Invisible Wounds of War

Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery

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CHAPTER EIGHT

Treating the Invisible Wounds of War: Conclusions and Recommendations

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Throughout its history, the United States has striven to recruit, prepare, and sustain an armed force with the capacity and capability to defend the nation. The Department of Defense (DoD), through the Secretary of Defense and the Services, bears the responsibility for ensuring that the force is ready and deployable to conduct and support military operations.

The nation has committed not only to compensating military servicemembers for their duty but also to addressing and providing compensation, benefits, and medical care for any Service-connected injuries and disabilities. For those who suffer injuries but remain on active duty, benefits and medical care are typically provided through DoD, which remains their employer. Veterans who have left the military may be eligible for health care and other benefits (disability, vocational training), as well as memorial and burial services, through the Department of Veterans Affairs (VA).

Safeguarding mental health is an integral part of the national responsibility to recruit, prepare, and sustain a military force and to address Service-connected injuries and disabilities. Safeguarding mental health is also critical for compensating and honoring those who have served the nation. The Departments of Defense and Veterans Affairs are primarily responsible for these critical tasks; however, other federal agencies (e.g., the Department of Labor) and states also play important roles in ensuring that the military population is not only ready as a national asset but also valued as a national priority.[1] Our research has focused mainly on services available through DoD and the VA; however, where applicable, we also refer to state programs and other resources.

[1] In March 2007, the President not only tasked the Secretaries of Defense and Veterans Affairs with making improvements to address the systemic failures in caring for the wounded, he also created an interagency task force that also included, at a minimum, the Secretaries of Labor, Health and Human Services, Housing and Urban Development, and Education; the Director of the Office of Management and Budget; and the Administrator of the Small Business Administration ("Executive Order Establishing Task Force; Executive Order 13426—Establishing a Commission on Care for America's Returning Wounded Warriors and a Task Force on Returning Global War on Terror Heroes," 2007, Appendix A). Indeed, the obligation for care of veterans does not stop at the federal level. Each of the states has a division of veterans' affairs, and since the inception of the Global

With the United States still involved in military operations in Afghanistan and Iraq, psychological and cognitive injuries among those deployed in support of Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) are of growing concern. Most servicemembers return home from deployment without problems and successfully readjust to ongoing military employment or work in civilian settings. But others return with mental health conditions, such as post-traumatic stress disorder (PTSD) or major depression, and some have suffered a traumatic brain injury (TBI), such as a concussion, leaving a portion of sufferers with cognitive impairments.

Despite widespread policy interest and a firm commitment from the Departments of Defense and Veterans Affairs to address these injuries, fundamental gaps remain in our knowledge about the mental health and cognitive needs of U.S. servicemembers returning from Afghanistan and Iraq, the adequacy of the care system available to meet those needs, the experience of servicemembers who are in need of treatment, and the factors affecting whether injured servicemembers and veterans seek care. RAND undertook this comprehensive study to address these gaps and make these conditions and their consequences visible.

We focused on three major conditions—post-traumatic stress disorder, major depression, and traumatic brain injury—because there are obvious mechanisms that link each of these conditions to specific experiences in war. Unfortunately, these conditions are often invisible to the eye. Unlike physical wounds of war that maim or disfigure, these conditions remain invisible to other servicemembers, family members, and society in general. All three conditions affect mood, thoughts, and behavior, yet these conditions often go unrecognized or unacknowledged. In addition, the effects of traumatic brain injury are still poorly understood, leaving a substantial gap in knowledge about the extent of the problem and its effective treatment.

The study was guided by a series of overarching questions:

- **Prevalence:** What is the scope of mental health and cognitive conditions that troops face when returning from deployment to Afghanistan and Iraq?
- **Costs:** What are the costs of these conditions, including treatment costs and costs stemming from lost productivity and other consequences? What are the costs and potential savings associated with different levels of medical care—including proven, evidence-based care; usual care; and no care?
- **The care system:** What are the existing programs and services to meet the health-related needs of servicemembers and veterans with post-traumatic stress disorder, major depression, or traumatic brain injury? What are the gaps in the programs and services? What steps can be taken to close the gaps?

War on Terror, several states have expanded health care access, educational benefits, and job support programs (see the National Governors Association Web site).

To answer these questions, we designed a series of data-collection activities to accomplish four aims:

1. Identify and assess current mental health and cognitive conditions among military servicemembers who served in Afghanistan or Iraq.
2. Identify the short- and long-term consequences of untreated psychological and cognitive injuries (e.g., PTSD, major depression, TBI).
3. Document and assess the availability, accessibility, and capacity of existing programs and services to meet short- and long-term mental health and cognitive needs, as well as brain injuries, in injured servicemembers.
4. Evaluate aids and barriers to seeking care and to using services.

