The Army has improved operational and occupational transitions where the beneficiary is within the Army’s span of control.
- The Army has created a practice management framework that assesses and improves its capacity planning, provider workload requirements, and utilization of purchased care.
- The Army has recognized the need to reintegrate first-level substance use care into the psychological health system of care and is developing the roadmap to manage that change.
- The Army has also advanced considerably in its understanding of the need to address political and cultural issues in managing change, not just structural issues.

The Army is well along in implementing a well-defined and structured system for addressing the psychological health of its Soldiers and has an information system in place that will support evaluation and learning and improvement. Its health professionals and line officers have developed and are well along in implementing single points of contact to communicate with each other, understand each other’s needs, and coordinate efforts. This is an enormous step forward.

For the Marine Corps, the main achievements are the following.

- With the issuance of their Memorandum of Understanding, the Marine Corps and Navy have clarified roles and responsibilities across organizations and among medical and non-medical providers.
• The Marine Corps has begun the process of identifying local innovations and defining a system of care appropriate to the Service.

• To carry through defining the system of care, the Marine Corps and Navy have developed a top-down and bottom-up plan and process that address both medical and non-medical components of the system.

Recommendations

Of course, there remains critically important work to be done. Specifically for the Army, this includes the following. The recommendations here are detailed in chapter 2.

• Continue to manage the implementation of the psychological 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 psychological 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 to enable better management 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 to disseminate to all interested audiences the performance of the new system as it continues to develop and be sustained.

The keys to continued progress for the Army lie in addressing stigma that keeps those in need from entering treatment while on active-duty service. The next step for the Army is to address the non-medical and purchased care components of its system.

There is also critically important work left to do in the Marine Corps. The recommendations here are detailed in chapter 3.

• Develop a governance model for Marine Corps-Navy collaboration across their organizations.

• Follow through on developing the process for fully defining the system of care (i.e., the top-down and bottom-up design and change process).
• Continue to work on clarifying roles, responsibilities, resource allocations, and coordination across Navy and Marine Corps organizations.

• Continue to learn from the Army’s experiences in defining and implementing its medical system of care.

The Marine Corps is currently at an early stage of defining and developing its psychological health system in coordination with its Navy medical partners. For the Marine Corps, the next steps are to learn from the successes identified at installations (see chapter 3) and develop a learning and diffusion strategy that works with the bottom-up and top-down design initiatives now underway. Moreover, the Marine Corps and Navy must jointly determine whether there is sufficient capacity to meet the psychological health care needs of Marines and their families and how to engage better in joint planning, resource allocation, and coordination of efforts to manage and improve psychological health, given their shared roles in the health care of Marines and their families.

In addition to the Service-specific recommendations above, there are several overall recommendations that apply to both the Army and Marine Corps.

• Recognize, as the modeling research shows, that the center of gravity of the psychological health problem is moving from the active-duty Services to the Veterans Administration. It is imperative that the military develop smooth handoffs supported by seamless information/health records systems that are easily accessible to providers, veterans, and their families.

• Recognize that prevention, early identification, and early treatment are showing increasing evidence of effectiveness in mitigating or even preventing long-term, chronic psychological health conditions, and invest accordingly.

• Civilian health care systems coping with psychological health issues have a lot of experience from which the military can continue to draw, especially regarding options for promoting population health and community support systems.

• All the Services have the opportunity to increase their use of data for basic research, performance management, and improvement. This is especially important for managing transitions of service members and family members as they move across locations, between purchased and direct care, and from active-duty to veteran status.

• We cannot overstate that the military health care system has significant things to learn from recent advances in civilian health regarding prevention, coordination, and use of data and
advanced technology in managing a health care system. In turn, we believe the civilian system can learn from the changes introduced and progress made in the military in recent years.

In chapter 5 of this report, we provide a brief comparison of our findings across research streams and discuss key conclusions at the Services level as well as for the DoD as a whole.
Chapter 2: US Army: Transformation to a Behavioral Health System of Care

Jayakanth Srinivasan, John Carroll, and Julia DiBenigno

Introduction

When we began the project in 2009, the rotation of Service members to and from combat over the lifecycle of two wars was continuing to strain the ability of the Military Health System (MHS) ability to meet the demand for mental health services by those Service members and their families. Only two years earlier, the DoD Task Force on Mental Health had concluded that “the system of care for psychological health that has evolved over recent decades is insufficient to meet both current and future needs of beneficiaries.”

Using a systems approach, we designed our research to examine how behavioral health (BH) care is organized and delivered in the U.S. Army and to facilitate a transformation of the system of care. Our exploratory field research in 2009–11 as part of an earlier study observed systemic problems interfering with access to and continuity of care, adversely affecting the efficiency and cost of care and hindering coordination between command and providers around readiness. We saw these problems as impediments to improving care based on process and outcome data.

From this exploratory research, we developed 10 recommendations to enable system transformation in the DoD. Of these, seven were tactical in nature, addressing component-level changes to the system of care such as improving telebehavioral health services and organizational barriers such as delays in hiring, credentialing, and privileging. We saw that these tactical recommendations could potentially be addressed with operational changes to the clinical care delivery within Military Treatment Facilities (MTFs). The remaining three recommendations focused on strategic challenges in the areas of system of care design, capacity planning, and performance management, which required senior leader engagement and support in the Army and the MHS.


As part of this project, we observed significant changes in the system of care at the installation, Army, and MHS levels and worked in partnership with leadership at multiple levels to provide useful insights and recommendations developed from our ongoing observations of the transformation process.

This chapter describes our approach to collecting data and conducting participatory action research, details the core attributes we believe constitute the design and operating principles of an effective Army behavioral health system of care, and summarizes the current state and remaining challenges in the Army’s system of care.

**Our Approach**

To describe and analyze the complex Army behavioral health system of care, we developed a multi-method approach incorporating field research, participatory action research, data analytics, and simulation modeling. With our first round of field research, we mapped the current state of the behavioral health system of care using an enterprise analysis framework developed by Nightingale and Srinivasan.\(^{22}\) We developed a hybrid approach for mapping out the current state using techniques from policy analysis, field research, and data analytics. The policy analysis examined 68 operational orders (OPORDs) and fragmentary orders (FRAGOs) relating to the provision of clinical behavioral health services issued from 2008 to 2014. These documents provide a history of desired planned changes across the system and enabled us to differentiate between the desired system and the implemented system.

We worked with our Army partners to identify four in-depth field research sites representative of installations that deploy forces to a combat theater. Our quantitative data analysis showed these posts to have the largest patient populations and highest demand for and use of behavioral health services. We spent a week at each site in 2010 conducting interviews and focus groups; we returned to the same posts in 2012–13 and again in 2014–15 to observe and work collaboratively to improve the system of care at these installations. In addition to these four field research sites, we conducted an additional 22 site visits to 15 other Army installations to assess the applicability of the findings from the four in-depth case. These 34 field research visits to 19 Army installations provided a rich

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understanding of the organization, delivery, governance, and impact of behavioral health care in the Army.

At each field research site, we gathered interview and focus group data from more than 100 interviewees drawn from 18 key stakeholder groups in three organizations that provide support to Soldiers seeking behavioral health services:23 (1) service providers (psychiatrists, psychologists, licensed clinical social workers, social service assistants, nurse case managers, behavioral health technicians, clinical care leaders); (2) command teams (four levels from company to division); and (3) support services (substance abuse clinical care providers, substance use managers, installation support services, family advocacy services, military family life counselors, chaplains and legal services). We did not interview Soldiers and family members receiving care, as none of the research team members were clinicians. Data from our interviewees were rich enough to address issues of organizing, governance, and process improvement; further research would be needed to address the actual patient experience of care.

The ability to triangulate field research findings with actual care delivery data was a critical component of the research design. We used 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 the field research alone.

These baseline findings from the first round of visits and the quantitative data analysis provided the foundation for executing ongoing participatory action research.24 In these visits, we worked with our partners to share observations, facilitate discussion, and co-design interventions to improve the system of care at the installation and Army levels. The cooperative agreement was a necessary foundation for the partnership that enabled MIT researchers to serve as neutral observers of the system of care and share findings with a wide range of stakeholders, including senior leaders (DoD, Army, and Installations), operational leaders (clinic chiefs, command teams), and care providers, without concerns about the direct influence often found as part of the organization’s reporting structure. The cooperative agreement also established a shared mental model among all stakeholders

that the researchers were there to generate new knowledge, not as external consultants “solving” operational challenges.

To conclude each field visit, we met with the senior leadership team from all principal organizations on the Army post to share lessons learned. The team conducted a daily retrospective to identify the system strengths and disconnects, which were then aggregated into a final list of findings and recommendations for leader actions. We also obtained permission from the leaders of each post to share local innovations with the Army leadership to facilitate their diffusion, first through pilot projects and then by integrating the innovations into the larger system of care design. We wrote up a case summary and revisited our field recommendations to ensure applicability to the larger Army system of care. The research team and the Army behavioral health leadership team carried out regular retrospective reflections on quantitative data analysis to determine whether changes to the system of care were delivering the desired results.

We held regular feedback sessions with the senior Army and MHS leaders to share findings from the field research and data analytics. This allowed us to share information and insights in ways that supported actual decisionmaking by the senior leaders. These meetings were critical to the participatory action research at the MHS and Army levels, as it led to directive guidance that provided consistent access to the field research sites and accelerated participation in change efforts.

Although we originally framed our research solely in terms of clinical care, the first round of field research in 2010 highlighted the need to understand the dual nature of behavioral health in the military as both a command-driven, clinically supported system and a clinically driven command-supported system. We therefore designed all our field and participatory action research to engage installation leaders and incorporate their feedback. Every site visit included a kickoff meeting with the senior leadership team at the installation and concluded with a key learning meeting with the team. This ensured that local challenges could be addressed at the installation level and that the installation leadership was aware of the information being shared with their leaders. We made sure to speak with command teams at every level to understand the challenges they face in shaping the occupational environment. Their feedback was incorporated explicitly into the design of the system of care. We verified whether the system design changes actually affected command team communications with providers and whether the bidirectional flow of information enabled both actors to provide care better for Soldiers. Likewise, feedback from the clinic chiefs and clinicians
was incorporated into the system of care design. The power of the research was in the ability to engage the same groups of stakeholders longitudinally over multiple Plan-Do-Check-Act cycles so they could see the tangible impact of their participation. Throughout, the three-lens perspective described in detail in chapter 1—encompassing the strategic/structural, political, and cultural lenses—was an important element of our approach.

Three transformation levers can be applied to improve beneficiary health and wellness: improving clinical care in the direct care system, improving access to and performance of the purchased care network, and enhancing education and training to build resilience. We chose to focus the Army research on the design of the direct care clinical system because it serves as the nexus for receiving ill patients and routing them appropriately into care. We consider the purchased care network to be very important but beyond the scope of the project given the lack of access to data. We did analyze the current state of the Ready and Resilient Campaign, designed to improve unit readiness and further reinforce the Army Profession and surfaced some of the same challenges associated with system design and command engagement observed in the clinical system of care.  

Overview of Our Findings

In the remainder of this chapter, we argue—based on the research just described—that improvement of the direct care system requires 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 titles of this chapter’s subsections are themselves the design rules guiding the transformation, each of which has been implemented to a greater or lesser degree.

Systems transformation requires a system design that is clinically coherent and specifies the desired patient flow across levels of care. In the Develop a Clinically Coherent System of Care

section below, we lay out the design process the Army adopted to transition from a loose discipline-based collection of individual practices to a mission-based system of care design. The capacity to provide care is the foundation for providing clinically appropriate, evidence-supported care. In the *Size the System of Care Appropriately* section, we discuss the shift in the Army from a volume-based sizing strategy to a more holistic capacity-estimation approach that accounts for the unique needs of military medicine. The system of care has to meet the needs of Soldiers, family members, and other beneficiaries. In the *Provide Culturally Competent Care* section, we lay out the Army’s approach for proving culturally appropriate Soldier care and highlight the current limitations of providing family care in the direct care system. We also consider some of the practices the Army has adopted to improve cultural competence in both the direct care and purchased care systems.

Command teams play a significant role in enabling access to behavioral health services and creating an occupational environment conducive to recovery. In the *Build an Operationally Responsive System of Care* section, we highlight the importance of quantifying the impact of behavioral health conditions on readiness. We discuss the information systems and policy changes the Army has deployed to build collaborative relationships between command teams and providers that respect the authorities and responsibilities of both sets of actors. The *Ensure Safe Occupational and Operational Transitions* section describes the steps taken to help the management of moves such as Permanent Changes of Station and deployment-related transitions so that Soldiers and their dependents are not lost during these transitions.

The Army is a recovery-oriented organization, but stigma persists for seeking behavioral health services. In the *Create a Recovery-Oriented Culture* section, we examine the broad range of strategies the Army has utilized—including leader education, policy changes to security clearances, and care-colocation—to reduce the stigma associated with behavioral health services.

The ability to inspect care processes and outcomes is critical to building a learning healthcare system. In the *Design a Management System to Meet Key Actor Needs* section, we lay out the foundational components of accounting infrastructure, outcome measurement, performance transparency and formal incentives that together enable performance management of providers, clinics, installations, and the service line.

In the *Discussion and Next Steps* section, we identify some of the ongoing challenges, and identify areas for future actions and research. In chronicling this transformation, we pay special
attention to the structural, political, and cultural challenges encountered. We present these not because they are unique to the Army’s transformation, but because they are likely to be experienced in any large, complex organization seeking to design and implement a new system while continuing to carry out its core mission. As such, they are relevant to many other organizations, military or civilian, seeking system transformation.

The chapter concludes with some reflections in a section titled *The Journey Ahead*.

**Develop a Clinically Coherent System of Care**

Outpatient Behavioral health utilization in the Army tripled from 1.1 million encounters in FY2003 to more than 3.3 million encounters in FY2014 (Figure 2-1 and Figure 2-2). In the same timeframe, psychiatric admissions for mental health and substance use conditions grew from 11,760 admissions in FY2003 to 25,686 admissions in FY2014, peaking in FY2012 at 27,374 admissions (Figure 2-3 and Figure 2-4). This rapid growth in demand for care led to an intensive examination in the Army of ways to organize care and assess its efficacy. Even though purchased outpatient care quintupled in this period, the care delivered in the purchased care system is governed by formal TRICARE contracts that constrain the level of changes the Army can make to the system. The Army focused its strategic redesign efforts on the direct care system because the Surgeon General has greater control over Military Treatment Facilities run by the Army.

The traditional organization of behavioral health services around the disciplines of psychiatry, psychology, social work, and psychiatric nursing supported the creation of a departmental structure that enabled alignment to academic societies, licensure boards, and certification agencies. The sets of services available at an MTF depended highly on the types of providers at that MTF, making it difficult to create a consistent experience of care from one to the next. Soldiers, family members, and retirees accessed services within each department on an as-needed basis, and coordination of complex cases was executed at the discretion of the individual providers involved in the care of the patient. The system was provider-centric rather than patient-centric.
Figure 2-1: Growth in Direct Care Ambulatory Behavioral Health Encounter, FY2003–FY2014

<table>
<thead>
<tr>
<th>Year</th>
<th>ACT</th>
<th>DA</th>
<th>GRD</th>
<th>DGR</th>
<th>RET + DR</th>
<th>DC BH</th>
<th>All BH Care</th>
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<td>113,091</td>
<td>11,802</td>
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<td>2013</td>
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<td>2014</td>
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<td>9,162</td>
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ACT: Active Duty; DA: Dependents of Active Duty; GRD: Guard/Reserve; DGR: Dependents of Guard/Reserve; RET + DR: Retirees and Retiree Dependents; DC: Direct Care Behavioral Health; All BH Care
Figure 2-2: Growth in Purchased Care Ambulatory Behavioral Health Encounter FY2003–FY2014
Figure 2-3: Growth in Direct Care Behavioral Health Inpatient Admissions, FY2003–FY2014
Figure 2-4: Growth in Purchased Care Behavioral Health Inpatient Admissions, FY2003–FY2014

<table>
<thead>
<tr>
<th>Year</th>
<th>ACT</th>
<th>DA</th>
<th>GRD</th>
<th>DGR</th>
<th>RET + DR</th>
<th>PC Admits</th>
<th>All Admits</th>
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<td>2007</td>
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<td>883</td>
<td>13,311</td>
<td>18,706</td>
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<tr>
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<td>1,609</td>
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<td>2011</td>
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<td>2012</td>
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<td>436</td>
<td>12</td>
<td>115</td>
<td>20,339</td>
<td>25,686</td>
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</table>

**ACT**: Active Duty; **DA**: Dependents of Active Duty; **GRD**: Guard/Reserve; **DGR**: Dependents Guard/Reserve; **RET + DR**: Retirees and Retiree Dependents; **PC Admits**: Purchased Care Inpatient Admissions; **All Admits**: All Inpatient Admissions
In 2009, the Army established 10 working groups to define the requirements for a standard patient-centric system of care. The working group process brought together subject matter experts from across the Army to develop consensus on the key components of the system such as family care, Soldier care, and telebehavioral health. The workgroups focused on key enabling processes such as outcome measurement, incentives, and governance, and built the foundation that led to key changes in policy and organizing. The work group efforts resulted in the 2010 Behavioral Health System of Care (BHSOC) Campaign plan that extended the Stroul and Friedman system of care concept to the military context. This change roadmap focused on building a system that could create a consistent patient-centered experience of care across all Army MTFs, increase capacity to provide care in the direct care system, engage command teams to shape the occupational environment, and promote recovery.

In our exploratory research, we saw behavioral health services provided under various clinic names, including post deployment health centers, sleep clinics, and traumatic brain injury clinics in addition to the traditional disciplinary-based clinics or departments of psychiatry, psychology, and social work. Each installation had its own process for scheduling patients and unique approaches for meeting the MHS standards for access to care. For example, some installations established walk-in clinics to triage all Soldiers in lieu of giving them a formal first appointment; follow-up visits were scheduled as referrals from the triage clinic.

The autonomy provided to hospital commanders to design the care delivery system to meet the needs of their local population encouraged diversity in the architecture and components of the system of care. The number of programs related to mental health also grew rapidly with the infusion of congressionally directed funding for psychological health and traumatic brain injury in the National Defense Authorization Act for FY2008. An unanticipated side effect of this independent funding was hospital commanders choosing to use the additional money as replacement funding for

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31 Nightingale et al, 2011.
maintaining behavioral health programs rather than expanding investment in behavioral health services. We also observed hospital commanders use funds generated from expanding behavioral health care to revitalize non-behavioral health programs such as ob-gyn and surgery wards.

The Army’s behavioral health leadership team carried out an inventory of all the programs labeled as behavioral health irrespective of the funding source of the program. Each program manager was required to complete a data call that captured critical program information including goals, financials, patient demographics, infrastructure, staffing, access to care, utilization, and positioning within the Behavioral Health System of Care (BHSOC). These data were further triangulated against the list of programs identified by an independent RAND study to generate a final list of 212 Army-specific programs. Three clustering criteria were used to understand this generated portfolio of programs: the stakeholder served, the level of care provided, and the uniqueness of the program.

The direct care system outpatient behavioral health services grew from 769,725 encounters in FY2003 to a peak of 1,746,358 encounters in FY2012. A majority of care was provided to active-duty Soldiers, activated Guard, and dependents. Soldiers (both active-duty and activated Guard and Reserve) are unique because they often receive care during work hours, requiring permission from their command teams to be away from their duty stations. Unlike for the other two populations, mission-related limitations resulting from Soldier care must be documented and potentially shared with command teams. Command teams can have a significant effect on access to care, care compliance, and the environment of recovery, making them a stakeholder that needs to be accounted for explicitly in any system of care design.

Six clusters emerged when programs were organized along the level of care provided in both the direct- and purchased care systems: care provided in primary care clinics; outpatient behavioral health services in community clinics; specialty care services in hospitals; and intensive outpatient services in hospitals, psychiatric nursing units, and residential treatment facilities. The program portfolio analysis also identified programs unique by virtue of the population served, such as school-

34 OTSG/MEDCOM. “Fragmentary Order 6 to Operational Order 10-70 Comprehensive Behavioral Health System of Care Campaign Plan - Psychological Health Spend Plan Data Call.” 2011.
based behavioral health, or the modality of care delivery, such as telebehavioral health. This baseline analysis provided a foundation for developing the new organizational architecture for delivering behavioral health services.

Figure 2-5: BHSOC Architecture Specifying Key Clinical Programs

The Army BHSOC architecture finalized in 2013 (Figure 2-5) establishes the core set of clinical care programs, with Army-wide standards defined for each program. Beneficiaries can enter the BHSOC as a walk-in, with a scheduled appointment, and/or additionally in the case of Soldiers, for command-directed mental health evaluations. An appointment can be scheduled by self-referral, specialty-care referral, follow-up after an emergency department visit, or as a result of a screening visit (for Soldiers, these include the pre-deployment screen, post-deployment health assessment, post-deployment health reassessment, and annual health exam). Other professionals such as chaplains and military family life counselors also refer beneficiaries to the behavioral health system of care, but these referrals are often not traceable because care received from such professionals is not documented in the medical record.

The architecture differentiates the first-level services for Soldiers from those for dependents and retirees to reflect the unique needs of the military environment. Soldiers receive first-level services in the Soldier Centered Medical Home (SCMH), the Embedded Behavioral Health (EBH) Clinic, or a Multi-Disciplinary (Multi-D) Behavioral Health Services clinic. The integrated behavioral health provider in the primary care setting works collaboratively with the primary care team to enable early identification and enrollment in care. Soldiers requiring more than four sessions of psychotherapy or needing medications beyond the scope of practice of primary care physicians are enrolled either in
an EBH team or a Multi-D team. Once a Soldier is established in one of these three settings, the responsibility for providing services rests with that care team.

Dependents and retirees receive first-level services in either a patient-centered medical home or in a Child and Family behavioral health clinic. In addition, both Soldiers and dependents can receive services in the Family Advocacy Program (FAP) clinic dedicated to dealing with prevention, education, intervention, and treatment of child abuse and domestic violence (including intimate partner violence). The Multi-D clinic also provides specialized services such as psychological testing that may not be available in other first-level service clinics. Beneficiaries needing more intensive care receive services in an intensive outpatient program, psychiatric nursing unit, or residential treatment facility.

The Army recognized a significant gap between the demand for care and the capacity to that provide care. Telebehavioral health services are a critical component of the system of care because they enable both sustainable capacity expansion and surge capacity in locations with significant provider shortages.

This strategic design serves as the template for the system of care that must be implemented at each Army Military Treatment Facility. It is important to note, however, that not every MTF will implement every component of the system of care. For instance, low-volume, long-term residential care is sourced from the purchased care network, as there is insufficient demand to provide these services within the direct care system. The BHSOC specification also does not rule out the development of new programs; rather, it enables Military Treatment Facilities to be more deliberate about understanding population needs and developing justifications for new programs. Key components of the system of care such as the Soldier Centered Medical Home and Embedded Behavioral Health have more detailed concepts of operations, standard operating procedures, and team designs specified as a starting point for implementation.

Implementation of the BHSOC at each Military Treatment Facility requires active management of the cultural and political aspects of the change. The BHSOC takes away some of the discretionary power of the MTF commanders to route behavioral health funds to other services. It also restricts the MTF commander’s ability to develop non-conforming local systems of care through funding

restrictions and policy. Even today, a key reason for the varying levels of conformance to the new design is leaders who have not bought into the new design and cannot articulate the need for change beyond that it is a requirement from headquarters.

Another area of tension is that the DoD requires that every installation have an Installation Director for Psychological Health (IDPH),\(^\text{37}\) which sometimes leads to the Behavioral Health Chief also filling that roles and thus reporting to two different people. Installations that made progress in their transformation journey have established ways of working that alleviate this conflict by empowering the IDPH to serve as the voice of the Military Treatment Facility commander on behavioral health issues. In installations at which the transformation journey has been slow or outright stalled, the relationships between the MTF commander and the IDPH were found to be combative.

The 2013 Behavioral Health Service Line (BHSL) policy memo represents a shift from a discipline-based organization of behavioral health services to a multi-disciplinary, mission-based approach.\(^\text{38}\) This expands the role of some providers in the areas of health education and command engagement. While this role expansion comes naturally for some, others need to be trained on the cultural norms and formal policies and procedures for engaging command teams. For command teams, understanding the mission support role played by providers requires active engagement of the behavioral health care team. The cultural differences among the various stakeholders need to be identified explicitly and managed. Some installations utilize leader education forums such as the Company Commanders Course and the 1st Sergeant’s course to educate leaders on their responsibilities when engaging behavioral health providers.

**Size the System of Care Appropriately**

Sufficient clinical care capacity is a necessary foundation for providing access to care and ensuring quality of care. Clinical care capacity can be increased through a combination of growing the number of providers in the system and improving the productivity of clinical care providers already in the system.


\(^{38}\) OTSG/MEDCOM Policy Memo 13-059 (2013) “Behavioral Health Service Line Policy, Consolidated Army Behavioral Health (BH).”
Since a large number of Army installations are in geographic Mental Health Care Health Professional Shortage Areas (HPSAs),\(^3\) aggressive hiring actions were taken to grow the number of core behavioral health providers (psychiatrists, psychologists, licensed clinical social workers, marriage and family therapists, and psychiatric nurse practitioners). This included providing direct hire authority at the MTF, enabling greater retention and relocation bonuses for new hires, and training new personnel through Health Professionals Scholarship Program (HPSP).\(^4\) Training new providers has a built-in time delay based on the training and certification requirements of the individual disciplines involved, and does not meet the immediate challenges of growing demand.\(^5\)\(^6\) Competing initiatives by the Department of Veterans Affairs targeted at the same providers, often in the same locations, further complicated the strategy of capacity growth through hiring. Nevertheless, the total number of providers grew from 2,721 in FY2009 to 3,731 in FY2013, with 345 positions not yet filled at the end of FY2013.\(^7\)

Without enough providers to fill available positions, the near-term answer in 2009 was to focus on maximizing productivity. Providers in our field research interviews articulated all three dimensions of burnout: they said they were exhausted; they felt frustrated that the system seemed focused on paying for volume rather than care quality; and, worst of all, they felt they were not effective in helping their patients or clients.\(^8\)\(^9\)\(^10\) \(^11\) The Availability for Patient Care guideline issued in 2009 specified clinical care contact hours based on the employment category: 6 hours for uniformed providers; 6.5 hours for general schedule civilian employees; and 7 hours for

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\(^3\) An overview of the mental health HPSA designation can be found at: [http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/mentalhealthhpsaoverview.html](http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/mentalhealthhpsaoverview.html)

\(^4\) Each of the services offers their own HPSP scholarship. More details on the Army program can be found at [http://www.goarmy.com/amedd/education/hpsp.html](http://www.goarmy.com/amedd/education/hpsp.html)


This guideline attempted to address the immediate problem of access to initial care at the expense of both follow-on care and time for shaping the recovery environment through command consultation and education.

The guideline specified workload requirements for critical personnel such as providers in administrative and teaching roles and non-Military Treatment Facility behavioral health assets such as unit behavioral health officers. This emphasis on provider productivity also eroded provider motivation. Providers noted that in addition to their desire to serve those who served the nation, a key reason they chose to practice in the military health system was to focus on patient clinical care without constraints such as meeting patient quotas or billing found in civilian managed care environments.

Historically, the Army has used the Automated Staffing Assessment Model (ASAM) to develop manpower requirements for fixed military treatment facilities. More recently, the Army has used both ASAM and the Psychological Health Risk Adjusted Model for Staffing (PHRAMS) to determine its behavioral health staffing needs. Each of these models has significant limitations that led to development of a new staffing approach in the Army called the BH Matrix.

The behavioral health model in ASAM IV projected the required number of providers and support staff using a multivariate model that incorporated a linear trend for future demand based on the previous five years of care provided, expected population growth as estimated by the hospital, and static leadership and education positions. The expected population drove family advocacy requirements at a ratio of 1 social worker per 3800 beneficiaries. The projected support staff requirements were estimated using a standard ratio of 1.82 support full-time equivalents (FTE) per provider. The key limitations of ASAM IV are its linear demand projection assumption, the limited incorporation of other key military mental health tasks such as command consultation and occupational assessments, and a sizing strategy focused on the direct care system.

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47 OTSG/MEDCOM. “Policy Memorandum 09-041minimum Amount of Direct Patient Care for Behavioral Health (BH) Providers.” 2009.
PHRAMS forecasts the total staffing requirement using more sophisticated demand-based projection than ASAM IV. It divides the population into risk groups based on demographics and geography, assigns them to population planning units associated with military treatment facilities, and uses estimated disease prevalence across 24 diagnosis groups to determine clinical workload. As with ASAM IV, PHRAMS assumes homogeneity when assessing productivity (default at 85%), and baselines expected demand based on prior performance. PHRAMS has a lower support staff requirement than ASAM IV because it uses a static ratio of 1 support FTE per provider. PHRAMS has an advantage over ASAM IV with its ability to forecast purchased care requirements in addition to direct care requirements.

Both models under-forecast personnel requirements and fail to capture the full spectrum of roles providers perform in the military health system. A refined capacity planning approach was needed that specifies a minimum population baseline that can be adjusted based on demand. The new system of care design (Figure 2-5) enables the decomposition of demand to smaller population groups, making prevalence estimates and demand projections more accurate. This new design also enables more accurate distribution of non-clinical provider workload. In 2014, the Army published the Distribution Matrix Tool (DMT), which uses a combination of population, workload, and staffing models to determine the number of behavioral health personnel needed to provide direct care services. This tool also supports the estimation of behavioral health personnel to support traumatic brain injury care, which is not part of the behavioral health service line. The DMT is refreshed in the third quarter of each fiscal year to assess performance against projection.51

The new workload standards published in 2013 are connected to the mission of each clinic. For example, the psychotherapy providers in an EBH clinic have a workload target of 0.65 FTE, whereas psychotherapy providers in a specialty care clinic have a 0.75 FTE requirement. This explicit reduction of clinical workload requirements is augmented with a requirement to engage command teams through command consultation, psychosocial education, and participation in line meetings. The lack of providers also highlighted the need for involving and engaging all available providers, including behavioral health officers, through a borrowed military manpower agreement.

51 OTSG/MEDCOM Memorandum (2014) “Guidance for the Behavioral Health Service Line (BHSL) Distribution MATRIX Tool (DMT)”
This new mission-based workload specification for each core provider type combined with a multidisciplinary team structure serves as the foundation for building a patient-centered care team. The challenges multidisciplinary behavioral health teams face includes bridging the philosophical differences across the disciplines, managing role diffusion, and building the routines and tools to enable reflexivity and team ownership of patients/clients. Professional differences can both inhibit diffusion of innovations and hinder team functioning. Consider the case of Embedded Behavioral Health that creates perceived equivalence between psychologists and social workers, since each provider is responsible for the care of their aligned unit. Psychiatrists have raised concerns about PTSD over diagnosing by social workers, noting that they may not have sufficient experience early in their careers to accurately diagnose the disease. Common goals of enabling patient recovery, maintaining shared understanding of complex cases, and maximizing readiness helped to bridge some provider disciplinary differences. Providers are required to address occupational issues with command teams, a role that some providers are not comfortable executing, and that is often not part of the training repertoire. Outside of peer reviews, there are limited fora such as Morbidity and Mortality conferences to enable reflective practice. The system of care design has to build in mechanisms enable reflexivity and accelerate learning in the care team.

The new system design does not encroach on provider autonomy in selecting the best approach for engaging patients/clients. Encouraging providers to practice at “the top of their licenses” also enables maximization of scarce resources. While psychiatrists may want to provide both psychotherapy and pharmacotherapy to patients, the workload standards argue that teams are better

served when the psychiatrists’ unique medico-legal expertise is exploited, and hence psychiatrists and psychiatric nurse practitioners have a 0.75 FTE workload requirement. Team roles are structured to help address role diffusion challenges; a member of the team may have more than one role. For example, a unit’s point of contact in an EBH often also has a psychotherapist role. Similarly, the team lead also has a clinical role mandating 0.5 FTE of clinical care.

The new staffing models are built on the use of multidisciplinary teams. The desired team composition for a brigade combat team-aligned EBH team is four licensed clinical social workers, three clinical psychologists (each aligned to one of the seven battalions in the brigade), one prescriber (psychiatrist, psychiatric nurse practitioner), three social service assistants or behavioral health technicians, one nurse case manager, and two medical support assistants. This support staff estimate is higher than PHRAMS (5.3) and lower than ASAM IV (9.6), but has been found adequate for the smaller patient catchment area (4,500–5,400 Soldiers) for the clinic. The EBH staffing model most closely matches the MHAT recommendation of 1 provider per 700 Soldiers.

The mission-based staffing model is transparent in its assumptions, which enables planners at installation and Army headquarters to test its limits. All the staffing models at the component level are assessed on annually by the program leads for the 11 standard programs. Two limitations remain, though, in this new approach: the installations themselves provide the population projections, and the model does not capture demand variation due to deployments. The first limitation is mitigated to some extent by assessing at the third quarter of each year when most permanent change of stations would have been completed. Integrating current assignment information from the Army G1 into future population forecasts can potentially address the second limitation.

Provide Culturally Competent Care

Care provided for the military beneficiary population must reflect the population’s diverse values, beliefs, and behaviors. This cultural competence is more difficult to achieve when care is distributed across the direct care and purchased care systems. In this section, we first discuss the purchased care challenges and then explore the direct care system challenges.

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The Department of Health and Human Services (HHS), DoD, Veterans Administration, and local communities have made significant efforts to educate providers in the civilian community about the unique needs of the military population. Since 2011, HHS Area Health Education Centers in 47 states have been providing professional continuing education on the specific needs of the military population for civilian primary care, mental, and behavioral health providers. In 2014, this program reported training more than 13,000 providers. Also, the DoD and VA partnered to develop a community provider toolkit for training and educating providers. At the Military Treatment Facility level, we have observed annual provider fairs that bring the community to the MTF for continuing education at no charge.

Still, despite these efforts, community mental health providers feel underprepared to treat this population.

There are limited strategies that can be deployed for assessing care quality in the purchased care network because they are governed by formal contracts that are difficult to improve. Furthermore, the contracts require very limited documentation for behavioral health conditions. This is of concern because dependent use of purchased outpatient behavioral health services continues to grow, while that of active-duty personnel dropped according to figures for the latest fiscal year (Figure 2-2).

The Combatant Commands and Military Health System have clear guidelines on the medical conditions for deployment of active-duty personnel, but the guidelines are not followed uniformly. For example, changes to the treatment regimen for psychiatric disorders require that Soldiers must demonstrate three months of stability prior to deployment to Iraq and Afghanistan. Community providers may not be aware of these standards, and their care may have occupational impacts on the Soldier. Some Army MTFs now implement case management to ensure outpatient services provided in the community conform to Army standards. In addition, they have introduced regular medical readiness screening activities to identify any readiness-related impacts early in the deployment lifecycle. We have seen some Military Treatment Facilities leverage the community for

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64 http://www.mentalhealth.va.gov/communityproviders/
psychotherapy to ensure continuity of care in the face of provider shortages, while retaining prescription-related care within the direct care system. This approach makes aggressive use of case managers, but at most installations the positions have yet to be filled.

Prior to implementation of the system of care, case managers developed their own local solutions (often Excel spreadsheets) to track these Soldiers manually. They then had to engage with the TRICARE office to obtain treatment information on their Soldiers because purchased care providers are required to provide only summary information (if any) as part of their billing data. In the face of high utilization, this approach was onerous and in some cases overwhelming for case managers.

A similar challenge is faced when dealing with inpatient psychiatric care, as military health system standards on medication use are more stringent than civilian standards. The number of admissions in the purchased care network has been increasing steadily for family members (Figure 2-4), and while the number of admissions for active-duty Soldiers is lower, the number of bed days are comparable (Figure 2-6). From an occupational perspective, every inpatient admission is time the Soldier is absent from her or his unit, and thereby affects both cohesion and readiness. The mean lengths of inpatient stay in the direct care (8 days) and purchased care (14 days) systems differ widely. In our field research, we observed one MTF (Site Alpha) that had dramatically lower purchased inpatient care length of stays, starting in FY2010, when compared to the overall lengths of stay for the Army (Figure 2-7).
Figure 2-6: Growth in Behavioral Health Inpatient Bed Days in Direct Care and Purchased Care

ACT: Active Duty; DA: Active Duty Dependent; GRD: Guard/Reserve; DRG: Dependent of Guard/Reserve; RET+DR: Retiree and Retiree Dependents
Figure 2-7: Care Coordination at Site Alpha Resulting in Shorter Lengths of Stay
In the FY2010–FY2013 timeframe, Site Alpha had 3,903 admissions for 2,349 patients who accounted for 39,862 bed days of purchased inpatient psychiatric care. This increased reliance on the purchased care network was driven by the closing of the direct care inpatient ward for renovations, as well as continued deployments. The behavioral health leadership team at the Military Treatment Facility placed an increased emphasis on effective care coordination for Soldiers using purchased inpatient facilities. The team established utilization management meetings in FY2010, initially focusing solely on utilization and expanding to coordination around expected release dates and handoffs between the installation and the care facility. TRICARE guidelines provide for a minimum of seven days of inpatient stay for alcohol withdrawal and 14 days for opiate withdrawal; purchased inpatient facilities, though, wanted to keep all patients for 28 days. Having purchased care providers share their treatment plans for longer stays helped the MTF better manage the use of those facilities. The Site Alpha utilization manager was able to negotiate an agreement that allowed for approving stays exceeding the minimum guaranteed stays in three-day increments.

Increased utilization of network facilities also surfaced the differences between Army practices for inpatient care and the practices in those facilities, from basic awareness of Army culture and regulations to more specific aspects such as guidelines on deployment limiting conditions and compliance to MHS guidelines on use of atypical anti-psychotics. In February 2012, the behavioral leadership team reframed the utilization meetings into Connect Care meetings to create the mentality of initiating discharge planning at time of admission rather than at release. These meetings included nurse case managers and the Site Alpha psychiatrist who owned the specific patient’s care to ensure follow-on care and safety planning. This same approach has now become standard practice for all purchased inpatient admissions across the Army.

The mix of uniformed and civilian providers in the direct care system has changed dramatically over the last decade from being largely uniformed personnel to civilian personnel comprising more than 75 percent of the workforce in FY2013. A large number of these civilian providers had no military experience or experience working with a military population, and typically had never dealt with multiple agency challenges like those found in the military setting.

The Army developed a provider onboarding program to teach “Army 101” to providers to enhance their cultural competence. The onboarding also addresses explicitly some of the information sharing required with command teams. The new system of care is built around small care teams in which more experience providers and uniformed providers can transfer cultural context to their colleagues through peer mentoring and team meetings.

Understanding and validating the occupational context is an integral part of understanding the stressors a Soldier may be experiencing. In the hospital-centric system of care, providers worked with the entire installation as their catchment area, and had patients/clients in their panel from multiple units. This made it difficult to gather and retain context information from their panel of patients. The new design narrows the catchment area for a care team to a single large unit (a brigade combat team) or a set of smaller units; thus, providers need only retain situational awareness about their aligned units.

The borrowed military manpower—line providers who work in the Military Treatment Facility for 20 hours a week—are integral to keeping the care team updated on the operational issues facing the units within which they work. The system of care design focuses on moving first-level services to within walking distance from a Soldier’s workplace. This not only improves access to care for Soldiers, but also it makes it easier for providers to participate in line-side meetings such as Command and Staff meetings and the unit high risk team meetings for their aligned units.

The new system of care design builds in multidisciplinary care coordination meetings at which the core behavioral health care team and the extended care team can come together to maintain shared situational awareness. At a morning meeting of the core behavioral health care team, the case manager identifies Soldiers who needed acute care (ER visit, suicidal ideation, homicidal ideation) during off-duty hours, as well as Soldiers being released that day from inpatient care. Care coordination happens at a Multi-Disciplinary Treatment Planning (MDTP) meeting that follows and that brings together the extended care team from across various all organizations involved in the behavioral health of a Soldier, including primary care providers, substance dependence care providers, and family advocacy representatives.

One of the principal sources of distrust of the behavioral health system of care in the Army was Soldiers having to repeat their narratives to multiple providers before entering a course of treatment.
This multiple triage process\textsuperscript{68} made it difficult for providers in a hospital setting to retain situational awareness of their panel of patients, especially when a patient had a walk-in appointment with a different provider. The team-based care ownership for a Soldier’s care in the new system of care reduces the number providers who can potentially triage a patient to the care team. Providers use their morning meetings to update colleagues on any walk-in cases they may have seen the previous day, and to alert the assigned walk-in provider about at-risk Soldiers with a high likelihood of walking-in.

Provider attrition remains a key barrier to continuity of care. The planned attrition due to uniformed providers moving or retiring is predictable and can be managed by the behavioral health leadership. However, provider losses due to lack of job satisfaction related to the new mission-based approach and managing multiple agency in the military setting remain an ongoing challenge. The purchased care network needs to share more information with the direct care team to enable rigorous assessment of care quality. While some Army locations have developed ways to assess local purchased, the DoD should adopt military wide policies to assess quality and cultural competence of purchased care providers.

\textbf{Build an Operationally Responsive System of Care}

The Army’s stated mission is “to fight and win our Nation’s wars by providing prompt, sustained land dominance”.\textsuperscript{69} Success is predicated on having sufficient medically ready personnel who can be deployed to a combat setting. Typically, commanders are expected to have 90 percent of the Soldiers in their units medically ready for deployment. Failure to meet this target could result in losing a command position. At the same time, the primary responsibility and professional interest of medical providers is to ensure that Soldiers receiving treatment are healthy enough to be deemed ready for partial or full return to service and/or deployment. This difference in goals and professional responsibilities naturally creates the potential for ongoing tension and conflict between command teams and medical providers. This is especially the case with respect to behavioral health providers and commanders, since the state of health involves mental rather than clearly visible physical impairments.

\begin{flushright}
\textsuperscript{68} Scott, Shane Paul (2012) \\
\textsuperscript{69} Murphy, Patrick, and Mark Milley. “A Statement on the Posture of the United States Army 2016.” Edited by Committees and Subcommittees of the United States Senate and the United States House of Representatives, 2016.
\end{flushright}
One source of tension we observed in our early field research in 2011 centered on the processes and information systems associated with identifying Soldiers who could not deploy for medical reasons were fractured and incomplete. The Army uses a physical profile serial system to determine Soldier availability for duty. The six classifications—physical capacity, upper extremities, lower extremities, hearing, eyes, and psychiatric—are captured in a standard form DA 3349. The paper-based profiling process relied on individual coordination between providers and the Soldier’s immediate command team to ensure shared understanding a Soldier’s medical readiness. The form itself relied on provider-supplied free text to capture behavioral health-related functional limitations, leading to significant variation from provider to provider.