Key Findings

Prevalence of Mental Health Conditions and TBI

- *Most servicemembers return home from war without problems and readjust successfully, but some have significant deployment-related mental health problems.*

To examine the prevalence of PTSD, major depression, and TBI among OEF/OIF veterans, we reviewed the first wave of studies that estimate the extent of these problems among servicemembers deployed to Afghanistan and Iraq. More than a dozen studies described the possible prevalence of PTSD and major depression, but there was very limited information about the extent of cognitive impairments following TBI events. The studies we reviewed and our own data (see Part II) suggest that, although most servicemembers are returning from combat free from any of these conditions, 5 to 15 percent of them may be returning with PTSD, and 2 to 14 percent with major depression. Very little is known about the number who experienced a traumatic brain injury or who are currently suffering from problems related to such an injury. The data are scant at present, and estimates range widely.

Several themes emerge from the currently available literature. Many studies have used common screening tools, facilitating comparisons across studies. But, regardless of the sample, measurement tool, or time of assessment, servicemembers who had been in combat and had been wounded had a heightened risk of having a mental health condition, mostly PTSD. When comparisons are available, servicemembers deployed to Iraq appear to be at higher risk for PTSD than those deployed to Afghanistan. These findings may help to identify which servicemembers will be most at risk for mental health problems upon redeployment, but they offer limited guidance for understanding specific mental health treatment needs among the entire deployed population. Thus, despite many strengths in the studies reviewed, the studies' limitations call for additional data collection within the post-deployed population.

We identified three important data gaps with respect to generalizability, scope, and availability of information on traumatic brain injury in the existing studies of OEF/OIF veterans:

First, these studies relied on surveys of relatively narrow groups (e.g., combat units, active duty units, Army), making it difficult to generalize findings to all deployed servicemembers, since information about other components and Service branches is weaker or nonexistent. Although the Army has accounted for the majority of the ground forces in OEF/OIF, data that generalize to the entire deployed population would help in planning efforts to address the full array of mental health and cognitive conditions post-deployment across Service branches and components.

Second, very limited research examined associations between deployment experiences and subsequent mental health problems—knowledge that is essential if we wish to understand how we can intervene earlier or mitigate the consequences of combat exposure.

Third, there is limited research on the prevalence of TBI and its long-term effects on functioning.

To address some of the gaps in knowledge in the existing prevalence literature, we conducted a telephone survey of 1,965 servicemembers from 24 geographic areas who had been deployed to Afghanistan or Iraq as part of OEF or OIF. The survey was designed to capture a wide range of deployed servicemembers across branches of Service, rank, military occupational specialty, and geographic regions. (Details of our methods and analysis can be found in Part II.)

- *Current rates of exposure to combat trauma and mental health conditions among returning veterans are relatively high.*

Rates of exposure to specific types of combat trauma ranged from 5 to 50 percent, with high levels of exposure reported for many traumatic events. Vicariously experienced traumas (e.g., having a friend who was seriously wounded or killed) were the most frequently mentioned. Direct injuries were reported by 10 to 20 percent of the sample. A substantial number of previously deployed personnel are currently affected[2] by PTSD (14 percent) and major depression (14 percent), or report having experienced a probable TBI (19 percent). However, it is not possible to know from the survey the severity of the TBI or whether there is any ongoing functional impairment from the injury.

Assuming that the prevalence found in this study is representative of the 1.64 million individuals who had been deployed to Afghanistan and Iraq as of October 2007, we estimate that approximately 300,000 individuals currently suffer from PTSD

[2] As defined by presence of symptoms in the previous 30 days for PTSD and in the previous 14 days for depression.

or major depression and that 320,000 veterans may have experienced a probable TBI during deployment. About one-third (31 percent) of those previously deployed have at least one of these three conditions, and about 5 percent report symptoms consistent with PTSD and major depression, as well as reporting a probable TBI.