The paper-based process also meant senior commanders relied on a laborious, often inaccurate process for constructing the medical readiness picture at aggregated levels of analysis such as a brigade or a division. In 2011, however, the Army introduced an automated system called E-Profile to replace the traditional paper-based form. The profile data are now captured through the Web in a centralized Medical Protection System database. The E-Profile system automatically identifies as medically non-deployable any Soldiers with deployment-limiting conditions lasting more than 30 days. Command teams now have a way to examine medical readiness automatically and transparently. This identification of Soldiers not medically ready is a necessary step for building a deployable force. Identifying this population of Soldiers also provides Military Treatment Facility leaders with critical information on population disease burden that can be used to develop both clinical care and public health interventions.

We examined the E-Profile data from November 2013–May 2015 to identify Soldiers with either a temporary (rating of 3) or permanent (rating of 4) profile in any of the six classifications listed above (shown in Figure 2-8), and to understand the impact of behavioral health on readiness. The data show that as the E-Profile system was fully rolled out in early 2014, temporary profiles for a behavioral health condition grew from 2.6 percent of all temporary profiles in January 2014 to

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9 percent of all temporary profiles in May 2015. The data also show the rapid growth in behavioral health permanent profiles to almost 30 percent of all permanent profiles. While the data may suggest behavioral health conditions are not among the main medical conditions affecting overall unit readiness, our field research shows that the readiness impact is underreported because profiles were not always written for behavioral health conditions.

![Figure 2-8: Documented Impact of Behavioral Health Conditions on Readiness](image)

Prior to 2014, command teams complained that the free text in DA 3349 forms was written for clinicians, not a command team. They felt some providers were using profiles and other forms of formal documentation to create a paper trail that forced commanders to take explicit ownership of the decision to take a Soldier to war when the provider felt the Soldier should not deploy. Command teams often complained that they could not get clarification on the content of a profile because they were not able to reach the provider who wrote it. The tension between command teams and
providers escalated to the point that the Vice Chief of Staff of the Army had to issue an All Army Communication on the sharing of protected health information with commanders.\textsuperscript{73}

The Army has focused on educating providers and command teams on the military exceptions to the federal Health Insurance Portability and Accountability Act (HIPAA) as it pertains to behavioral health.\textsuperscript{74,75} The Army policy on writing profiles required authorship by a doctoral-level provider. Some installations narrowed profile-writing privileges even further to psychiatrists. Since, a significant portion of psychotherapy is provided by master’s-level licensed clinical social workers (LCSWs), this policy created an additional burden on doctoral-level providers who now had to write profiles for Soldiers were not empaneled with them. The Army has since addressed this structural limitation by revising the profile writing policy for behavioral health to allow LCSWs to write temporary profiles. Permanent profiles still require review by at least one doctoral-level provider. The newly developed policy guidance on behavioral health profiles aims to improve the quality of profiles by focusing on what the Soldier can do, which enables command teams to minimize the Soldier’s separation from his or her unit.\textsuperscript{76}

The Army also changed the staffing requirements for brigade combat-size units to include one Behavioral Health Officer (BHO) per brigade.\textsuperscript{77} These BHOs also serve as clinicians in the Military Treatment Facility, augmenting direct care capacity. As providers in the direct care system privileged by the MTF, BHOS and brigade primary care providers can access HIPAA-protected information to maintain situational awareness of complex cases. They serve as boundary spanners who can also share mission-related information with command teams in a HIPAA-compliant manner. The new system of care moves first-level behavioral health care within walking distance of the Soldier’s workplace, and aligns a provider to a battalion-size unit.

While digitizing the profiles and these staffing changes may help improve coordination between medical providers and commanders, we found that having a single point of contact at the


\textsuperscript{74} OTSG/MEDCOM. “Policy Memorandum 14-080 Release of Protected Health Information (Phi) to Unit Command Officials.”, 2014.

\textsuperscript{75} Department of Defense. “DoDI 6490.08 Command Notification Requirements to Dispel Stigma in Providing Mental Health Care to Service Members.” 2011.

\textsuperscript{76} OTSG/MEDCOM. “Policy Memorandum 15-045 Behavioral Health Profiling Standardization Policy.” 2015.

commander-provider interface also produced significant improvements in key outcomes. For example, we studied intensively these tensions in four brigades located on the same post as the post was in the process of moving outpatient mental health providers from centralized post hospitals to freestanding clinics colocated within the footprint of the different brigades. Initial data collected in 2012 showed considerable commander resistance in all four brigades to provider recommendations regarding the readiness of Soldiers receiving treatment to return to duty. An intensive follow-up study 18 months later, however, found significant improvements in the management of this interface in two of the four brigades. Both brigades that improved had implemented a *single point of contact* arrangement in which one provider was given responsibility for communicating readiness recommendations with commanders in the brigade; in the other two, brigades commanders continued to receive readiness recommendations from multiple providers.

The results of this organizational change were quite significant. In the two brigades with single point of contact arrangements, 86 percent of commanders interviewed reported regularly accepting the provider recommendations; in the other two brigades, the figure was only 10 percent. We examined how a subset of conflicts were resolved between commanders and providers and confirmed this difference: 90 percent of the recommendations coming from single point of contact providers were implemented, compared to only 18 percent in the other two brigades. Similarly, 89 percent of providers and commanders combined in the single point of contact brigades agreed the outcomes of these interactions were positive, compared to 5 percent of interaction outcomes being deemed positive in the other two brigades. Our interviews and observations of these interactions indicated that the single point of contact allowed providers and commanders to develop closer interpersonal relationships and a deeper understanding of each other’s responsibilities, language, and norms. Single point of contact providers were better able to identify with the commanders’ perspectives without sacrificing their professional norms and relationships with fellow providers.

While these data are limited to a single post, we observed the same general pattern at three other posts: a single point of contact arrangement seemed to allow for managing the tensions between commanders and providers better than in brigades without that structure. This demonstrates the need to manage the natural, ongoing political and cultural differences reflected in goals and professional

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norms in command-medical provider relationships. In this case, the single point of contact structural arrangement allowed commanders and providers to develop the trust, mutual respect, and understanding of each other’s needs and responsibilities.

Our point here is not to suggest that a single point of contact is necessarily the best option for managing commander-provider relationships in all settings, but rather to stress the importance of recognizing that tensions at this interface are a natural and ongoing issue that needs to be addressed in all units within the Army and perhaps in other military settings as well.

We surveyed 238 command teams at one installation to assess satisfaction with the implemented system of care. The data (Figure 2-9) reveal a strong correlation between communication and follow-up and five key aspects of behavioral health system performance: the ability of the system to meet Soldiers’ behavioral health needs of their; whether the system of care provides quality care; whether it supports mission readiness; whether providers incorporate command feedback; and whether they share mission-essential information. As part of our field research, we explored the weaker but still positive correlation on communication and follow-up with working directly with the EBH team. Command teams cited overall system maturity, the improvements from implementing e-profiles, and the use of the line aligned medical personnel as trust multipliers.

<table>
<thead>
<tr>
<th>Non-Parametric Kendall’s $\tau_b$</th>
<th>Communication and Follow Up</th>
<th>Work directly with EBH Team</th>
<th>Able to meet BH needs</th>
<th>Provides quality care</th>
<th>Supports Mission Readiness</th>
<th>Considers command feedback</th>
<th>Shares mission essential Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work directly with BH Team</td>
<td>0.3234</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.6850</td>
</tr>
<tr>
<td>Able to meet BH needs</td>
<td>0.6648</td>
<td>0.7684</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3954</td>
</tr>
<tr>
<td>Provides quality care</td>
<td>0.6648</td>
<td>0.2954</td>
<td>0.7213</td>
<td></td>
<td></td>
<td></td>
<td>0.6952</td>
</tr>
<tr>
<td>Supports mission readiness</td>
<td>0.6715</td>
<td>0.7648</td>
<td>0.6729</td>
<td>0.6952</td>
<td></td>
<td></td>
<td>0.6365</td>
</tr>
<tr>
<td>Considers command feedback</td>
<td>0.7365</td>
<td>0.3452</td>
<td>0.6528</td>
<td>0.664</td>
<td>0.6602</td>
<td></td>
<td>0.4971</td>
</tr>
<tr>
<td>Shares mission essential Information</td>
<td>0.6850</td>
<td>0.3774</td>
<td>0.6644</td>
<td>0.641</td>
<td>0.6471</td>
<td>0.6977</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2-9: Non-Parametric Correlation of Communication and Follow-Up on Command Satisfaction Components**

Our field research shows there is still progress to be made capturing duty limitations in E–Profile. There remains confusion at the provider level on what behavioral health conditions actually require a profile. We have anecdotal evidence on the use of the Behavioral Health Data Portal (BHDP) to track clinical transitions, but the process has not yet been institutionalized in the Army.
Ensure Safe Occupational and Operational Transitions

There are two key transitions the BHSOC needs to manage: Permanent Changes of Station (PCS) and deployment-related transitions.79 A clearly specified policy for managing PCS transitions for Soldiers and their families mandated a warm handoff from the losing installation to the gaining installation. Our field research showed, however, that compliance with the policy varied from installation to installation. Some conducted a monthly medical record assessment of Soldiers and families joining that installation to determine whether they had received behavioral health services in the last 90 days and when deemed clinically appropriate, case managers were assigned to reach out and offer them services. Providers and case managers complained that the list of contacts specified in the policy guidance was outdated, and it was difficult to hand someone off to a provider when the unit to which the Soldier was assigned was unclear. The handoff was even more difficult when dependents received care in the purchased care network because of difficulties in obtaining records from that provider (the managed care support contracts are structured such that these providers share only a high-level treatment plan with the MTF). This switch between installations is a potential source of dropout from care.

We worked with the BHSL to develop the algorithm for making sure patients are not lost during the transition. In the pre-PCS screening, a provider now assesses whether the beneficiary of services needs follow-on services and, if so, flags them. When there is a PCS of the beneficiary to the new installation, the flag is checked as part of the in-processing step and the beneficiary is offered behavioral health services. If the beneficiary chooses to refuse services or schedules an appointment, the flag is deactivated. The installation director for psychological health does a monthly screening to determine whether any flags remain active, and directs the appropriate care team to offer services to those patients. This efficacy of this process needs to be examined in greater detail.

Create a Recovery-Oriented Culture

Service members who screen positive for a mental health condition are more likely to leave service in the year following the deployment, according to research.80 In our initial field research


interviews, more experienced, often higher-ranking Soldiers articulated their belief that seeking behavioral health services was career ending.

One analysis found that Soldiers with higher perceived organizational support were less like to report intent to leave service based on mental health symptoms and the organizational climate.\(^1\) Another recommended targeting organizational cohesion and support to promote retention.\(^2\) Researchers found that the most commonly endorsed barrier to seeking mental health services were negative perceptions by unit members and leaders and being viewed as weak.\(^3\)

The DoD and Army recognized the need create a culture that promotes recovery from mental illness.\(^4\) Army senior leadership made a significant investment in a stigma-reduction campaign in an effort to shift the culture from “avoiding care” to “care seeking.” A recent review of stigma in the military found that DoD has on the whole made progress at reducing the stigma to seek services.\(^5\) The data show that mental health service utilization by active-duty Soldiers in the Army grew from 5.6 percent of the population in FY2003 to 15.6 percent in FY2014, suggesting an increase in care seeking.

Three key barriers to seeking services, from a system of care perspective, are awareness of services, accessibility of services, and getting time off to get care.\(^6,7,8\) The new system of care design attempted to address the first two by creating a standard system of care across all installations.

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\(^4\) Department of Defense. “Instruction 6490.08 Command Notification Requirements to Dispel Stigma in Providing Mental Health Care to Service Members.” 2011.


\(^8\) Kim, Paul Y, Jeffrey L Thomas, Joshua E Wilk, Carl A Castro, and Charles W Hoge. “Stigma, Barriers to Care, and Use of Mental Health Services among Active Duty and National Guard Soldiers after Combat.” *Psychiatric Services* 61, no. 6 (2010): 582-88.
and by moving first-level services to within walking distance of the Soldiers’ workplace. Attempts to address the third barrier involved command education and efforts to treat behavioral health as a routine medical appointment.

The impact on security clearance of seeking behavioral health services was a key concern we heard early in our field research. The Army supported the DoD-wide revision of the Standard Form 86 in 2010 that explicitly excluded requiring that seeking mental health services for either a family issue or for adjustments from service in a combat environment be reported on the form to obtain a security clearance. Providers also were concerned that Soldiers were being discharged or retired inappropriately from the Army for treatable personality disorders and chronic mental health conditions. The Army has since tightened the use of these administrative separations for personality disorders and other chronic mental health conditions to ensure Soldiers receive a disability evaluation and honorable medical discharge when appropriate. Soldiers can still be administratively separated for misconduct if the Army assesses their conduct to be unrelated to their behavioral health condition.

Early in our field research, some providers were concerned that command teams inappropriately sent Soldiers to behavioral health providers for mental status evaluations as punishment, further stigmatizing the use of behavioral health services. In the same timeframe, some commanders reported that mental status evaluations were the only means they had for piercing the HIPAA barrier and getting information about their Soldier. The Army developed implementation guidelines for operationalizing DoD policies on the use of mental health status evaluations by commanders, with an explicit focus on ensuring appropriate use of services. The new guidelines focused on ensuring formal documentation of evaluation requests, informing Soldiers of their rights at least two business days prior to an evaluation, and ensuring that a doctoral-level provider assesses the validity of requests from a clinical perspective.

80 OTSG/MEDCOM. “Policy Memorandum 11-010 Administrative Separation of Soldiers for Personality Disorder (PD) under Chapters 5-13 and 5-17, or Other Designated Physical or Mental Conditions under Chapter 5-17.” 2011.
93 Department of Defense “Instruction 6490.4 Requirements for Mental Health Evaluations of Members of the Armed Forces.” 2013.
Typically, command teams have managed Soldiers deemed to be at high risk because of a behavioral health condition by separating them from their usual workplaces and assigning them to desk jobs. This inadvertently increases social isolation. The profiling improvements have caused a shift from the idea that a profile is *set in stone* to seeing profiles as a starting point for conversations about creating the appropriate healing environment for the Soldier. We have observed health of the force meetings at which behavioral health providers provide strategies command teams can use to minimize social isolation and promote recovery.

Our recent field research has revealed a new set of concerns affecting recovery from mental illness. First, some command teams frame behavioral health as an “easy button” some Soldiers use to avoid work, disciplinary action, and sometimes deployment to a combat zone. As a result, some other Soldiers who need behavioral health services choose not to seek care to avoid being associated with the group seen as using behavioral health inappropriately. Second, some command teams use behavioral health as their own “easy button,” sending Soldiers with sub-clinical symptoms to behavioral health care providers rather than engaging them as their leaders. Such inappropriate use of behavioral health clinics affects access to care for all Soldiers, and can also have a negative impact on continuity of care because providers have fewer open slots to see continuing patients. Third, the increased engagement between command teams and behavioral health care providers has raised concerns among Soldiers about the privacy of their communications with their providers. The phrase we often hear is “command is always in the room.” Providers also remain concerned about the impact of sharing with command teams information on therapeutic alliance and continued patient engagement in care.

Despite efforts to develop clear policies and guidelines to create a culture of recovery from mental illness, the translation of policy to practice remains problematic and requires ongoing education and consistent relationships between command teams and providers. Soldier concerns about Army downsizing and early termination boards have further reinforced the perceived stigma associated with seeking behavioral health services. Stigma cannot be addressed with education campaigns alone, but will require a cultural shift in the mindset of leaders and Soldiers to see mental and physical ailments in the same way.
Design a Performance Management System to Meet Key Actor Needs

The Behavioral Health Service Line (BHSL) is responsible for enterprise-level management of the behavioral health system of care across all 32 Army Military Treatment Facilities. The BHSL performance management system uses resource, process, and clinical outcomes metrics to support action by Army senior leadership, installation/clinic leaders, and clinicians, all key actors in the BHSOC. The system is evolving its capabilities to connect decision makers with the information they need to drive action. The information needs of each of these actors are related but different, and the performance management system must be designed to integrate across three sets of requirements.

- The first set of requirements is that the system must capture population-level demand for services, accurately represent the cost of providing services, explain the quality of services provided, and quantify the impact of services on overall readiness of the force. By providing accurate information in this way, the system will support population-level decision making by senior Army leaders.

- The second set of requirements focuses on enabling practice management and quality improvement at the installation level. The system must reflect accurately when and where care is provided, who provides the care, and the impact of care on patient wellness and unit readiness. This will facilitate decision making by MTF commanders and Installation Directors of Psychological Health.

- The third set of requirements is built around clinical decisionmaking support for individual providers. The system must capture patient-reported outcome data and then tabulate and present the data in real time to support patient engagement. The performance management system has to merge previously stove-piped data systems and develop a governance system that ensures efficient resource distribution, and rapid dissemination of best practices.

The Behavioral Health Service Line performance management systems utilize a wide variety of data and reporting tools, as Figure 2-10 shows. The M2 aggregates cost information that provides a baseline for comparing performance across the Army.
Our analysis shows significant differences in the cost of providing inpatient and outpatient services between the direct care system and the purchased care system in FY2014 (Figure 2-11 and Figure 2-12). One potential explanation for the difference in costs for ambulatory care is the lack of accurate costing data in the direct care accounting system, which does not capture all the non-clinical services performed by MTF providers such as occupational evaluations and screenings.
Figure 2-11: Differences in Cost per Behavioral Health Encounter in Direct and Purchased Care
The Distribution Matrix Tool is a first step at addressing the incomplete accounting problem by staffing to a more accurate clinical FTE workload requirement reflective of the providers’ mission. These should show a reduced cost in FY2015, but our data set does not extend to this period.
A monthly review and analysis process was initiated in February 2014 to assess progress towards the implementation of the BHSOC. This quarterly meeting evolved from an existing quarterly meeting focused solely on funding to one focused on a more holistic analysis to facilitate problem solving and priority setting. In this meeting, Military Treatment Facility performance is discussed, and corrective actions are co-developed with the installation director for psychological health. These Review and Analysis (R&A) sessions also provide the Installation Directors for Psychological Health with an opportunity to provide input to the Army behavioral health strategy and highlight potential priority areas for the next year.

Six metrics tracked at present in these meetings provide insight into the strategic direction for the Behavioral Health Service Line:

- **Outpatient market share** focuses leader attention on recapturing care from the network for both Soldiers and family members.
- **Inpatient care utilization** is a good indicator of the disease acuity in the population, and also has a direct effect on unit readiness.
- Despite the growth in capacity, provider utilization remains the principal lever for improving access to care. The *positions filled* and *production against Capacity Assessment and Report Tool (CART)* metrics focus leaders on ensuring that they have the staff they need to accomplish their mission, and that their providers are at minimum meeting Army workload requirements.
- Since the Army is still in the process of implementing the BHSOC, the *Behavioral Health Data Portal adoption* metric ensures that leader attention is focused on the collection and utilization of clinical outcome data.
- The *Telebehavioral Health utilization* metric alerts leaders to other opportunities for increasing capacity.

The IRIS incentives provide additional monetary rewards to installations to accelerate implementation of the BHSOC and guide desired behaviors at the installation. In the previous year, there were nine IRIS-BH incentives: compliance to production targets, raw production, availability for patient care, behavioral health care cost, market share, Telebehavioral Health utilization, BHDP adoption, care continuity for PTSD and Major Depressive Disorder, and inpatient utilization. Each

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incentive reflects a shift towards a baseline system of care. As the system has been implemented, the review and analysis process has allowed for changing incentives to focus on rewarding quality of care for PTSD and Major Depressive Disorder, the diseases that contribute to high utilization and potentially affect readiness. The refined accounting systems and increased collection of clinical outcome data enable inspection of care quality in terms of process (number of encounters, continuity of care) and clinical outcomes.

Review & Analysis creates a potential learning process in which incentives and leader metrics may serve as markers of system maturity. As the BHSOC implementation has progressed, the leader metrics have also evolved, as Figure 2-13 shows. For example, the current year focuses on improving data quality in the Behavioral Health Data Portal rather than solely on survey completion in the previous year. The incentives and leader metrics were very closely related in the previous year, and the payout associated with incentives was still being refined.

<table>
<thead>
<tr>
<th>Previous Year</th>
<th>Current Year</th>
<th>Previous Year</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRIS-BH Incentives</strong></td>
<td>Compliance to Production Targets Raw Production BHIDP Adoption Availability for Patient Care BH Cost Trend Market Share TBH Utilization PTSD and MDD Care Continuity Inpatient Utilization</td>
<td>PTSD Treatment Dosage PTSD Treatment Outcome MDD Treatment Dosage MDD Treatment Outcome</td>
<td>Outpatient Market Share Inpatient Utilization Rate <strong>Staffing against DMT</strong> Production Against CART BHIDP Surveys with key data fields populated <strong>TBH Provider Utilization</strong></td>
</tr>
<tr>
<td><strong>Leader Metrics</strong></td>
<td>Outpatient Market Share Inpatient Utilization Rate HEDIS 7 Day Follow Up after Admission Production against CART BHIDP Adoption Rate Initial PTSD Treatment Quality Initial MDD Treatment Quality</td>
<td>Outpatient Market Share Inpatient Utilization Rate <strong>Staffing against DMT</strong> Production Against CART BHIDP Surveys with key data fields populated <strong>TBH Provider Utilization</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Performance Metrics (Partial List)</strong></td>
<td>Access to Care Patient Satisfaction Referrals Staffing to Business Plan Frequency of encounters Antidepressant medication management Population Health</td>
<td>Access to Care Production Against CART Staffing against DMT TBH Utilization by Patient BHIDP Adoption</td>
<td><strong>Treatment Alliance</strong> HEDIS 7 day Follow Up HEDIS 30 Day Follow Up Population Health</td>
</tr>
</tbody>
</table>

Figure 2-13: Evolution of Measures Reflects System of Care Maturity
The Capacity Assessment and Report Tool is an analytical tool that draws data from the human resource management system and the M2 to analyze and compare provider, clinic, and Military Treatment Facility performance against minimum expected clinical care delivery. The tool enables leaders to drill down to the individual provider level to determine whether there are any productivity shortfalls. This information is also made available to individual providers so they can see clearly the impact of their performance on the larger behavioral health mission of the installation. The historical emphasis on productivity without matching transparency from leadership was a source of frustration among providers in our early field research. CART is now a critical enabler of trust in the leadership team at the MTF level, as there are no surprises related to productivity during Annual Reviews or Peer Reviews. The initial rollout of the tool surfaced significant data quality challenges, as providers were misclassified in the human resource management system and, in some cases, were not even associated with the installation at which they were working. These initial problems have since been remediated as leaders focused on ensuring that data in the CART was reflective of actual work performed.

The Behavioral Health Service Line also tracks key population health indicators such as disease burden, suicides, outpatient utilization, and inpatient hospitalization, to assess the impact of the behavioral health system on readiness and wellness of the force. The use of the E-Profile tool provides quantification of the impact of behavioral health conditions on the readiness of the force.

High patient volumes, the limits of the electronic health record as it relates to behavioral health, and a history of not utilizing routine outcome measurement have driven quality improvement efforts to rely on small data samples. Furthermore, the focus narrows to administrative details rather than improving actual clinical practice. Patient-reported outcome data brings the voice of the patient/client to the multidisciplinary team and create a common foundation upon which providers from multiple disciplines can collaboratively construct care plans that maximize recovery. The Behavioral Health Data Portal was designed to overcome some of the known challenges of routine outcome monitoring in mental health by explicitly minimizing providers’ data collection burden. It improves the clinical workflow by automating demographic and self-reported data entry and gives providers real-time longitudinal visibility of patient-reported outcome data. BHDP enables clinic-leader monitoring of the population-level impact of behavioral health care. More important, it allows the provider to tailor their care more effectively for their patients. BHDP is essential to shift
performance management from being predominantly structure- and process focused to a more balanced mix of structure, process, and outcomes.

At the Military Treatment Facility level, there may be skill gaps that prevent accurate root cause analysis. Site Assistance Visits provide MTFs with subject matter experts from within the BHSL to provide leaders with a performance assessment of the installation along with potential courses of action to rectify identified disconnects. The MIT research team has also played a role in continuous improvement through the participatory actions research in which field research findings are shared with providers, MTF leaders, and Army leadership.

The Army now has a baseline performance management system that can be improved continually to create a learning healthcare system. The performance management system is designed to enable corrective action at the provider, clinic, and/or MTF levels. Peer reviews utilizing outcome data can now enable richer conversations between peers on the perception of care by the patient/client and potential actions to enable recovery. These data can also enable practice management by clinic chiefs to initiate conversations on care termination and case mix adjustments.

Providers still bring up being “trapped in the tyranny of the tools” rather than feeling empowered to improve the system of care. The infrastructure has been built, but the organizational routines associated with translating insights to action are still being refined and institutionalized. For example, the population trends captured by the BHSL are not yet disseminated widely across the Army, and the use of site assistance visits is not yet routine practice. Consistent provider attrition makes ongoing provider training critical for operating in the new governance framework.

**Discussion and Next Steps**

When the MIT team began our research, overall behavioral health care in the Army was organized differently from one installation to another. The overall system was highly fragmented, with stakeholder differences in interests and cultures reinforcing the fragmentation. The enterprise goals specified only broad parameters in terms of access to care, deployment limiting conditions, and productivity requirements. Each Army MTF translated these goals into the local context (of resources, stakeholder power, and cultural meanings), and developed unique local organizing mechanisms to group providers and care coordination strategies. This reflected the siloed organization approach at the headquarters level that structured medical services, personnel, and other support services within individual, disconnected commands that were formally coordinated only at
the headquarters of the Army. The headquarters level established command-specific policies and practices that often failed to take into account the needs of the other commands. The power differences between key stakeholder groups at the post level, such as command teams and providers, further inhibited cross-group interactions. Stakeholders interacted primarily through formal communication mechanisms, but there were no formal integration mechanisms to align stakeholder groups. The underlying narrative was us-versus-them, with behavioral health care providers and command team silos feeling they were alone in supporting Soldiers and their families.

The Army has made significant progress towards the design objectives of building a clinically coherent, appropriately sized, culturally competent, operationally responsive, recovery-oriented system of care. There is an Army-wide standard system of care design that clearly specifies the desired patient flow across levels of care. The shift from disciplinary-based system design to a mission-based design has enabled the creation of care teams centered on specific beneficiary groups. The shift from a volume-based system sizing strategy 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 that is conducive to recovery.

The new system of care design encourages collaborative relationships between command teams and providers that respect the authorities and responsibilities of both sets of actors. 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.

From the perspective of designing a system of care, the Army continues to work on two disconnects. The first is managing patients seen in the emergency department for a behavioral health reason but who are not admitted to inpatient psychiatric care. We observed significant variations to how follow-up care was provided for Soldiers, as well as in how information was shared with the Soldiers’ command teams. Some installations required Soldiers to walk into their assigned behavioral health clinic the next business day, while other installations submitted a formal referral to
the behavioral health clinic. When it came to notify command, some installations used a formal mental status evaluation form, while others used a provider-dependent free text summary document.

The second disconnect surfaces during the parallel treatment of comorbid conditions. Some conditions such as services related to a sexual assault or domestic violence are protected for legal reasons, but those providers are part of the medical system and attend the multidisciplinary treatment planning meetings to make sure their treatment plans do not conflict with those of other providers. The separation of first-level treatment for alcohol dependence and other substance use disorders from the clinical behavioral health system of care in 2010 has created a significant coordination challenge because substance use providers do not always document care in the medical record. These providers are part of a different organization and cannot be required to attend multidisciplinary treatment planning meetings.

While it may seem that the high-level strategic redesign of the Army system of care was all-important, the reality of implementation at the installation level shows that strategic design was necessary, but not sufficient, to accomplish the desired transformation. The details of how the system evolved reveal numerous challenges that had to be overcome, most notably arising from political and cultural issues not explicitly identified during the strategic design process. All of these will require ongoing attention and active management as the system evolves.

The use of all three lenses in the approach we adopted reveals there is no single recipe for success, although there are useful principles to apply. The Army faces conflicting demands from Congress and the public, rapid fluctuations in deployment, and changes in the knowledge base regarding measuring and treating behavioral health issues. This calls for conversations about where flexibility and innovation at the post level and standardized design of care provision can be mutually supportive. Further, cooperation and collaboration across organizational levels and professional domains of expertise requires mutual trust and respect. The political and cultural lenses help leaders at all levels understand the broad range of stakeholders, their interests and values, their sources of power (rank, expertise, credibility, personal networks, willingness to leave the Army, etc.), and the disparate meanings they can give to the same situation. Preparation for change requires an active communication plan with strong agreements and shared understanding among stakeholders. Feedback loops occur in conversations and meetings, and those processes are facilitated by clear
plans, measures with reliable and meaningful data, and collaborative relationships to ensure shared goals and interpretations.

Finally, bridging across stakeholder boundaries is greatly facilitated by having an objective party trusted by multiple stakeholders and that understands the cultures, vocabularies, and interests of the stakeholders, while always maintaining a big-picture perspective. This sometimes emerges with a single leader who happens to have the right background, mindset, skillset, and relationships. The Inspector General is an institutionalized third-party role that offers the proper objectivity but lacks domain knowledge and organizational expertise. The research team was able to play that role by building trust with various stakeholders (each of whom viewed the team as helpful rather than threatening), listening to everyone up and down the hierarchy, seeing the whole system, sharing data with all parties in a trustful atmosphere, and getting stakeholders to realize that they shared the same goals. There had to be a meeting of the minds around the Quadruple Aim—the mission statement alone is insufficient—to understand how to negotiate shared language, shared metrics, interdependent role expectations, and inevitable conflicts.

**The Journey Ahead**

The Army has taken significant strides towards transforming the organization and delivery of behavioral health services into a system of care. The Operating Company approach enabled the Army to make infrastructure investments such as standardized accounting, routine collection of patient reported outcomes, and improved staffing models that are critical to governing the system of care. The Army has established a framework for inspecting and improving the system of care through defined standards of performance and monthly review and analysis sessions. The management systems can now provide the data needed to evaluate performance and provide feedback for learning and resource allocation. The implementation of the new system of care is ongoing, and in this final section we suggest a number of actions needed to continue developing and implementing a comprehensive behavioral health care system for all beneficiaries.

The Army has prioritized the design and implementation of the BHSOC in the direct care system. However, the data show that most care for other beneficiary groups is provided in the purchased care network, over which the Army has limited direct control. The Army faces an ongoing challenge with assessing the quality of care provided in the purchased care network and ensuring equity for all its beneficiaries. The direct care system bears the responsibility exclusively of
coordinating care when services are sourced from purchased care. The Army experience has shown that this is an extremely difficult and, in some cases, ineffective approach absent changes to how information is shared by purchased care providers and how those providers are managed. Addressing these issues is a logical next step in the development of a truly comprehensive Behavioral Health system of care for all beneficiaries.

The current system operates in an environment of force reductions, evolving missions, and reduced budgets. These external uncertainties will require the system design to adapt in unforeseen ways to meet the needs of the beneficiary population. Good examples of expected changes are ongoing efforts to recapture care from the purchased care network. These efforts have to be managed carefully to minimize care fragmentation and develop trust between the beneficiary and the system of care. The implementation of the system of care has already taken a significant toll on providers, care extenders, and support staff who have had to deal with changes in their roles and their ways of working. The reduced utilization by active-duty Soldiers will potentially result in providers returning to care roles focused predominantly on clinical care. The Army must continue to invest in its analytics infrastructure to estimate more accurately the demand profile for the changing beneficiary population, and must also continue to invest in active change management to ensure provider retention.

Our research has highlighted the variation in documentation of substance use care in the direct care system because of the separation of first-level substance use care from behavioral health care. The Army has decided to reintegrate the former into the behavioral health system of care. This is not simply a structural change to the system care; it raises fundamental questions about the scope of practice of substance use providers and how care should be provided for Soldiers with comorbid conditions. There are important political issues that need to be addressed such as pay scales for licensed clinical social workers in those clinics. Last but not least are the critical cultural reintegration activities that must be carried out as providers change their organizational affiliations from Installation Management Command to Medical Command.

The behavioral health system of care is but one large component in the much larger system of health and discipline in the Army. There are key interfaces between behavioral health and other components of the health system such as the emergency room, primary care, and traumatic brain injury care that still need to be defined and refined. While the Army has a clear concept of
behavioral health support for operational units such as brigade combat teams, more work is needed to develop the framework for non-operational units such as a sustainment brigade. There is an implicit understanding that health and discipline are interconnected, and that the Army’s Ready and Resilient system depends on the behavioral health system of care. The relationships between these two systems need to be better understood.

Our research was possibly only because of the trust-based relationship between the Army leaders and the MIT research team. It provided us with the ability to develop observations and insights grounded in the lived experiences of people in the system. The Army was an active partner that acted on the recommendations provided by the MIT team, and worked with us to help improve DoD policies. Such research-practice partnerships are unusual and difficult to sustain; the five-year partnership between the Army and MIT provides a framework for replication in other services and other health systems.
Chapter 3: US Marine Corps: Building a comprehensive coordinated psychological health system

Anne Quaadgras, Amy Glasmeier, and Ken Kaplan

Introduction

The Marine Corps is not as far along as the Army in defining and implementing a psychological\textsuperscript{95} health system suited to its mission, culture, and organizational structures. Indeed, because responsibility for the delivery of health care is shared between the Navy and the Marine Corps, any efforts to implement changes to existing practices must be negotiated—there is not a single hierarchical reporting structure as in the Army. Thus, throughout this chapter, we describe how and why a model of system development that is different from the Army approach, that takes account of the complex reporting structures and responsibilities, and that is responsive to the unique and more decentralized culture of Marines operations is underway and needs to continue to evolve. Moreover, our research on the Marine Corp processes is neither as deep nor as extensive as the work reported in the Army chapter. Therefore, what is presented here should be viewed as work in process, both for the Navy and Marine Corps personnel designing and providing psychological health care to Marines and family members and with respect to the information and analysis needed to support further development of a well-coordinated psychological health system in this service.

In addition, our work with the Marine Corps began later than the Army research, and was not a comprehensive effort to define and establish a new system service-wide. Rather, we were asked in 2012 to analyze systemic problems at Camp Lejeune and nearby North Carolina installations, and did so in 2013, and in 2015 study the impact of implementation of a Memorandum of Understanding (MOU) signed by the three organizations providing most of the Marine Corps’ psychological health care. This MOU was a negotiated policy memorandum with the stated goal to create a more integrated psychological health system. It outlined the respective responsibilities of the Navy and the Marine Corps in delivering medical and non-medical care. Given these complex organizational arrangements, our study of the MOU implementation pays special attention to coordination across these organizations, which provide different yet potentially related types of care.

\textsuperscript{95} As noted in chapter 1, we use the term “psychological health” to denote the overall system for the Marine Corps.
Like the Army work, the issues to be studied and the scope of work were developed jointly between Marine Corps leaders and MIT researchers. In this regard, the Marine Corps was especially interested in what could be learned from civilian sector research and practice on the effective management of psychological health. Therefore, we use that literature to frame and organize the presentation of the work done to date and directions for the future as the Marine Corps, in cooperation with the Navy, takes the next steps in defining and implementing a comprehensive psychological health care system suited to its mission and to the active-duty and post-active-duty lives of Marines and family members.

**Psychological Health System development in the USMC: needs and responses**

The Marine Corps, like the other U.S. military Services, faces a significant challenge to its core mission because of adverse health and social outcomes among Marines. With respect to Marines’ psychological health, operational command has two goals. One is to maximize the number of people in an operationally ready state, which requires that Marines be psychologically healthy and prepared for their assignments, whatever they may be. The other reflects the long-held Marine Corps commitment to developing quality citizens, which also requires psychological health. It is an objective shared across the Marine Corps, both by commanders and by those who provide the services that should ensure psychological health.

Simply put, achieving these objectives requires that the Marine Corps take explicit steps to minimize the high number of suicidal ideation/attempts, violence, substance abuse, and behaviors symptomatic of serious mental health conditions such as PTSD or depression. This requirement is well known among Marine Corps leaders and health services providers, as noted in chapter 1.

The Marine Corps recognized that change was needed several years ago. As we noted in chapter 1, the Marine Corps Commandant’s Planning Guidance of 2010 says, in part: “Integrate Behavioral Health efforts—present recommendations on how best to integrate more fully Behavioral Health programs/issues (Combat and Operational Stress Control, Suicide Prevention, Family Advocacy, Sexual Assault, and Substance Abuse Prevention) within the Marine Corps.”

As a result, by 2012 Marine & Family Programs (MFP) was implementing plans to increase and modify its Behavioral

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Health services to offer comprehensive “non-medical” counseling to Marines and their families. This would happen through a new umbrella organization, the Community Counseling Center, incorporating the existing General Counseling services and serving as the main door to other MFP programs such as family advocacy, sexual assault prevention, new parent support, and non-medical (mild) substance abuse counseling.

This transition was underway when we began our study of psychological health care at the Camp Lejeune, New River, and Cherry Point installations in North Carolina. We were asked to include resources belonging to the installations as well as to the operational Marine Expeditionary Force (II MEF).

In 2013, we examined the current state of psychological health care provision from a systems perspective, focusing on experiences and perceptions of active-duty and civilian providers, members of the chain of command for both the installation and operational forces, and junior leaders. Our analysis of their interview and survey responses links observable features of psychological health care services with perceptions of effectiveness, and also highlights issues such as care seeking, access to care, stigma, and information sharing.

**Design and Governance of Psychological Health Services in the Marine Corps**

Marine Corps psychological health services comprise a large set (more than 25 at most installations) of mostly disconnected programs aimed at preventing, diagnosing, or treating psychological health issues, offered by multiple types of providers in a variety of settings, and all with different degrees of accessibility and levels of confidentiality.

To represent these programs and organizations visually and succinctly, we began with a structural and organizational perspective. Multiple groups provide psychological health services in the Marine Corps; figure 3-1 shows schematically their reporting and accountability relationships. The groups that offer direct services to Marines on and near installations (dark gray boxes) report to a variety of organizations that come together, from a governance and funding perspective, only at the level of the Office of the Secretary of Defense.

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97 Nonmedical counseling is not recorded in the medical record, and cannot be used to treat medical diagnoses such as major depressive disorder or PTSD. It is defined by DoD (see chapter 1) and in the text of the 2013 MOU.
Figure 3-1: Organizations providing Psychological Health Services for the USMC

- Marine & Family Programs’ Behavioral Health organization provides group classes such as anger management, individual and couples counseling, and DoD-mandated programs such as family advocacy for victims of domestic violence, sexual assault prevention and response, and substance abuse counseling.

- Prevention personnel offer in-unit prevention/promotion programs to mitigate behavioral health risk factors, including evidence-based formal training classes and group workshops. They report to operational commanders. Personnel at MFP headquarters design many of these programs.

- Embedded mental health providers (Operational Stress Control and Readiness, or OSCAR, providers) and embedded medical officers serve specific Marine Corps units and deploy with them. They provide referrals, as well as individual treatment through counseling and/or medication, which is recorded in the medical record. Although they are not shown in the diagram, chaplains are also embedded, and they provide confidential individual counseling and referrals. All embedded providers are “dual-hatted” in that they are Navy personnel who professionally report to Navy Medicine or the Chief of Chaplains but report operationally to Marine Corps commanders. OSCAR providers are psychiatrists and licensed mental health personnel. Medical Officers are mostly primary care doctors with limited psychiatric training,
but, like all medical doctors, can prescribe psychiatric medications. Health Services provides policy and procedural guidance for embedded Navy Personnel.

- Navy hospitals and mental health clinics house providers who offer a range of psychiatric treatment options for diagnoses recorded in the medical record, as well as some prevention services. These providers report to Navy Medicine. The hospital commander also has a dotted line supporting relationship with the installation commander.

- TRICARE pays for all psychological health-related off-installation care. It is overseen by the Defense Health Agency, which supports all the military branches.

- Military Family Life Counselors provide face-to-face, short-term, confidential individual counseling for subclinical concerns, and offer referrals for more serious mental health issues. They report to Manpower & Reserve Affairs, a DoD agency separate from its health services organization.

- Military OneSource offers free telephone and online referrals and short-term counseling services to all personnel and families. It is also part of Manpower & Reserve Affairs.

To show succinctly the types of services these organizations provide, we draw on the definition of psychological health in Chapter 1: “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.”

As noted in chapter 1, psychological health provision refers to a full spectrum of services, including promotion, prevention, treatment, and rehabilitation, and embodies the Institute of Medicine’s 2009 Continuum of Care model. This IOM study also provides a thorough review and analysis of prevention research and programs, showing that most psychological health disorders originate before age 25 and noting that the research shows that many mental, emotional, and behavioral disorders can be prevented. In addition, the co-morbidities between mental health conditions and other chronic psychological conditions common to combat experience are widely acknowledged.\(^{98}\) This indicates the need for better coordination between mental health care and general health care and health promotion.\(^{99,100}\) In addition, both the Affordable Care Act of 2010 and

\(^{98}\) See, for example IOM. (2012). Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Final Assessment. IOM. pp. 1, 3

the 2011 National Prevention Strategy it mandated emphasize the importance of preventing health conditions (including psychological health conditions) to provide more effective services to a broader population at lower cost.\textsuperscript{101}

In line with this evidence, the Marine Corps has adopted this comprehensive perspective and its psychological health services include not only medical diagnosis and treatment services provided by licensed medical professionals based in hospitals or clinics, but also health promotion and prevention services often delivered in a variety of programs outside of the clinics or hospitals—on the installation, at work in Marines’ units, and in the community.

Figure 3-2 shows schematically where each of the groups offering psychological health service to Marines is located, and which services from the IOM Continuum of Care each offers.

\textbf{2013 Baseline research findings}

We completed the first phase of our Marine Corps research in 2013. The results of that work provided the baseline set of issues and challenges that focused our 2015 follow-up work. In 2013, we interviewed and surveyed more than 270 line and provider respondents. We asked about

\begin{figure}
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\includegraphics[width=\textwidth]{Figure3-2.png}
\caption{Marine Corps major psychological health services and groups}
\end{figure}

\textsuperscript{101} See Lando, et al. (2006). A Logic Model for the Integration of Mental Health into Chronic Disease Prevention and Health Promotion. Preventing Chronic Disease, 3(2). \url{http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1563949/}

\textsuperscript{101} For an example of the ACA impact, see: Saloner, B., & Cook, B. L. (2014). An ACA Provision Increased Treatment for Young Adults with Possible Mental Illnesses Relative to Comparison Group. Health Affairs, 33(8), 1425–1434. \url{http://doi.org/10.1377/hlthaff.2014.0214}.
respondents’ perceptions and knowledge of the care system, the pathways to care, and reasons a Marine might choose a particular pathway when seeking care. In this process, we uncovered multiple problems with the system as it existed in 2013, which we describe below. Many of these problems persist, although our 2015 visit uncovered multiple efforts to address them.

First and foremost, we found that while there were many programs and services, as figure 3-2 shows, these services were generally disconnected, making it difficult for users, commanders, and providers to know what services existed and which ones were most appropriate for an individual’s needs at any time. In addition to these structural problems, our interviews and surveys identified a number of cultural barriers and differences between line commanders and Marines regarding their preferred pathways for obtaining care. For example:

- Line leaders showed a preference for medical mental health care pathways over non-medical options. Stated reasons included confidence that medical was the “best” care and the ability to obtain information about a Marine’s status from medical providers relatively easily. However, both providers and line leaders noted that Marines who sought care on their own often chose more confidential routes that would keep their care from being recorded in their medical records. In some cases, respondents related these preferences explicitly to cultural issues of stigma.
- Stigma, whether real or perceived, affects and most likely limits care seeking. That stigma is a critical factor is reflected in the frequency with which respondents, independent of rank or position, mentioned its impact in our interviews.
- The General Counseling services within Marine & Family Programs were not well understood by line leaders and other providers, and also appeared relatively underused.
- Demand for medical mental health care, along with an increase in the number of programs, exceeded the supply of providers.
- Hiring qualified professionals was challenging. Contributing factors were the relative isolation of Camp Lejeune, uncertainty about long-term employment exacerbated by the temporary nature of much program funding, and bureaucratic time lags associated with the hiring process.
- As a result of this supply/demand mismatch, 10 to 20 percent of Marines at all three sites were sent into the off-base (TRICARE) network.
- Analysis of our 2014 interviews with off-base providers confirmed many of these issues, suggesting that Marines and family members used off-base providers because of on-base
provider shortages and perceived low care quality on base, as well as concerns about privacy and stigma. Comparison of care provision practices suggested that overall practices are similar to those on base in terms of abiding by treatment rules and guidelines, adapting to Marines’ schedules, and respect for HIPAA and privacy rules. One difference in the experience of care may be due to the absence of operational pressures from a Marine’s duties on off-base providers, which may result in Marines who use them feeling they receive more personal attention and more confidential care in a safer and less judgmental environment.

Inadequate information sharing was identified as a key source of disconnects in providing care:

- Provider groups worked in silos, and each provider group had its own culture, resource streams, and accountability structures. This resulted in few opportunities for communication and collaboration, which constrained care coordination. In particular, Navy providers in hospitals and clinics were unclear about the roles and responsibilities of embedded mental health (OSCAR) providers compared with Navy hospital-based providers in caring for Division Marines.

- There were challenges with sharing medical information among on-base providers and with commanders. Two contributing factors were the lack of a comprehensive medical information system and differences in providers’ and commanders’ understanding about rules governing HIPAA and privacy. Instead, many providers and commanders relied on informal communication networks to help manage the constraints imposed by the limits of the formal medical information system and the HIPAA regulatory environment.

- A lack of effective communication channels between on- and off-base TRICARE-paid providers led to unease and poor sharing of information.

In short, while respondents valued highly a psychological health system with characteristics including efficacy, availability, confidentiality, and accessibility, they did not believe the system they perceived—with its many disconnected programs, lack of information sharing, and inability to provide sufficient care in a non-stigmatizing way—was effective.\textsuperscript{102} We describe below, in our description of our 2015 site visits, changes that begin to address these issues.

\textsuperscript{102} For details, see our January 2015 report, “The Marine Corps II MEF Psychological Health System,” with initial analysis of our 2013 interviews and surveys, and our more detailed January 2016 report, “The Emergent Psychological Health System at Marine Corps, Base Camp Lejeune 2012-2015,” which also includes our analysis of interviews with TRICARE providers, and our 2015 work at Camp Lejeune. Both are available at \url{http://hsi.mit.edu/ptsi}.
2015 Analysis: MOU implementation and coordination

Navy and Marine Corps leaders recognized the importance of clarifying how the expanded Marine & Family Programs Behavioral Health programs would interact with existing Navy medical programs, and during 2013 they developed a Psychological Health System Memorandum of Understanding. Its stated goal was: “Establishment of a comprehensive system of psychological health services for active-duty Marines and their families.” The MOU was a negotiated formal policy document that clarified the scopes of practice and thus the responsibilities of providers. One result of this negotiation was to define “medical” care and “non-medical” care as a way to delineate Navy Medicine and MFP Behavioral Health responsibilities, especially since professionals in both organizations have the same professional qualifications (e.g., licensed clinical social worker or psychologist).

The negotiation also resulted in agreement on broad requirements for referral mechanisms, tracking, and systemic change over time, but as is common with policy documents it did not specify many implementation details. Both Marine Corps and Navy cultures leave implementation to those who understand a local situation best: in this case, that was each installation’s psychological health leadership, usually the directors of MFP Behavioral Health and Navy mental health.
Table 3-1 summarizes the contents of the MOU, which was signed in November 2013.

<table>
<thead>
<tr>
<th>Roles and responsibilities:</th>
<th>Specifies the respective roles of Navy and Marine Corps providers.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Navy Medical providers must treat all potentially disabling psychiatric diagnoses, all medication needs, and all moderate and severe substance use disorders, suicidality, and violence.</td>
</tr>
<tr>
<td></td>
<td>• Marine &amp; Family Programs providers may provide outpatient “non-medical counseling services” for subclinical diagnoses and to address “general conditions of living,” provide educational or preventive services, treat mild/moderate substance abuse disorders, and assist victims of child abuse and domestic violence.</td>
</tr>
<tr>
<td></td>
<td>• All providers may provide diagnostic screening and assessments for determining appropriate referrals.</td>
</tr>
<tr>
<td>Individual (case) coordination:</td>
<td>Requires development of processes to make and track referrals and provide feedback to the referrer; specifies circumstances requiring case management.</td>
</tr>
<tr>
<td>MOU implementation tracking</td>
<td>Provides headquarters and installation-level guidance including: frequency/attendance at tracking meetings, tracking metrics, and role of the Installation Director of Psychological Health (a DoD required position)</td>
</tr>
<tr>
<td>Other topics:</td>
<td>Refers to policies on informed consent, non-duplication of care, and command notification requirements</td>
</tr>
</tbody>
</table>

Table 3-1: MOU Overview

In early 2015, we were asked to study the implementation efforts relating to the MOU. In this process, we interviewed 45 psychological health leaders and providers at three installations (Camp Pendleton, Camp Lejeune, and MCAS Cherry Point), and analyzed the content of the MOU and 12 installations’ Standard Operating Procedures (SOP) documents that described how each installation was implementing the MOU. We also reviewed the relevant civilian literature for applicable learnings and frameworks. The goal was to develop actionable, evidence-based recommendations for improving the Marine Corps Psychological Health system.

Both the MOU and the perspective we had taken in our 2013 work highlighted the importance of focusing on the system rather than individual programs and services, in particular by emphasizing coordination efforts that could reduce the disconnects we had observed. The evidence derived from our literature review showed the growing importance of the concept of coordination within and
among medical practitioners, and especially the value of coordination in effectively aligning medical practice and the professional social service community. Therefore, we made the coordination perspective more explicit in 2015 in both our analysis and the resulting recommendations.

Our analysis began with figure 3-2 above, which shows the main provider groups, locations, and service offerings available to Marines, but provides no guidance about how to choose either a service or a pathway for moving from one service to another. These choices and pathways are key drivers of the need to coordinate these services. To make this issue more explicit, and help make the case for putting coordination at the center of the Marine Corps efforts going forward, we developed a framework (Figure 3-3) showing both the psychological health-related states a user can be in and how a user typically moves from one to the next. The role of the IOM continuum of care components is shown in bold. Note that the IOM segments link user states in some cases, but not consistently or completely.

![Figure 3-3: User perspective of a comprehensive psychological health system](image)

While medical care and non-medical care appear to be clearly delineated by the boxes at the bottom right in Figure 3-3, the boundaries are fuzzy in practice. For example, prevention activities may occur in any user state, and may be provided as part of medical or non-medical services.
Further, users may receive both medical and non-medical care and maintenance services concurrently (e.g., medication management along with non-medical marriage counseling). In addition, users over time transition across states, moving from medical to non-medical care as well as to and from healthy, stressed, and ill/injured states.

To support a user through this cycle, therefore, requires coordination so that the system components are linked, the user is supported in moving from one to the other, and information moves with the user. Moreover, the coordination must exist in multiple domains. Synthesizing the research literature, we define coordination for a medical/non-medical system such as that of the Marine Corps in three distinct domains: individual care, across programs, and across organizations.

**Coordination of individual care** aims to improve that care. Individual care includes referrals, warm handoffs, transfers, and case management. Users and their care information need to be moved; individual outcome information is important as well to make good care coordination decisions. Coordinated care emphasizes communication among providers, systems, patients/families, and organizations, especially at points of transition between professionals and programs.

The importance of care coordination is clearly illustrated by the growing prevalence of patient-centered medical homes, due in large part to the care coordination capabilities between primary care services and other specialty care services they bring. DoD is moving towards medical homes for all primary care services and working to integrate some behavioral health care and coordination within medical homes. The Agency for Healthcare Research and Quality’s Clinical-Community Relationships Measures Atlas is one particularly relevant resource on care coordination for the Navy/Marine Corps case; it provides a measurement framework and existing measures of clinical-community (i.e., medical/non-medical) relationships.

In the Marine Corps, the warm handoff of individuals between the colocated MFP Behavioral Health provider and Navy mental health providers at the Camp Pendleton mental health clinic is an example of individual care coordination. In this process, a mental health clinician triages walk-ins and sends them to the Marine and Families Program provider if symptoms seem subclinical, and

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103 See DODI 6490.15 (2013): Integration of Behavioral Health Personnel (BHP) Services into Patient-Centered Medical Home (PCMH) Primary Care and Other Primary Care Service Settings.
briefly discusses intake findings with her. The MFP provider does a detailed assessment and either explains the scope of community counseling and, with the individual’s agreement, sets up an appointment or refers the individual back to a mental health provider across the hall (often walking the individual over) if the assessment suggests medical care is needed.

Individual care coordination, however, is not enough. The 2013 SAMHSA care coordination for integrated health care report discusses the importance of including not only individual care coordination but also program and organizational coordination as part of its integrated care framework.¹⁰⁵

Coordination across programs has as its goal development of standards and processes to link users and their information across programs or services. Processes, rules, and program-level aggregated user information are coordinated. Program managers work together and use this information to make decisions about how the programs are linked in practice. This type of coordination links specific programs, but because it focuses on a single relationship it usually does not require involvement of parent organizations and related governance decisions.

A civilian example of program coordination describes how the Electronic Linkage System prompts clinicians to offer counseling to appropriate patients and then refers patients to community services that could help them address preventable health risks. Once clinicians and patients agree on an appropriate option, the system sends referrals electronically to community-based counseling organizations, prompting them to contact patients to arrange services. A group of medical practices incorporated this system into its daily workflow to prompt clinicians to offer behavioral counseling regarding diet, exercise, smoking, and alcohol consumption. The program led to well-above-average rates of referrals for counseling services and improved behaviors related to diet and exercise that, in turn, led to weight loss and enhanced quit rates among smokers.¹⁰⁶

A Marine Corps example of program coordination at Camp Pendleton is the referral process between the Marine & Family Program’s substance abuse counseling service and Navy Medicine’s, as well as the decision making process for managing borderline cases by the Navy Medicine

provider colocated at the Marine & Family substance abuse clinic. At Camp Lejeune, Navy Medicine hired an admissions coordinator who works with the MFP substance abuse clinic and unit representatives to assist in the process of placing Marines in treatment in either MFP or Navy Medicine substance abuse treatment.

**Coordination across organizations** is the most complex form, as it requires development of governance mechanisms to link organizations that have a variety of goals and interests and do not otherwise report to each other. This governance development is a political process, requiring that an agreement on how to govern, measure, and make system decisions be negotiated.

Civilian examples of new governance models include Accountable Care Organizations (ACO), which are medical-centric models, as well as Accountable Health Communities, which aim to link medical and community (non-medical) services more broadly. ACOs are incentivized by the Accountable Care Act to coordinate care to improve outcomes and access while reducing costs, and range from single practices to statewide networks. Models that include mental health, substance abuse treatment, and other social supports for Medicare and Medicaid patients are now emerging. 107

The Accountable Health Community is an emerging model that incorporates both medical and community services in a holistic system, with shared leadership. 108 The concept, still new, is a promising example for the Marine Corps’ medical/non-medical coordination efforts. Initial reviews focus on governance requirements and financing. 109 Models vary in structure in part because they are designed to meet needs of the communities they serve within state-specific organizational and funding requirements. However, there is growing agreement on guiding principles that encompass neutrality, accountability to the community, flexibility, and sound governance. These principles are instantiated in core components of an Accountable Health Community, which include:

- **Community Stakeholders**: organizations in the health care sector, government, and nonprofit

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109 For more see, for example: Cantor, Tobey, Houston, & Greenberg (2015), Corrigan & Fisher (2014) or Plaza, Arons, Rosenthal, & Heider (2014).
organizations, including community organizations and social service providers.

- **Governing Body**: provides for joint decisionmaking and prioritization of interventions; establishes roles, responsibilities, and relationships between the component organizations; accountable to broader community of stakeholders.

- **Backbone**: host entity to provide leadership and administrative support; can be a nonprofit, government, or for-profit organization.

- **Wellness Fund**: fund established by the AHC to pool and leverage funding from a variety of resources to sustain the AHC initiative.

The Center for Medicare and Medicaid Services has to date provided more than $600 million in grant funding to more than 30 states, resulting in new evidence for and models of multi-organizational coordination. Many models also include information technology innovations such as health information exchanges and data capture and analysis capabilities, which enable evidence-based evaluation and modification of the models. The program’s measurement system has shown promising results that favor a community model supporting the medical model, with better outcomes. These metric-driven models, although distinctly civilian, offer the Marine Corps some practical lessons on designing a “bottom-up” local, tailored model, as well as providing an evidence-based governance approach that stresses local leadership and engagement to maintain the integrity of common resources.

In the Marine Corps, the MOU itself is an example of coordination across organizations. It begins to outline a vision for a system linked across two distinct organizations. At Camp Pendleton, the local psychological health system governance structure consists of the leaders of the local Navy mental health clinic, embedded mental health, and Marine and Families Behavioral Health. As a group, they develop innovations; create, implement, monitor and adjust standard operating procedures for them; and respond jointly to systemic issues raised across their programs.

To summarize, the Marine Corps is working towards a coordinated system that crosses these multiple domains. Our research provides evidence that a coordinated system is possible, and points to a way forward to achieve that objective. One source of evidence arises from our analysis of the

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MOU and the related installation standard operating procedures, discussed next. Our site visits provide additional evidence; they are discussed afterward.

**MOU implementation: findings from 2015 document analysis**

The Memorandum of Understanding, with signatories representing multiple organizations within the military, begins to lay out a vision for a comprehensive Marine Corps psychological health system. It specifies and defines roles and responsibilities, addresses scope of practice, and discusses foundational communication and measurement processes for the individual and program domains. These structural roles and processes—all of which are important to a coordinated system—are designed to engage Navy Medicine and Marine & Family Programs more closely with each other at both the installation and headquarters levels. The MOU is a milestone in the development of a comprehensive Marine Corps psychological health system because it is the first attempt we have seen to define roles, responsibilities, and processes linked across programs and organizations that have no reporting relationships with each other. And, as we found in our site visits, its implementation is broadening and accelerating installation-level innovations in multiple ways.

While our analysis shows that the MOU covers many topics necessary to support creating a coordinated system, it also suggests that the MOU is missing three key things. The first is that the MOU covers only Navy Medicine and the Marine & Family Programs, two groups that encompass many of the services a comprehensive psychological health system should provide but by themselves do not constitute a complete system. As figure 3-2 shows, many other groups, including chaplains, Military Family Life Counselors, and commanders provide preventive services and other types of care.

Second, the absence of any means in the MOU for enforcing or negotiating adherence to the role definitions, scope of practice, or processes it discusses raises the question of governance, a key component of coordination. As is becoming clear from civilian efforts at creating Accountable Health Communities, governance must be defined explicitly for any multi-organizational relationship, which requires ongoing negotiations and trust-building efforts given the mix of different professionals and complex reporting and peer relationships involved.

Third, the MOU omits any identification of metrics for evaluating/monitoring performance of the system as a whole. There is no call in the document for creating a measurement system to provide the data needed for effective coordination of services. The MOU does provide for tracking and
monitoring the flow of patients, urges creation of a Quality Assurance/Process Improvement program, and recommends using “applicable data, including information on numbers of people seen at Navy Medicine and MFP facilities, referral patterns, diagnoses, problems encountered, access to care, workload trends, network referrals and any other systems issues that arise,” but these will not serve the overall system development objective absent specific metrics that clearly inform decisions and show improvement in coordination and other processes.

Despite these gaps, representatives at the Marine Corps installations were asked to develop Standard Operating Procedure documents to implement the MOU for each location. However, leaders were not able to clarify fully the clinical and operational differences between medical and non-medical, nor how these differences would affect daily practice. In essence, headquarters leaders moved the complex task of harmonizing medical and non-medical programs to the parties on the ground, but without providing them a clear framework with which to do so. Given this unresolved context, it is not surprising that many base-level staff were unable to create an effective SOP. Efforts to come to terms with this “medical/non-medical” difference varied; Camp Pendleton made the most comprehensive attempt (described further in the section on our site visits, below).

Our analysis of twelve Standard Operating Procedures, covering most installations, showed significant variations in scope, detail, and specificity. Most SOPs are more explicit than the MOU regarding how groups at the installations plan to coordinate, especially around referrals and tracking. However, the SOPs do not consistently describe planned practices. Close reading also surfaced local variations in each installation’s psychological health system’s organizational structure, practices, and relationships that may reflect or inform political and cultural as well as structural differences. While we cannot evaluate which variations are “good” or “bad” without site visits and interviews, these differences suggest that understanding the sources of variation, rather than either assuming they are necessary or attempting to eliminate them through standardization, is important. Despite that no specific SOP development guidelines or templates were provided to installations, SOP similarities suggest some cross-installation information sharing and support.

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111 See Section 6 of the MOU.
112 For details of our SOP analysis findings, see the 2016 MOU implementation report submitted to the Marine Corps January 29, 2016.
The MOU says that each installation’s Director of Psychological Health will have responsibility for leading MOU-related meetings and issue resolution, but it also notes that these positions have yet to be established. As of this writing, we know of no Marine Corps installation at which that role has been formally filled, although there is an explicit DoD Instruction requiring one.113 This issue adds ambiguity to installation-level implementation guidance.

Our installation interviews suggest that SOP creation has served as an opportunity for installation leaders to work together to negotiate and think systemically, as well as to consider unique aspects of their sites that might require additional coordination processes. Interviews also suggest the process resulted in increased trust among the negotiation participants, leading to additional innovations and a willingness to solve problems together. More generally, validation and updating of SOPs will provide good opportunities to improve practices and learn from experiences across sites. However, SOP development is not the only way to increase communication and build trust.

MOU implementation: findings from 2015 site visits

Our June 2015 visits to Camp Pendleton, Camp Lejeune, and MCAS Cherry Point provide further evidence that a coordinated system is possible. In fact, we observed a number of system and coordination innovations in these visits. The qualitative data from our interviews show that local innovations and coordination are mitigating some of the symptoms and overcoming some systemic constraints we observed in 2013—strengths that can be built upon for a comprehensive and coordinated system across the Marine Corps.114

Camp Pendleton. Innovations at Camp Pendleton through June 2015 include coordination efforts and innovations in all three domains described above: individual care, program, and organizational. A culture of innovation was growing even before the MOU was signed. This early start helped build on successes by increasing trust and shared understanding among the leadership and providers, and increased their willingness to try new approaches.

In the individual care domain, the leadership has developed effective referral and tracking procedures, and schedules meetings and other opportunities to discuss complex cases or those for which the best program is unclear. While the Marine Intercept Program (MIP) for suicide prevention

113 DOD Instruction 6490.09 (2012) on DoD Directors of Psychological Health
is a Marine Corps-wide innovation, its implementation at Camp Pendleton also supports individual care coordination for those who have agreed to be included.

In the program domain, boundaries between programs have been smoothed by colocation and multiple mechanisms that increase all providers’ awareness of the goals and locations of other programs; multiple providers across different programs shared this observation. These efforts, as well as the MIP implementation, mitigate the confusion from program proliferation that arises for both commanders and patients/clients.

In the organizational domain, there is increased coordination between installation medical personnel who report up through the Navy hierarchy and embedded Navy providers who report to Marine Corps commanders. This is being accomplished through referrals and regular meetings to analyze and remediate systemic problems—for example, resource shortages due to fluctuating supply and demand as embedded mental health providers deploy or Marine units return from deployment. In addition, efforts by Pendleton clinic mental health leadership to coordinate more closely with the Navy Medical Center San Diego have reduced unnecessary inpatient admissions from the emergency room for psychological health issues.

In a more complex organizational example, the Pendleton leadership team members—the heads of the Navy mental health clinic and MFP Behavioral Health, along with the Division Psychiatrist who leads the embedded mental health providers—work together to manage as many aspects of the local psychological health system as possible. The leadership team has built and maintains a relationship with commanders through formal briefings and attendance at regular meetings such as Force Preservation Councils and the Case Management Group for sexual assaults. Coupled with ongoing innovation efforts, this has resulted in an informal governance capability that supports responsiveness to systemic or environmental changes as well as continuous improvement.

Analysis of our interviews shows that the impacts of Camp Pendleton’s innovations include improved care coordination for individual patients/clients who see multiple providers, as well as through the voluntary Marine Intercept Program; colocation and care coordination efforts designed to mitigate confusion arising from program proliferation for both commanders and patients/clients; a reduction in duplication of effort through colocation of providers, which reduces wait times and distance between making referrals and intake interviews that help determine the appropriate care for
an individual; perceptions of improved access for individual Marines through colocation; and the moving of Navy mental health providers to be near units with high demand.

Camp Pendleton’s coordination innovations have strengthened cross-organizational relationships, information sharing, and psychological health resources and awareness across providers and command. There is now an effective local governance structure to guide these multi-organizational coordination efforts.

Still, it is important to note that just as there is no simple formula for designing a comprehensive, coordinated psychological health system for the entire Marine Corps, it would also be impossible to replicate precisely the Pendleton innovations at other locations. What these innovations offer the effort to address the larger Marine Corps problems is evidence that coordination is necessary and possible, as well as some qualitative guidance with respect to how to address specific aspects of the system. Customization will be necessary; each local system will be unique while sharing some common attributes, because the culture from one location to another differs, needs and available resources are not the same, relationships and power dynamics vary from site to site, and there are important (even if subtle) differences in how people work together at each Marine Corps site. The challenge is to balance replication and customization to create a well-coordinated system at each site.

Further, it should be noted that we had no access to comprehensive quantitative data, and it is not clear that adequate measures exist (something we also noted as missing in the MOU). The Pendleton leadership team recognizes the importance of metrics and sees the potential for using metrics in its coordination efforts.

**Camp Lejeune.** A path to greater system-wide coordination can also be seen at Camp Lejeune. While the Camp Lejeune Standard Operating Procedure document did not describe specific coordination efforts, we found an increase in coordination beginning to occur: weekly discussions between the Marine & Family and Navy substance abuse programs aided coordination in the individual domain, and the Navy program hired a PhD psychologist as admissions coordinator. In the program domain, an installation medical provider colocated with the special operations command one day each week, along with a full-time MFP provider. Further, a number of meetings in Spring 2015 across installation leaders from the Navy hospital, embedded mental health, and MFP
behavioral health have aided coordination efforts, including planning for several additional colocation opportunities.

Coordination efforts continued to increase between June and December 2015. These included full implementation of the Marine Intercept Program for suicide prevention, which increased opportunities for MFP providers to communicate directly with unit commanders. The Community Counseling Program director assigned a single person for each battalion, selecting contacts for their knowledge of the Marine Corps and effective prior interactions with commanders. As a result, Marine & Family providers now participate in the Force Preservation Council meetings of two regimental units, as well as for the special operations command.

In Fall 2015, an MFP Behavioral Health provider was colocated at the Navy hospital for three afternoons each week. This provider completes assessments, conducts referrals, and shares information with Navy mental health providers on cases, referrals, and related issues. This information feeds into regular meetings among MFP behavioral health and Navy mental health leaders. Information sharing has improved case management, and there is greater familiarity with the practices of both groups. There are plans to locate a behavioral health counselor with II MEF operating forces in 2016.

Also in Fall 2015, the Division Psychiatrist, who leads the embedded mental health providers, formalized a specification of a continuum of care for the Division at Camp Lejeune with three tiers of acuity, and specific roles for different provider groups and individuals. This defined system is designed to provide clearer care pathways by specifying the array of “front doors” and thus types of resources available.

Future planned changes include the addition of new, non-deploying psychiatrists to support Division (Ground Combat Element) and the Marine Logistics Group in Summer 2016, and colocating all embedded Division psychological health resources in a single location. Outcome metrics at the Community Counseling Program are scheduled for implementation in 2016.

Extensive coordination and collaboration efforts began earlier at Camp Pendleton than at Camp Lejeune, and turnover of leadership personnel at Camp Lejeune has been much higher than at Camp Pendleton. But with new leadership in place, coordination efforts at Camp Lejeune grew rapidly in 2015. These efforts have also benefited from increased contact and the resulting knowledge sharing between psychological health leadership at Camp Pendleton and Camp Lejeune. Direct sharing
through regular teleconferences allows for surfacing structural, political, and cultural differences and similarities in a natural and integrated way that is not possible through mere adaptation of written procedures and plans.

**Cherry Point**. Finally, our 2015 visit to the Marine Corps Air Station Cherry Point revealed a significant increase in coordination efforts, tied to the signing of the MOU. Development of the Cherry Point SOP included specific referral and tracking processes that have been effectively implemented. The Cherry Point SOP also served as a model for several others.

Certain characteristics of Cherry Point speak to our argument that customization must unfold at the local level, while still maintaining overall system coordination. For instance, Cherry Point is smaller than both Camps Lejeune and Pendleton, with no embedded mental health presence, inpatient hospital, or Navy substance abuse program (it does have the Marine & Family substance abuse program for mild/moderate substance abuse issues). It is also relatively remote, making it difficult to coordinate with external hospital services at Camp Lejeune (about an hour’s drive away) or in the community. Further, Cherry Point must refer many patients to purchased care due to capacity shortages. This has necessitated having a case manager/referral specialist to coordinate post-discharge care needs.

The population that Cherry Point serves is also smaller: there are about 10,000 active-duty Marines compared to more than 40,000 at each of the two other sites. Cherry Point has implemented the Marine-Centered Medical Home model, including an internal behavioral health consultant. All medical officers and medical home providers work out of the same building as the Navy mental health clinic. This makes it easier to refer people to other services, as they simply need to go upstairs. MFP programs are also nearby.

Stable leadership at Cherry Point supports relationship development, with good relationships between MFP and Navy mental health leaders as well as among providers within each organization. There are monthly tracking meetings and more frequent informal discussions among the leadership. The behavioral health consultant/MFP relationship is in its early stages, as a permanent behavioral health consultant only began working in late 2014. Still, Cherry Point continues to face mental health staffing shortages, which led the mental health clinic to eliminate its walk-in option. However, use of a consult liaison process with medical officers and the behavioral health consultant mitigates this issue to some extent.
As with our visits to Pendleton and Lejeune, what we found at Cherry Point strengthens our argument for putting coordination at the center of Marine Corps efforts to address the problem of its overall psychological health system. We saw evidence of a solidifying relationship between the Internal Behavioral Health Consultant and the mental health clinic and the Marine & Family Programs. The Standard Operating Procedure was very direct and was being followed, resulting in increasing referrals and generally good relationships and awareness between providers.

**Discussion & ongoing systemic constraints**

Based on the material above, we offer an overall assessment that summarizes the current situation in the Marine Corps, from which we develop recommendations. While our data come from only a subset of Marine Corps installations, these installations were chosen in consultation with our Marine Corps partners with the view that they would provide a reasonable window for taking stock of the general state of practice and potential directions for the future.

First, despite some very positive steps, and even as organizational leaders have begun to work together at multiple levels, *psychological health services in the Marine Corps continue to be fragmented*. The services are difficult to describe, choose, and use. Information is not shared well among participants. There is no structured way to know what works for users, programs, and the Marine Corps as a whole, or to learn whether, how, and why local innovations are effective. Despite a plethora of policies, programs, and professionals focused on various aspects of the psychological health of active-duty Marines, there are still long waits for access; a persistent lack of knowledge about users’ health status and movements through programs, the system, and their program utilization and intervention outcomes; missed opportunities for systemic improvement; and, as noted in chapter 1, continued occurrence of high-risk behaviors such as suicide and substance abuse, along with diagnoses of PTSD and major depressive disorder, at unacceptably high levels.\(^{115}\)

*The Memorandum of Understanding is a partial blueprint* for building a system, but it is far from a complete roadmap. On the positive side, it recognizes explicitly the important role of both medical and non-medical services in a comprehensive psychological health system. It is a useful step toward defining roles and responsibilities of two key elements in that system. It is incomplete, though, because it lacks guidance for all needed coordination domains and participants, lacks clear

\(^{115}\) We did not have access to more recent Marine Corps data, but none of our 2015 respondents believed these numbers had changed significantly in the last two years.
governance, and is unenforceable. Its implementation, in the form of installation-specific SOPs, varies in both extent and details across installations, and it provides no guidance for ongoing measurement of many important cross-program and cross-organizational system variables, nor for comprehensive management and governance of the system through systematic evaluation, learning, and improvement processes.

Site visits showed both the importance of coordination and significant variation in the extent of coordination efforts. We found progress in addressing the challenges we identified at Camp Lejeune in 2013 and that other researchers noted at Camp Pendleton.\(^{116}\) We also observed continuing systemic issues that, if left unaddressed, will limit improvement over the long run and create greater challenges for the Marine Corps as a whole, including sustaining changes when leadership turns over, the ability to measure the impact of changes, and the ability to measure and respond to changes in environmental circumstance such as supply and demand. Still, the innovative efforts emerging from installations to improve coordination go far beyond implementation of the MOU and its formal SOPs. These innovations are important and point to the potential for improving the Marine Corps psychological health system across the board.

*Coordination remains a critical priority, and local coordination innovations are insufficient.* This speaks directly to the systems perspective we have adopted, looking beyond any one Marine Corps site to see the bigger picture, and incorporating civilian findings cited earlier. Sustaining improvement at any one site, and measuring, governing, and building a robust, comprehensive, and coordinated Marine Corps psychological health system will require additional resources, support, and engagement at both the local level and from senior stakeholders across the Navy and Marine Corps.

The increasing evidence for prevention and coordination, especially for young people under 25 (which includes more than half of all Marines), is good news going forward. Civilian experiments in designing new systems of care offer useful guidance for the Marine Corps and Navy. It is not necessary to reinvent the wheel, although the Marine Corps and Navy will need to create their own design through a process that includes personnel from both services. This process can draw on

emerging standard system “skeleton” elements and governance models, recent learnings from the Army behavioral health system of care (see chapter 2) and civilian research on coordination.

**Systemic constraints**

Our recommendations need to account for the very specific systemic constraints that make it difficult for the Marine Corps to build and sustain a comprehensive and coordinated psychological health system. These constraints play out both in the provision of services and with respect to coordination efforts.

First, we must acknowledge the organizational structural complexity of the current system, with Navy Medicine providing needed medical services to the Marine Corp, and the Marine & Family Programs as well as organizations not under Marine Corps control providing others, as figure 3-1 shows. The initiative to expand MFP Behavioral Health was an explicit response to this situation. We have no evidence that changing this organizational complexity by integrating all services in a single organization is feasible or beneficial, and so make no recommendations to address this specific constraint. Other systemic constraints, though, are addressable.

There needs to be clearer and shared understanding of relevant policies by all system participants. For instance, HIPAA/privacy regulations are not clearly understood. There are varying interpretations of the scope of practice restrictions across the Marine Corps that hamper communications and breed mistrust. Similarly, complex rules that require extensive command/provider coordination to develop appropriate individualized limited duty assignments can impede effective treatment and a return to duty.

The need to enact policies for both Marine Corps and Navy personnel suffers from the absence of agreed-upon procedures for doing so, as illustrated by the variability in the scope and detail of the Standard Operating Procedures. This affects, for example, effective information sharing for both commanders and providers, given HIPAA/privacy regulations.

There are multiple financing constraints in the system, including funding from multiple sources with various restrictions on programs, position duration, or specific activities. Examples include the inability to use Defense Health Program money for health promotion; temporary funding sources for prevention specialists and Community Counseling resources that could dry up at any time; and restrictions on activities, such as care coordination by Navy mental health providers who are
contractors, due to financing rules that limit the activities contractors can perform. In addition, there is little accountability to financing sources for performance resulting from the provided funds.

IT-based constraints include the inability of different hardware and software systems—for secure email, referrals, and scheduling software, for example—to interoperate across providers and Services. Such challenges must be addressed.

A coordinated system that works will also require appropriate physical infrastructure. At present, though, this is a constraint. For instance, buildings that might be used for psychological health services are not appropriate for that purpose (i.e., they are not Joint Commission-certified), and at larger installations there are ongoing transportation issues.

Already mentioned, there continues to be a perceived shortage of (provider) resources despite program overlap, fragmentation, and duplication of services. While a recent DoD/VA report suggests there are no serious system-wide resource shortages, our interviewees in both 2013 and 2015 across installations indicated that personnel on the ground believe otherwise. However, without accurate information on both supply of providers and demand for care, this issue is difficult to manage. Our work revealed that no one in the Marine Corps or Navy has an easily accessible count of providers across programs that can support resource allocation decisions, and quantification of unmet demand (e.g., people who “give up” on finding care) does not exist.

**Four recommendations for building a more comprehensive MC system**

Our recommendations arise from the analysis of our interviews, surveys, and visits to three Marine Corps installations in 2013 and 2015; our synthesis of the health systems literature referenced throughout this chapter; and our collective research experience in organizational coordination, health system design, organizational systems design, and management of organizational change. While we did not explore every part of the Marine Corps and Navy collaboration in detail, our core recommendation is clear: creating a comprehensive, coordinated psychological health system must become an integral part of the immediate Marine Corps/Navy agenda.

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There is no specific recipe for bringing such a system to fruition; rather, a conscious and concerted design effort must be undertaken. Given the complex desired system qualities, even desired features and characteristics of systems elsewhere will still need to be adapted for the Marine Corps through a joint effort with the Navy; they cannot simply be copied from elsewhere. The solution must balance multiple kinds of health promotion, prevention, and treatment services (varying in degree of confidentiality, accessibility, and treatment) with an easy-to-use system that enhances and streamlines the experience of all users.

**Recommendation 1: Negotiate a robust psychological health system governance framework that includes all key stakeholders and supports system development, improvement, and sustainability.**

The civilian literature is beginning to provide recommendations on the appropriate scope, charter, and responsibilities for a psychological health system. Based on this research and our work with the Marine Corps, we recommend that the Marine Corps and Navy create a governance board with members from across the military health system and with commanders and operational leaders at both the headquarters and installation levels. Involving commanders is crucial to ensuring that any psychological health system that emerges meets requirements from a command perspective; most notably that it improves Marine readiness. Commanders want a system that is readily available, easy to understand, easy to use, and provides them with relevant information about their Marines’ readiness and risks to unit readiness. In practice, commanders at all levels play several vitally important non-medical roles in the current system: they provide and receive information, are co-decision makers about individual Marines, and, at higher levels, make decisions about the system itself. Because installation commanders and other Marine Corps leaders have a responsibility to promote psychological health in their Marines, are responsible for returning good citizens to civilian life, and are held accountable for doing so, involving them in designing a coordinated system that will support their ability to meet these responsibilities is crucial.

The complex structure and reporting relationships among providers makes it clear that this governance framework will have to be negotiated by representatives of all the stakeholders. These representatives will need to agree on a detailed governance charter that includes: stakeholder roles; decisions to be made, and transparent decision processes for making them; relevant metrics and measurement processes to support decision making; and processes for feedback, enforcement, and
system changes. As this framework is being built, the Marine Corps/Navy should take short-term governance actions to create a solid foundation for further design, including broadening MOU participants to include additional providers and commanders and broadening the MOU scope to be more explicit about coordination concepts and practices in all of the coordination domains, such as care coordination and systemic resource management practices, metrics, and improvement processes. The governance board should also make or recommend policy changes to support a more effective psychological health system, such as privileging Marine & Family Programs Behavioral Health providers so they can work more directly with Navy providers and access medical records as appropriate; creating mechanisms to permit, pay for, and measure coordination work; developing a more stable funding system that incorporates accountability and metrics that support change decisions; and clarifying HIPAA and privacy regulations as they relate to information sharing.

**Recommendation 2:** Develop a better understanding of local Marine Corps/Navy best practices and needs.

Implementing this recommendation will require establishing a good baseline of both problems and opportunities, and measuring the impact of systemic and other changes against this baseline. This includes completing the description of installation innovations with commander perspectives, prevention activities, and system-wide baseline information and metrics. System metrics need to include baseline quantitative data showing how and where clients/patients are currently seen, as well as any available outcome data. Other activities include determining resource availability across programs as personnel turns over, and measuring user needs.

**Recommendation 3:** Create a robust measurement system that captures all the process and outcome measures needed to evaluate, provide feedback, and identify opportunities for learning and improvement.

The actions for this recommendation build on the work begun in Recommendation 2 by focusing on why to measure something, what to measure, and how to measure it. It will require improving IT and physical infrastructure to support metrics gathering and analyses processes and support provider workflows, especially information sharing across the entire IOM Continuum of Care. While this process will eventually result in automation of metrics, human analysts and experts will always be needed to design and implement changes as workflows and other system design elements are modified.
**Recommendation 4:** Develop a design process that is both bottom-up and top-down.

Designing from both “directions” will be critical to success. Involving those on the front lines of service delivery will help ensure that the cultural norms and traditions of different providers, Marines, and family members are taken into account as the system evolves. Involving all stakeholder groups from the bottom to the top of the organizations will also ensure that their multiple interests are surfaced and understood, and that strategies for better aligning them and resolving differences are built into future plans and processes. Bottom-up design of practices also provides opportunities for creating local experiments that can be adapted, transformed, and scaled if they succeed.

Based on the Camp Pendleton experience, as well as on emerging civilian experience, installation design efforts should begin with processes that involve building links among providers, such as referrals, informed consent and information sharing practices, colocation, and use of the Marine Centered Medical Home as an entry point into the system. As the installation design team learns how to create and implement designs, builds trust, and gains experience, it can add other processes, including those that involve commanders and prevention activities more generally.

A top-down participatory design process—led by the governance board—incorporates the bottom-up innovations and successful experiments, and recognizes the potential impact of local circumstances on an overall design. Such a process has high impact precisely because it is participatory, which increases commitment and ownership of results and changes the focus of those involved from “their” role/program/organization to the overall system. The design process assumes programs will continue to exist as building blocks within the system, and the focus is design of the system links—specifically, the coordination requirements across the continuum of care in all three domains identified earlier: individual care, across programs, and across organizations.

These systems-based recommendations for building a better psychological health system are important to both Marine Corps and Navy success for several reasons. First, the Marine Corps force needs to be maximally ready—that is, more psychologically healthy, with fewer high-risk behaviors, at both the individual and unit level.118 Despite reduced deployment rates, risky behaviors and

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118 The 37th Commandant’s update to the 36th Commandant’s Planning Guidance (2016), by General Neller, states: “We will immediately and aggressively reduce the number of non-deployable Marines and Sailors, especially those injured during training. Part of this effort must address destructive behaviors. Abuse of alcohol, abuse of illegal and prescription drugs, sexual assault, hazing and other high risk behaviors all negatively impact the readiness of the team.” See http://www.hqmc.marines.mil/cmc/Home.aspx Frago 01/2016, p. 7.
psychological health issues remain high among Marines. A comprehensive, measured system will enable increased readiness by providing evidence for innovations that make a difference. Second, the large number of disconnected psychological health programs is confusing, potentially costly, and difficult for Marine Corps leaders to manage effectively; linking these programs in a coherent system will clarify pathways and help users, commanders, and providers navigate the complexity. Finally, both programs and links among programs (i.e., the system) need to be measured to take maximum advantage of resources in an uncertain, rapidly changing environment. By creating a comprehensive, coordinated, and measured system for psychological health care, the Marine Corps and Navy will improve its service members’ ability to achieve their military mission and return to civilian life psychologically healthy.
Chapter 4: Mathematical modeling

Richard Larson, Navid Ghaffarzadegan, and Henry Fingerhut

Mathematical models are well known to the Department of Defense. The very birth of Operations Research, which relies heavily on mathematical models, was DoD-driven during World War II. Among the products of this work were efficient linear programming algorithms to improve war time logistics; the theory of optimal search, which proved invaluable to U.S. efforts in the North Atlantic to find and destroy enemy submarines; optimal location theory, which proved most useful for placement of radar stations in Britain to detect incoming enemy aircraft; and much more.

Less well developed then were models of human health and behavior and interventions to improve health. But the subsequent seven decades have seen much good work in this area—less on hardware-dominated tactical operations and more on human systems. For instance, epidemiology is now a mature field involving many different types of mathematical models of behavior-influenced disease progression and control. Mathematical modeling is relatively new to PTSD, with barely a handful of papers addressing the topic.

A goal of this project has been to incorporate both qualitative and quantitative modeling-based work as a way to capture the potential benefits of a multidisciplinary examination of the burden of PTSD and how it might be addressed in the military health system going forward. Our mathematical modeling work takes a “systems” perspective, embedding the soldier into the military system and then structuring various PTSD-focused models around that, with the type of structure depending on the types of decisions and policies the model may guide and influence. From the systems point of view, we seek first to frame the problem to understand the overlapping and intertwined subsystems—both formal and informal—that influence the treatment of PTSD, both positive and negative. Then, from an aggregate level, we seek to project DoD (and also Veterans Administration) PTSD treatment workloads over the coming years and even decades.

Mathematical models come in many varieties: deterministic and probabilistic; equation-based versus algorithm-based versus simulation-based; optimizing versus descriptive; and so on. Our approach is simulation-based and descriptive in response to the complexity of PTSD. Simulations also come in varieties: Monte Carlo (probabilistic) simulation; System Dynamics (deterministic)
Simulation modeling methods have increasingly been used to understand health care systems and inform policy decisionmaking.\textsuperscript{119} Simulation models have a wide variety of uses. Among others, they support “what if” experiments and workload projections. A simulation model of a PTSD treatment system can project the multi-year consequences of PTSD workloads and costs under a wide variety of “what if” scenarios ranging from those largely outside the control of the PTSD system (such as the intensity of engagements in future wars) to those under the control of the PTSD system—such as deployment of additional resources and/or use of new evidence-based treatments. This use can inform projections of budgets and needs for professional manpower and facilities.

Another use is to improve systems understanding. Sometimes, a model’s primary use is problem framing, through which decisionmakers and other stakeholders—such as the PTSD-afflicted Soldiers and Marines, their families, friends, and personal support organizations—can learn from the model development and structure the shared importance of the many intertwined stakeholders in helping to ameliorate the symptoms of PTSD. From a DoD perspective, such a framing model can justify government resources being devoted to family, friends, and supporting organizations outside the DoD, as these are also seen as critical in a comprehensive treatment program.

Since the beginning of Operation Enduring Freedom (OEF) in 2001 and later during Operation Iraqi Freedom (OIF) beginning in 2003, a handful of simulation and systems models have been developed that combine and apply theory and empirical data. They provide insights about how the psychological health burden from the two wars is likely to play out over a long period.

No model perfectly depicts reality. As George Box and Norman Draper famously wrote, “[A]ll models are wrong, but some are useful.”\textsuperscript{120} Also, model complexity does not necessarily imply greater or even equal usefulness as compared to a simpler model. Here a quote often attributed to Albert Einstein is appropriate: “Everything should be made as simple as possible, but not simpler.”

We have tried to follow these two propositions in our three developed models, which we describe


below. First, however, we review the two other most relevant models in the published literature that were not developed for the present project.

**RAND Model**

The first of the PTSD-related models from the literature was developed at RAND Corporation and used a simulation approach to predict costs from PTSD and depression related to OEF/OIF.\(^{121}\) It assumed outright that 15 percent of modeled individuals experience PTSD over the model’s time window. It presented results in terms of the expected costs for 50,000 simulated E-5 service members due to PTSD, depression, and suicide over a two-year period following return from deployment: with respect to *status quo* treatment in which 30 percent of individuals with a mental health condition receive treatment and 30 percent of treatment is evidence-based, and excluding lives lost to suicide, the RAND model predicts total two-year costs of $119.8 million under the baseline, $51.2 million at low-cost, and $149.0 million at high cost. The baseline predicts that 94.5 percent of these costs are due to lost productivity, 5.1 percent due to mental health treatment, and 0.4 percent due to medical costs of suicide.

The RAND model also predicts two-year costs per case of PTSD, depression, and co-morbid PTSD and depression. Excluding suicide mortality, the baseline model predicts a $5,635 cost per PTSD case with no care, $5,664 cost per PTSD case with usual care, and $7,933 cost per case with evidence-based care. Including the cost of lives lost to suicide, the baseline model predicts an $11,986 cost per PTSD case with no care, $13,935 cost per PTSD case with usual care, and $7,933 cost per case with evidence-based care.

**Atkinson, Guetz, and Wein Model**

The second model used a simulation approach to explain acute stress symptoms empirically observed during OIF and to predict future PTSD onset resulting from the conflict through 2023.\(^{122}\) The researchers exposed virtual service members to a random number and magnitude of traumatic events based on historical deployment characteristics. The model assumed an innate stress threshold for each service member, consistent with a theoretical model described in the psychological


literature. Service members for whom the traumatic stress experienced exceeds their stress threshold were said to experience PTSD after a random delay. This model predicted the total number of service members that will experience PTSD at each time through the end of the current wars and under various drawdown scenarios.

The Atkinson, Guetz, and Wein model presented results in terms of the number of OIF Army soldiers and Marines expressing PTSD by each year over the 20-year period 2003–2023. The model assumed three OIF withdrawal scenarios. The actual withdrawal occurred within the model scenario range, such that model predictions provide a reasonable window for actual PTSD prevalence.123 While the study provided a detailed examination of traumatic exposure and PTSD onset over OEF/OIF, it did not consider the effect of treatment, nor the possible remission of PTSD.

The model predicts that 278,000–313,000 service members will have exhibited PTSD symptoms by 2023. These values correspond to roughly 40 percent of active-duty Soldiers and Marines and roughly 32 percent of Army Reservists that deployed to Iraq during OIF. The model predicts that were service members to deploy only once, the lifetime PTSD rate would be roughly 30 percent. However, such a deployment policy would expose many more service members to combat in order to maintain the same troop levels, resulting in upwards of 30 percent more lifetime PTSD cases.

We now turn to the three models developed for the present project.

**Model 1: A conceptual systems model of PTSD**

With what we refer to as Model 1 (developed as part of this project), Ghaffarzadegan and Larson124 developed a qualitative representation of the system, seeking to answer a basic question: What are the interrelations between psychological, sociological, and medical factors in a case of PTSD treatment? The main inputs for the model were published articles and reports about PTSD in military and the Veterans Administration. With the model, the researchers uncover several root causes of complexity of treating PTSD.

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123 The model withdrawal scenarios assumed a yearlong drawdown to zero from September 2008 troop levels (140,000 troops) beginning in February 2009, 2010, or 2011. The actual drawdown took place in two steps, with half of the troops drawn down in September 2009–September 2010 (to 61,200 troops) and the rest drawn down in September 2011–September 2012.

The study’s outcome is a big-picture model. The model demonstrates how military personnel with PTSD are situated in a complex web of partially overlapping structures, some formal as operated by the Department of Defense (and later, the VA), and some informal as provided by family and friends.

Beyond evaluating different causal reasons for complexity of PTSD treatment, Model 1 points to five major vicious cycles (figure 4-1). The figure represents multi-layer dynamics: individual, family/friend, and societal layers. In the individual layer, one’s own health and actions influence treatment. In the second layer, family/friends affect treatment. In the societal layer, many patients’ behaviors are observed and create public perceptions and the associated labels, which ultimately feed back to individual layer dynamics.

The vicious cycles, represented as loops in figure 4-1, are labeled R1 to R5: R1) cascading illness and medical complexity; R2) cascading illness and exclusion from family and friends; R3) stigma and social exclusion; R4) self-fulfilling prophecy; and R5) the malingerer stigma. In this context, a vicious cycle is a feedback loop that, over time, creates cascading negative influence on the PTSD sufferer, and exacerbates his or her mental health situation. These cycles, as time passes, make PTSD less likely to be treated.

To illustrate, we briefly review R1. If a patient does not actively seek care, the illness progresses over time and his or her medical condition worsens. Studies indicate that some patients with PTSD also develop other psychiatric disorders. Increasing complications render medical interventions progressively less effective. Patients’ responses in the form of drug abuse can further complicate health conditions. The entire process ends up in a cascading pattern that eventually pushes mild medical illnesses into chronic and life-threatening conditions.

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125 Additional information about these cycles is in Ghaffarzadegan and Larson (2015).
Overcoming vicious cycles is very difficult, requiring policies and patience over the long term. Without early interventions, these cycles result in a downward spiral into depression, family discord, and possible divorce, substance abuse, joblessness, homelessness, and even suicidal ideation or action.

Like a snowball that gets bigger and bigger as it rolls downhill, vicious cycles are difficult to stop as they gain momentum. This analysis points to the need to prevent these situations from developing, potentially even from the beginning. Two conceivable policy steps are early effective screening and resiliency-related interventions (e.g., better recruitment procedures or resiliency-related trainings). Attention should be paid to military personnel and their families.

Model 1 was a first step for problem framing and understanding interconnections and complexities surrounding any individual military personnel with PTSD. In the next stages, we needed models that help quantify such effects and compare and contrast effects of improving resiliency and early treatment. Such quantitative models should include uncertainty in diagnosis, individuals’ health, access to care, and military personnel readiness. The models should also help compare PTSD prevalence and healthcare system costs under different policies and scenarios.

In response, two additional models were developed for this project: a system dynamics model of PTSD prevalence and a Monte Carlo simulation model.
Model 2: a population-level System Dynamics model of PTSD

With Model 2, we moved toward quantifying effects of different interventions on PTSD prevalence, asking these basic questions: What are the trends in the population of PTSD patients among military personnel and veterans in the postwar era? What policies can help mitigate the effects of PTSD? And what are the healthcare cost implications of potential policies?

To answer these questions, Ghaffarzadegan and colleagues\(^{126}\) developed a system dynamics simulation model of the PTSD population, with a broad boundary. Taking a systems approach, the model incorporates both military personnel and veterans (other works typically have a narrower perspective and focus on only one group). It encompasses veterans of pre-2000 wars as well as the more recent wars in Iraq and Afghanistan, and can track cases over entire lifetimes. The model is complex and includes more than 100 equations.

Structurally, Model 2 depicts the flow of people from recruitment into the military, from the military to the post-military stage, and from the post-military stage to death. The model incorporates the chances of deployment, of experiencing trauma, and of developing PTSD given trauma. In the model, people do not necessarily reveal PTSD symptoms immediately; the diagnosis may be delayed, in some cases happening after separation from the military. Since the model includes two subsystems, military and post-military, it helps estimate PTSD-related healthcare costs for both the DoD and VA.

The model uses a variety of data sources. The structure is informed by previous work by the researchers, other published articles, and reports. Model parameters and time series (2000-2014) come from the DoD, Institute of Medicine, and the VA. We ran the model for the period 2000–2025. The period 2000–2014 was used for model validation and examination of the model’s fidelity in replicating the historical data. Then the model forecasts the 2015–2025 period. To create scenarios for forecasts, U.S. involvement in wars and the intensity of future wars (in comparison to OIF) were used as inputs. The outputs are PTSD prevalence, number of PTSD cases diagnosed and undiagnosed in both the military and the VA, and PTSD-related healthcare costs. Figure 4-2 is an example of one of Model 2’s outcomes.

Figure 4-2: PTSD diagnosis rate in military [new cases per year].

Note: The model fits the data for 2000–2014 and predicts the trends for 2015–2025 for three scenarios. Scenario 1 is minimum deployment to intense/combat zones (1% of military personnel); Scenario 2 is 2% deployment to intense/combat zones; and Scenario 3 is 5% deployment to intense/combat zones.

In their paper written based on the model, Ghaffarzadegan and colleagues test four policies aimed at improving resiliency, screening, treatment, and a combination of the three. A user can test different combinations of these policy measures under different scenarios of future wars, and examine PTSD prevalence and costs as outputs. Model 2 yielded four major results.

1. The model predicts that the population of patients and system costs are very sensitive to U.S. involvement in future wars, and that screening and treatment policy interventions have marginal effects in comparison. In fact, more screening increases short-term healthcare costs by increasing demand for health services.

2. In a very optimistic scenario, Model 2 estimates PTSD prevalence among veterans in 2025 to be 10 percent.\(^\text{127}\) The figure includes undiagnosed cases of PTSD.

3. Effective policies for periods of war and for postwar periods are different. During wars, resiliency-related policies are the most effective policies for decreasing PTSD; however, in a postwar period, there is no silver bullet to overcome the problem of PTSD. This is consistent with what was argued in Model 1 regarding the difficulty of controlling the vicious cycles of PTSD.

\(^{127}\) This is the percentage of veterans with active PTSD during this year. It is not a cumulative measure.
4. It takes a long time, on the order of 40 years, to ameliorate the psychiatric consequences of a war. This is also consistent with the data on Vietnam War-era PTSD patients.

The paper also provides detailed discussions about healthcare costs for the DoD and VA regarding PTSD. The costs are limited to direct healthcare costs. In reality, there are also social costs associated with PTSD, but these were not considered in this analysis. In an optimistic scenario (about 1–2% deployment to intense/combat zones in the next 10 years), the model’s prediction of PTSD healthcare costs for the military in 2025 ranges from $130 to $160 million/year (in 2012 dollars). With greater involvement in future wars (about 5% deployment to intense/combat zones), the costs potentially increase to $260 million/year. For the VA, the cost estimates are one order higher, with average estimates of $2.9 to $3.2 billion/year (in 2012 dollars). With greater involvement in future wars, this cost can also increase to $3.6 billion/year.

Beyond prevalence and cost estimations, Model 2 stresses that PTSD is a multi-organizational problem. A systems approach needs to consider both military and post-military stages together since an effective policy in one stage may create problems for the other stage. The models should also look at long-term dynamics, considering delays between developing PTSD and showing symptoms. The analysis also shows that a focus on resiliency and decreasing the chances of developing PTSD is potentially one of the most effective policies, which is consistent with Model 1’s suggestions.128

**Model 3: A Monte-Carlo simulation model of PTSD**

Fingerhut129 developed the third of the three models specific to the present project, using a Monte Carlo simulation approach to predict PTSD prevalence and clinical demand of individuals over five decades after OEF/OIF, following the population over the period 2003–2064. This approach creates representative service members that replicate the deployment schedule, PTSD risk, care-seeking behavior, and treatment of actual service members from the two conflicts. After randomly assigning each virtual service member’s deployment and trauma exposure as well as any possible PTSD onset, recognition, and treatment events over the period of study, the study aggregates each individual’s simulated history to determine population level statistics and trends.

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128 Model 2 can work as a “flight simulator” and is a framework for policy experiments. Installation of the simulation software is not needed. It can be tried at https://goo.gl/Dej8wL.
This study also provides a series of sample policies designed to replicate possible decisions a policymaker could implement to affect the PTSD burden.

The model uses empirically observed distributions of parameters from across the mental health system of care (traumatic exposure, onset, recognition, care seeking, and treatment) within a relatively simple structure to estimate the time dynamics of a series of individual and population parameters. This approach enables policymakers to understand what each of these observed factors—as well as potential changes in their values—means in terms of macro-level parameters of interest (such as population prevalence and clinical usage). This approach also enables researchers to understand how certain unobservable values may change over time and motivate dynamic observation of these factors within a population of interest.

Model 3 manipulates a time-series form of input, and is thus able to provide time-series output. That output takes the form of prevalence estimates from the population perspective, that is, each point in calendar time provides a snapshot of what a real-world population prevalence estimate would look like, given changes over time in deployment, combat, and other similar factors.

The model predicts a peak rate of active-case PTSD of nearly 200,000 by 2016 (17% of the population that deployed to date), declining to 150,000 by 2025 (15% of the population). These predictions reflect best-case assumptions about PTSD recognition, care seeking, and treatment efficacy that represent the most optimistic rates in these factors observed in recent empirical studies. The model predicts a long-term active-case PTSD rate of 19 to 23 percent under assumptions that reflect realistic limitations in these factors. Model 3 further predicts that 29 percent of OEF/OIF combat veterans will experience PTSD at some point in their lives.

In terms of care seeking and treatment, under best-case care-seeking assumptions, Model 3 predicts that 80 percent of the ever-PTSD population (23% of the full OEF/OIF population) will seek treatment at some point in their lives. Under the realistic recognition, care seeking, and treatment assumptions, 48 to 63 percent of the ever-PTSD population (14–18% of the OEF/OIF population) is expected to seek treatment. Under best-case model assumptions, clinical demand peaks at 3 percent of the OEF/OIF population per year in 2010, decreasing to 0.5 percent of the OEF/OIF population in 2025. Under the best-treatment efficacy assumptions (including the most effective treatments currently available and low rates of treatment dropout and PTSD recurrence), 59 percent of the ever-treated population is expected to remit PTSD symptoms successfully and
permanently. Under realistic treatment assumptions, this figure drops to only 21 percent under the realistic treatment assumptions. This decrease is driven for the most part by decreased care seeking (i.e., for follow up treatment) and decreased treatment efficacy probabilities, as well as by an increased dropout probability and increased probability of PTSD recurrence even if treatment was successful.\textsuperscript{130}

**Conclusion**

The three models specific to this project described above are initial efforts to depict in systems contexts our knowledge about PTSD treatment systems structures—both formal and informal, each model embedding the all-important psychological and social processes underlying the PTSD burden in the populations studied. They provide a good first look at the implications various policy and managerial actions could have on future PTSD prevalence, clinical demand, and cost. For those interested in additional details, each model is fully developed in separate refereed published papers and/or technical reports, as cited in this chapter’s footnotes, and in the references.

Going forward, there are two key questions. First, *how might these models be used?* Our suggestion is to view the models as living entities, evolving and improving over time as new knowledge becomes available. Doing so will require professionals in the DoD to take ownership of the models and have timely access to all sorts of model-related information as it becomes available.

Second, *what is the anticipated new knowledge?* It ranges from administrative factors such as multi-year projected budget levels that may constrain system resources to new scientific knowledge about the efficacy of new treatments for PTSD. Within the models, budget constraints may appear only indirectly in terms of total numbers of professionals and facilities available for PTSD treatment. Putting new scientific knowledge to work will require going into the details of the models, the feedback loops, the flow parameters, the response delays, and so on and updating them to be compatible with the new scientific results. New science will, in turn, affect budgets and facilities, up or down. It may be, for instance, that a new treatment protocol is quite costly but demonstrates a very high chance of lifetime cessation of PTSD symptoms after, say, two years of such treatment. A protocol of that sort, if discovered, would be expensive in the short term and very cost effective in

\textsuperscript{130} Note that the results of model 2 and 3 are not directly comparable, as the metrics used were different. Model 3 did not include cost calculations.
the long term. All this shows how scientific knowledge of treatment effects can cause major changes in the DoD resource-intensive systems model.

One final thought: our observation, not only in the DoD but also in the VA and in virtually all large service systems, is that professionals of all types tend to focus on their own work and specialties and not understand the systemic connections through which their actions to improve their own work often have unintended side effects that encumber the system as a whole. One major value of systems models is that they show clearly how everything affects everything else. They demonstrate clearly the hazards of local optimization, showing how even appealing local changes have the potential to be detrimental to the total system. In that sense, then, systems models provide an integrated, unifying framework for key decision makers from throughout the system to discuss their problems intelligently and dispassionately. This attribute may be one of the major arguments in favor of systems models.
Chapter 5: Conclusions

Observations on system similarities and differences

Two steps taken in the military served as the starting points for our work with the Army and Marine Corps summarized in the previous chapters of this report. The first is the 2007 Department of Defense Task Force on Mental Health, which declared that the military’s system for managing psychological health needed to be updated and transformed to meet the current and future needs of members of the Armed Forces and their beneficiaries. The second is the Quadruple Aim (introduced in chapter 1), developed by the Military Health System leadership to specify the multiple objectives the MHS is expected to pursue: improved readiness, better health, better care, and lower costs.

As we have documented, both the Army and the Marine Corps have made enormous progress in transforming their psychological health services to address the goals embodied in the Quadruple Aim. Still, however, both Services face significant challenges to realizing and measuring results against these multiple objectives. One overriding observation comes through as we look across the specific research carried out with our Army and Marine Corps partners: the Services have taken different paths in designing their systems to achieve the Quadruple Aim. For example, the Army and Marine Corps (the Services we studied), as well as the Navy and Air Force, each have their own definitions of medical readiness, and their own Service-specific systems for capturing medical readiness. There is no explicit military-wide definition of what exactly constitutes better health or better care. The definition of lower costs depends on the specific circumstances of each aspect of care. Hence, at best it is unclear how the psychological health care systems developed to date within the Services enable achievement of the Quadruple Aim.

In this concluding chapter, we look across the two Services and to the DoD’s overall Military Health System to take stock of where these systems are in their design and implementation processes and frame our conclusions in terms of key issues that deserve focused attention at all levels of the military’s psychological health system.

Complexity in funding and structural differences have Service-level design implications

One source of complexity of the psychological health system is in its funding and policymaking. Funding and policy direction related to psychological health come from three sources within the DoD. The Office of the Secretary of Defense provides policy guidance and funding for the Family
Advocacy, Military Family Life Counselors, and Military One Source (which provides non-clinical counseling through the TRICARE network). The Defense Health Program provides funding and policy direction for the military treatment facilities in the Army’s Behavioral Health System of Care and in Navy Medicine, which serves the Marine Corps. Service-specific funds support both medical and non-medical care. The means of funding and providing overall policy direction to the Military Health System make development of a single or common design difficult.

In addition, there are challenging structural differences across the different Services, with implications from the perspectives of the political and cultural lenses introduced in chapter 1. It is therefore not surprising that different paths were taken. Figure 5-1 illustrates the structural reporting relationships for installation-level psychological health services in the combined Navy/Marine Corps and the Army systems of care. The diagrams are drawn to be as similar as possible to highlight some important differences that have major political and cultural implications.

![Structural reporting relationships, FY2010-FY 2015](image.png)

**Figure 5-1: Psychological Health Organizational Structure Differences between the Army and Marine Corps**

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131 Note that for both services, TRICARE purchased case, military family life counselors, and Military OneSource are external.
A brief comparison of the structures for both the Marine Corps and Army shown in figure 5-1 will put our conclusions that follow into sharper context. MC Community Services is a Marine Corps-controlled set of installation-based services, including Marine & Family Programs. It is part of Morale, Welfare and Recreation. Again, however, the Marine Corps does not have its own health care delivery organization; all doctors and medical personnel are from the Navy, and even when embedded with Marine Corps units or on Marine Corps installations they continue to report professionally to Navy Medicine, which is commanded by the Navy Surgeon General. Marine Corps Health Services is a headquarters organization led by The Medical Officer of the Marines, who is a Navy doctor and one-star admiral. This organization advises the Commandant and makes policy recommendations, enforces policies, and performs provider credentialing/privileging of Navy medical personnel serving Marines. It has no installation-level personnel.

The complex set of reporting relationships among Navy medical staff and Marines has multiple cultural implications, as the Marine Corps and Navy have different mission philosophies, operating missions, organizational structures, and, as a result, very different military service cultures—all of which increase the potential for system disconnects or breakdowns in coordination across these organizational boundaries. On Marine Corps bases, there is also a cultural and political disconnect between embedded providers and those in installation hospitals and clinics, which can be seen in the expressed lack of understanding of each group’s priorities and goals, lack of shared interests in terms of reporting relationships, and thus potential disagreement on how to care for certain complex cases.

The challenges of the Marine Corps reporting structure are compounded by the fact that there are no obvious structural or political mechanisms (except at the highest levels inside the Department of the Navy) to correct imbalances that may occur between the supply of medical providers and the demand for services (which happened as Marines were deployed extensively during the post-9/11 wars). This is one of the limitations to what the Marine Corps can do to address Quadruple Aim objectives directly.

The Army psychological health care structure is hierarchical and complex, but overall simpler than the Marine Corps/Navy. One leader, the Army Surgeon General (who also serves as the commander of Army Medical Command), is responsible for managing all health care service delivery. Care providers assigned to non-medical units are only authorized to provide clinical care in
Joint Commission certified facilities, which are owned by Medical Command. Memorandums of Understanding exist at the installation and command levels.

Given these complexities, both the Army and the Marine Corps are making progress along the paths they have chosen to achieve the Quadruple Aim in their psychological health systems. In 2010, the Army published a campaign plan for establishing its Behavioral System of Care. In the same year, the Marine Corps Commandant’s Planning Guidance included a task to “integrate Behavioral Health efforts by presenting recommendations on how best to integrate more fully Behavioral Health programs/issues within the Marine Corps.”

*Psychological Health System Design differences: scope, orientation, and design maturity*

While the pressure to address the need for change was similar, and there is no disagreement on design goals such as developing a consistent, patient-centered experience across installations, an increase in care capacity, a focus in engaging commanders, and an orientation that promotes recovery to increase unit readiness levels, the Service-related differences highlighted above may help explain three major design differences between the Army and Marine Corps systems: in the scope of design, orientation of design, and maturity of the design and its implementation.

By early 2016, the Army had designed a standardized, integrated delivery system for clinical psychological health services and was making progress towards full implementation across the entire Service. This implementation included a comprehensive performance measurement system geared towards Army-level population health monitoring, installation-level practice management, and care team-level clinical decision support (see chapter 2). Meanwhile, the Marine Corps had signed an MOU in late 2013 with the Navy that is a partial blueprint towards a system of care; had developed the goal of a comprehensive psychological health system incorporating unit-based prevention activities, community-based care, and Navy-provided medical care; and had undertaken multiple local innovations in applying principles of system coordination and governance that point the way towards a potential system design (see chapter 3).

In terms of scope, the Army focused on building an Army-wide integrated delivery system from a loose collection of individual military treatment facilities. This required developing a standard

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psychological health architecture to consolidate the number of clinical programs from 212 to 11. The new design established a patient-centered, team-based care approach to ensure coordinated care and provide visibility into the flow of beneficiaries within the system of care. This occurred in parallel with a larger Army effort run by the Army G1 focused on resilience and prevention. The Marine Corps scope is broader, emphasizing the importance of prevention much more strongly and therefore explicitly including prevention efforts that enhance Marine and unit readiness into its vision of a comprehensive psychological health system, along with a vision for improved clinical care.

The Army’s orientation of its psychological health system is driven by span of control and the need to provide integrated psychological health care services from within the medical-centric system (primary care, Embedded Behavioral Health clinic, or hospital) looking to the larger Army community. In contrast, the Marine Corps, with medical services provided by the Navy, centers on a more community/unit-centric perspective, looking to medical care provided by the Navy.

The Army has been working since 2010 to design and implement its system, with dedicated resources, policy changes, and implementation processes. It has benefited from having some policies in place to allow for establishing a new structure. Since the 2010 Commandant’s Planning Guidance, the Marine Corps has worked with the Navy to develop and implement the MOU and has created local innovations, but had not yet developed a design process that incorporates all stakeholders in the necessary negotiations. That process is now getting underway.

In terms of specific design goals and mechanisms the Army used to achieve them, the Army designed its clinical Behavioral Health System of Care to be an Army-wide integrated delivery system in which each installation has a local care system implementation that is:

- Clinically coherent—by designing groups of programs, standards of care, access paths, standardization/customization guidelines, roles (e.g., team care);
- Appropriately sized—by developing supply/demand metrics, workload standards;
- Culturally competent—by training civilian providers (in both direct and purchased care), direct/purchased care case management, treatment plan meetings, visibility on the occupational/deployment environment, care coordination meetings within teams;
- Recovery oriented—by managing stigma and malingering through education and change management;
- Operationally responsive—by designing more effective command/provider relationships, PCS.
and deployment transition management processes; and

- With a performance management system that enables inspection of care processes and care outcomes and drives quality improvement efforts by providers, installations, and Army overall.

The Marine Corps design is less mature and explicit. It has to date been much more installation-based, with local innovations now being shared across installations and the importance of coordination to manage the inherent structural, political, and cultural complexities increasingly being recognized. Policy guidance, such as the MOU, is negotiated and clarified over time. At present, there is increasing work being done by both the Marine Corps and Navy Medicine to take a broader system design view and work out how to incorporate both top-down and local efforts to create a balance between standard elements and local variation appropriate to the Marine Corps structure, political needs, and culture.

Conclusions

No “one size fits all” system is likely to serve individual Soldiers or Marines and families adequately. At the same time, there are some overarching common needs and significant opportunities for learning across the Services; these are outlined below. We do not suggest or propose that a single system be implemented across the Services; instead, the conclusions and recommendations offered here seek to pose the issues policymakers at the various levels—DoD, the Military Health System, the individual Services, and the installations within the Services—need to address as they work together to continue defining, evaluating, and improving the delivery of psychological health care to military personnel, veterans, and their families.

Our first conclusions relate to the Services level.

1. **While many aspects of system design can be consistent across Services, governance requirements will vary.** Because of the complexity of the Navy/Marine Corps psychological health system, a stronger set of explicit governance mechanisms is needed than the reporting structures and linkages provided in the Army’s design. This governance system must be negotiated between Navy medicine and Marine Corps leaders, with agreed-upon and transparent metrics and with explicit decision processes and clear accountabilities. These negotiation requirements also illustrate the importance of political lens issues such as differences in power and interests across the different parties. In addition, Navy and Marine Corps leaders must pay even more attention to cultural differences between the two Services as they manage the
implementation of their joint governance and psychological health delivery system. That said, the MOU is a partial design solution for the Marine Corps/Navy system. However, it does not address deep systemic problems such as the degree of standardization versus customization appropriate for the variations observed at Marine Corps installations, nor does it deal with the cultural differences between Marines and Sailors.

2. The relative maturity of the Army implementation provides potential learning opportunities for the other Services, both in what works well and in how to overcome implementation challenges. The Army’s success using a single point of contact strategy to create effective Command-Provider relationships at site Alpha is a particularly clear example of such lessons.

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. Given the complexity of its system, the need for coordination across programs and Services is much greater in the Marine Corps than in the other Services. The system the Marine Corps and Navy have created to date includes coordination mechanisms across a broader range of psychological health services than just the clinical direct care system, and explicitly incorporates program-level coordination as well as inter-organizational coordination and governance. The other Services can learn from these innovations and adapt them to build a truly comprehensive and coordinated system that reaches beyond direct clinical care to incorporate prevention and community 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 the four dimensions of the Quadruple Aim or track progress toward achieving it.

Our next conclusions are more general, and apply at the DoD level.

1. Without active attention and performance measurement, systems diverge and degrade. We saw this divergence in both the Army and Marine Corps installation-level systems. This attention should include change management, negotiation, and adaptation to new circumstances. We also found local innovations in our site visits that could be adapted to improve the overall system. Our findings, as well as evidence from civilian system development, suggest that all the Services
can and should develop a system design that includes transparent performance metrics to support system management and innovation, learn from local experiments and innovations, and make explicit decisions about system-wide standards and useful local implementation variations. This work requires structural change, political negotiation across shared and distinct interests, and explicit efforts to build trust and understand important cultural similarities and differences using a wide variety of venues for working together at all levels.

2. **However many systems exist, the variations across them provide opportunities for learning.** While we observed examples of such learning and adaptation among leaders and across installations within both the Army and Marine Corps, it is not yet engrained into the health care systems of either Service. Given the significant amount of innovation being introduced in different locations, it would be worthwhile to develop a robust learning culture and processes. Opportunities for learning must be explicitly designed into a system for it to be sustainable, especially in a high-turnover system such as the military.

3. **Any system design must pay careful attention to transitions; major challenges for the military lie in the transition of active-duty personnel to post-military status.** Transitions are common in all health care: these include inpatient/outpatient stepdown care and emergency department discharges. However, some transitions are unique to the military, and any effective system of care must include coordination mechanisms or other design features to manage them well and minimize gaps in care, which are key factors when psychological health treatment fails. Military-specific transitions include transitions between direct care and purchased care, between garrison and deployment, and from one installation to another. However, the most significant military-related transition is between active-duty and civilian status, whether as veteran, reservist, or National Guard member. While each Service is aware of the challenges associated with this transition and is taking steps to address it, much more attention is needed—as the simulation modeling in chapter 4 shows. It is also the transition responsible for the bulk of future costs of providing psychological health services to today’s military service members. In short, the fact that DoD no longer provides care for people does not mean their problems are solved; they may likely have just moved to another system.

4. **Our evidence shows that the extent of IT support of all types in military psychological health systems across the Services lags civilian systems.** Many of the disconnects observed in both the Army and Marine Corps systems occur as part of transitions. Providing effective and
well-coordinated continuity of care across these boundaries and movements would benefit from integrated IT support for coordination, workflow management, and staffing planning. Such IT systems exist in civilian contexts, and some appear to better support coordination than the current systems we have seen in our work for DoD, especially in our Marine Corps visits. The examples range from homegrown systems at Massachusetts General Hospital (now being superseded by an EPIC-based system) as well as a demonstration of a system used in Finland and Denmark that is user-friendly, includes strong and secure mobile connectivity, and adopts a patient-centered perspective (e.g., patients in most cases can control who has access to what information about them). While the Army’s performance management design is an excellent step forward, we suggest that the military look more closely at civilian IT-based process and measurement systems being developed, and consider adapting these innovations to the military context. A Service-member-centric, mobile system would also simplify the transition to the VA or civilian providers once a service member leaves the military. Of course, any IT system chosen must be carefully integrated with existing infrastructure, as well as adapted to Service-specific cultural and political realities.

5. Performance management should be incorporated in all design, implementation, and change efforts. For example, while data exist for Navy medical care provided to Marines, we have not been able to obtain evidence that these data are used for performance management in the Marine Corps. There appears to be no comprehensive measurement system that provides Marine Corps leaders visibility into the psychological health system and the extent of the problems. As a result, no one really knows the extent of the problems or the effects of the innovations that have been observed in the Marine Corps. The Army’s design is a good first step for the Marine Corps and Navy to collaborate in asking what they will need to measure, how to measure it, and how to implement changes based on measurement results.

Limitations of our research

- Readiness was not explicitly included in our research scope, but is an important aspect of psychological health in the military. Readiness is more difficult to define than health and even harder to measure. Still, the Marine Corps explicitly recognizes the importance of prevention work on readiness, and the Army implicitly recognizes prevention with its Ready and Resilient Campaign, which at present is independent of its psychological health system of care. The Quadruple Aim also includes readiness as one of the four goals the military health system should
support. Finally, evidence-based civilian innovations are beginning to provide potential learnings for the military in prevention as well.

- Although we received excellent cooperation from all our partners, our knowledge of the current Marine Corps system is incomplete. We did not have sufficient time to engage line officials regarding the changes from the Memorandum of Understanding at their installations. To understand the systemic design needs sufficiently would require additional interviews and observation, as well as exploration of installation-level quantitative data collection and use.

- We did not have the resources to analyze the system the Navy uses for its own personnel, nor did we explore the Air Force’s system. These two systems are structured differently from the Marine Corps and Army systems, and so we expect the political and cultural implications to vary as well.

- At many installations, almost all family care is provided off base (through TRICARE) or through DoD-wide confidential programs such as the Military Family Life Consultants or OneSource. Beyond the out-in-town provider interviews that were part of our Marine Corps research (see chapter 3), we did not focus explicitly on the families of active-duty Service members, as the system for family care is quite different from that for active-duty Service members. However, the importance of families’ health to Service-member readiness is undisputed, and so family care deserves additional study.

- While the Army in particular is making accounting and other changes to support systemic measurement and improvement, as well as outcome tracking, we did not have sufficient data for the Marine Corps to do a similar analysis.

**Final thoughts**

Throughout this research, we observed an ongoing tension between creating a single DoD-wide model for psychological health care delivery and the need to tailor each system to the mission, culture, and local specifics of each Service. Such tension is natural. Our overall recommendations will help mitigate it: ongoing governance that includes the many organizations and other stakeholders at all levels; measurement to support evidence-based design efforts and evaluate the system from multiple perspectives; and attention to mechanisms that support learning from innovations in all the Services. Building a comprehensive, coordinated and robust military psychological health system is work in process. Implementing these recommendations could, over
time, help simplify a complex system and support realignment of limited resources where they are needed most.

As we conclude this research on the DoD’s efforts to address the problems documented in the 2007 Task Force Report, great credit is due to the men and women who have applied their talents and knowledge to bring a better design to their psychological health system. The DoD, perhaps more than ever, is embracing the concept that a healthy mind is as important to readiness as a fit body, and the focus of this research project was on active-duty personnel, and to a lesser extent their family members.

We cannot stress enough, however, the importance of attending to the ongoing psychological health needs of military personnel and their families as they move away from DoD responsibility into veteran, Reservist, and/or civilian settings. In fact, the true boundary of the system is not the Military Health System, or even DoD. The need for individual care extends to, and the costs and benefits of system change are distributed across, the Veterans Administration and civilian services as well. Drawing too narrow a boundary could result in innovations that reduce costs or generate benefits for the military Services but forego innovations that reduce costs or increase lifetime benefits for service members and the system overall. This is why it is so important to focus on handoffs and disconnects and to build links. The quality of the handoffs between interfaces in all health settings is known to have substantial effects on health outcomes. For those who serve in the military, how well these handoffs are coordinated and how effectively follow-up care is provided over the course of their post-military careers will have substantial effects on their quality of life, their longevity, the contributions they make to their communities—and on the costs and benefits seen by society. A systems perspective, in spite of its inherent complexity, provides an unprecedented opportunity to improve the health and wellbeing of not just care recipients, but also their families, communities and society overall.
Appendix 1: Project outputs

Working papers can be found on the PTSI project website at: http://hsi.mit.edu/ptsi.

Published articles and book chapters:


Papers and book chapters under review:


Working papers and reports submitted to DoD sponsors (MRMC, Army, USMC)

Theses and Dissertations


# Appendix 2: Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACA</td>
<td>Affordable Care Act</td>
</tr>
<tr>
<td>ACMC</td>
<td>Assistant Commandant of the Marine Corps</td>
</tr>
<tr>
<td>ACO</td>
<td>Accountable Care Organization</td>
</tr>
<tr>
<td>ADM</td>
<td>Admiral</td>
</tr>
<tr>
<td>AHC</td>
<td>Accountable Health Community</td>
</tr>
<tr>
<td>ASAM</td>
<td>Automated Staffing Assessment Model (Army)</td>
</tr>
<tr>
<td>BG</td>
<td>Brigadier General</td>
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<tr>
<td>BH</td>
<td>Behavioral Health</td>
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<tr>
<td>BHDP</td>
<td>Behavioral Health Data Portal</td>
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<tr>
<td>BHO</td>
<td>Behavioral Health Officer</td>
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<tr>
<td>BHSL</td>
<td>Behavioral Health Service Line</td>
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<tr>
<td>BHSOC</td>
<td>Behavioral Health System of Care</td>
</tr>
<tr>
<td>Blue</td>
<td>Navy Health Care providers based in MTFs and clinics</td>
</tr>
<tr>
<td>CAPT</td>
<td>Captain (Navy)</td>
</tr>
<tr>
<td>CART</td>
<td>Capacity Assessment and Report Tool</td>
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<tr>
<td>CMMI</td>
<td>Center for Medicare and Medicaid Innovation</td>
</tr>
<tr>
<td>CDR</td>
<td>Commander</td>
</tr>
<tr>
<td>CMS</td>
<td>Center for Medicare and Medicaid Services</td>
</tr>
<tr>
<td>COL</td>
<td>Colonel</td>
</tr>
<tr>
<td>COSC</td>
<td>Combat Operational Stress Control</td>
</tr>
<tr>
<td>DMT</td>
<td>Distribution Matrix Tool (Army)</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defense</td>
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<tr>
<td>DoDD</td>
<td>DoD Directive (policy document)</td>
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<tr>
<td>DODI</td>
<td>DoD Instruction (policy document)</td>
</tr>
<tr>
<td>DPH</td>
<td>Director for Psychological Health</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>EBH</td>
<td>Embedded Behavioral Health</td>
</tr>
<tr>
<td>ER</td>
<td>Emergency Room</td>
</tr>
<tr>
<td>FAP</td>
<td>Family Advocacy Program</td>
</tr>
<tr>
<td>FRAGO</td>
<td>Fragmentary Order</td>
</tr>
<tr>
<td>FTE</td>
<td>Full-Time Employee</td>
</tr>
<tr>
<td>FY</td>
<td>Fiscal year (For DoD: Oct. 1 to Sept. 30)</td>
</tr>
<tr>
<td>G1</td>
<td>Office of the Deputy Chief of Staff for Personnel (Army)</td>
</tr>
<tr>
<td>GAO</td>
<td>Government Accountability Office</td>
</tr>
<tr>
<td>GEN</td>
<td>General</td>
</tr>
<tr>
<td>Green</td>
<td>Navy Health Care providers embedded in Marine units (e.g. OSCAR providers)</td>
</tr>
<tr>
<td>HEDIS</td>
<td>Healthcare Effectiveness Data and Information Set</td>
</tr>
<tr>
<td>HHS</td>
<td>Dept. of Health and Human Services</td>
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<tr>
<td>HIPAA</td>
<td>Health Insurance Portability and Accountability Act</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
<td>HPSA</td>
<td>Mental Health Care Health Professional Shortage Areas</td>
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<tr>
<td>HPSP</td>
<td>The Health Professions Scholarship Program</td>
</tr>
<tr>
<td>I MEF</td>
<td>1st Marine Expeditionary Force (pronounced ‘one mef’)</td>
</tr>
<tr>
<td>IBHC</td>
<td>Integrated Behavioral Health Consultant (provides PH care in MCMH)</td>
</tr>
<tr>
<td>IDPH</td>
<td>Installation Director for Psychological Health</td>
</tr>
<tr>
<td>II MEF</td>
<td>2nd Marine Expeditionary Force (pronounced ‘two mef’)</td>
</tr>
<tr>
<td>IOM</td>
<td>Institute of Medicine</td>
</tr>
<tr>
<td>IRIS-BH</td>
<td>Integrated Resourcing and Incentive System for Behavioral Health</td>
</tr>
<tr>
<td>LCSW</td>
<td>Licensed Clinical Social Worker</td>
</tr>
<tr>
<td>LTC</td>
<td>Lieutenant Colonel</td>
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<tr>
<td>LTG</td>
<td>Lieutenant General</td>
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<tr>
<td>M2</td>
<td>Military Health System Management Analysis and Report Tool</td>
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<tr>
<td>MAJ</td>
<td>Major</td>
</tr>
<tr>
<td>MC</td>
<td>Marine Corps</td>
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<tr>
<td>MCAS</td>
<td>Marine Corps Air Station</td>
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<tr>
<td>MCMH</td>
<td>Marine-Centered Medical Home</td>
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<tr>
<td>MDD</td>
<td>Major Depressive Disorder</td>
</tr>
<tr>
<td>MDTP</td>
<td>Multi-Disciplinary Treatment Planning</td>
</tr>
<tr>
<td>MEDCOM</td>
<td>Medical Command</td>
</tr>
<tr>
<td>MFP</td>
<td>Marine and Family Programs (part of MC Community Services)</td>
</tr>
<tr>
<td>MG</td>
<td>Major General</td>
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<tr>
<td>MHAT</td>
<td>Mental Health Advisory Team</td>
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<tr>
<td>MHS</td>
<td>Military Health System</td>
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<tr>
<td>MIP</td>
<td>Marine Intercept Program (for suicide prevention)</td>
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<tr>
<td>MIT</td>
<td>Massachusetts Institute of Technology</td>
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<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>MTF</td>
<td>Military Treatment Facility</td>
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<tr>
<td>Multi-D</td>
<td>Multi-Disciplinary Behavioral Health Services</td>
</tr>
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<td>OEF</td>
<td>Operation Enduring Freedom</td>
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<td>OIF</td>
<td>Operation Iraqi Freedom</td>
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<tr>
<td>OPORD</td>
<td>Operations Order</td>
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<tr>
<td>OSCAR</td>
<td>Operational Stress Control and Readiness</td>
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<tr>
<td>OTSG</td>
<td>Office of the Surgeon General</td>
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<tr>
<td>PCMH</td>
<td>Patient-Centered Medical Home</td>
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<tr>
<td>PCS</td>
<td>Permanent Change of Station</td>
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<tr>
<td>PH</td>
<td>Psychological Health</td>
</tr>
<tr>
<td>PHRAMS</td>
<td>Psychological Health Risk Adjusted Model for Staffing</td>
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<tr>
<td>PTSD</td>
<td>Post-Traumatic Stress Disorder</td>
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<tr>
<td>PTSI</td>
<td>Post-Traumatic Stress Innovations (this project)</td>
</tr>
<tr>
<td>RADM</td>
<td>Rear Admiral (upper half)</td>
</tr>
<tr>
<td>RDML</td>
<td>Rear Admiral (lower half)</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>ROM</td>
<td>Routine Outcome Monitoring</td>
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<tr>
<td>SAMHSA</td>
<td>Substance Abuse and Mental Health Services Administration</td>
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<td>SCMH</td>
<td>Soldier-Centered Medical Home</td>
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<tr>
<td>SIM</td>
<td>State Innovations Model (via CMMI)</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
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<tr>
<td>TBH</td>
<td>Telebehavioral Health</td>
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<tr>
<td>TBI</td>
<td>Traumatic Brain Injury</td>
</tr>
<tr>
<td>TMO</td>
<td>The Medical Officer (of the Marine Corps)</td>
</tr>
<tr>
<td>USA</td>
<td>US Army</td>
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<td>US Air Force</td>
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<td>US Marine Corps</td>
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<td>VA</td>
<td>Veterans Administration</td>
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<td>VADM</td>
<td>Vice Admiral</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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