- *Some groups are at higher risk for these conditions.*

We identified several groups that are at increased risk for current PTSD and major depression. Higher rates of PTSD and major depression are found among Army soldiers and marines, and among servicemembers who are not on active duty (e.g., those in the Reserve Component, as well as those who have been discharged or retired from the military). In addition, enlisted personnel, women, and Hispanics are more likely than their counterparts to meet screening criteria for PTSD and major depression. Finally, individuals with more-lengthy deployments (i.e., 12 to 15 months) and more-extensive exposure to combat trauma are at greater risk of suffering from current PTSD and major depression. Exposure to specific combat traumas was the single-best predictor for both PTSD and major depression. Examination of rates of these conditions within the group of veterans who reported no exposure to combat-related situations showed very low rates (2, 3, and 1 percent for probable PTSD, depression, and TBI, respectively). When we used statistical techniques to control for the effects of different trauma exposure, enlisted personnel, women, Reserve members/National Guard, Hispanics, and older military servicemembers continued to show an increased risk for mental health problems.

Similarly, we found several groups to be at high risk of reporting a probable TBI, particularly soldiers, marines, enlisted servicemembers, and those with extensive combat exposures. Here again, combat exposure was the best predictor of probable TBI.

- *There is a large gap in care for these disorders: The need for treatment is high, but few receive adequate services.*

Our survey also assessed *use of health care* (seeing a physician or other provider) for these three conditions. Servicemembers and veterans with probable PTSD or major depression seek care at about the same rate as the civilian population, and, just as in the civilian population, many of the afflicted individuals were not receiving treatment. Among those who met diagnostic criteria for PTSD or major depression, only 53 percent had seen a physician or mental health provider to seek help for a mental health problem in the past 12 months. Of those who sought medical care, just over half received minimally adequate treatment (see Chapter Four). The gap in care was even higher for TBI: 57 percent of those who reported experiencing a probable TBI were never evaluated by a physician for a brain injury.

Survey respondents identified many barriers that inhibit their getting treatment for mental health problems. In general, respondents were concerned that if they received treatment, it would not be kept confidential and would constrain future job assignments and career advancement. About 45 percent were concerned that drug therapies for mental health problems may have unpleasant side effects, and about one-quarter thought that even good mental health care was not very effective. Logistical barriers to mental health treatment, such as time, money, and access, were mentioned less frequently but may still be important barriers for many individuals. At the same time, it is possible that many servicemembers and veterans do not seek treatment because they may perceive little or no benefit.

These survey data, combined with the results of our literature review, suggest the following conclusions:

- Most published studies of mental health conditions among military servicemembers and veterans to date have systematically excluded or underrepresented individuals who have separated from a Service or serve in the Reserve Component. Yet, our survey found these individuals to be at significantly higher risk for mental health problems than those currently on active duty.
- Major depression is often not considered a combat injury; however, our data suggest that it is highly associated with combat trauma and warrants closer attention.
- About half of individuals with a probable diagnosis of PTSD or major depression had sought help from a health professional, but most did not get minimally adequate treatment (defined as [1] taking a prescribed medication for as long as the doctor wanted and having at least four visits with a doctor or therapist in the past 12 months or [2] having had at least eight visits with a mental health professional in the past 12 months, with visits averaging at least 30 minutes). Thus, by increasing the rate of effective treatment utilization, we can reduce the number of individuals who otherwise would have persistent PTSD or depression.
- Many of the most commonly identified barriers to getting needed mental health treatment could be reduced if servicemembers had access to confidential treatment.
- Access to both medications and psychotherapies is necessary, since many servicemembers and veterans have concerns about the side effects of medications.

We now consider the potential long-term consequences associated with these injuries.

Long-Term Consequences of Mental Health and Cognitive Conditions

- *PTSD, major depression, and TBI can have long-term, cascading consequences.*

Research conducted in both military and civilian populations on the long-term effects of PTSD, depression, or TBI suggests that, unless treated, each of these con-

ditions has implications that are wide-ranging and negative for those afflicted. Thus, the effects of post-combat mental health and cognitive conditions can be compared to ripples spreading outward on a pond. However, whereas ripples diminish over time, the consequences of mental health conditions may grow more severe, especially if left untreated.

An individual with any one of these conditions is more likely to have other psychiatric problems (e.g., substance use) and to attempt suicide. Those afflicted are also more likely to have higher rates of unhealthy behaviors (e.g., smoking, overeating, unsafe sex); higher rates of physical health problems and mortality; a tendency to miss more days of work and report being less productive while at work; and a greater likelihood of being unemployed. Suffering from these conditions can also impair personal relationships, disrupt marriages, aggravate difficulties with parenting, and cause problems in children that extend the costs of combat experiences across generations. There is also a possible connection between having one of these conditions and being homeless (see Chapter Five).

In Chapter Five, we presented a framework to help clarify how a mental health or cognitive condition (i.e., impaired emotional and cognitive functioning) has both short-term and long-term effects. The condition can have immediate consequences for the individual (e.g., additional psychiatric problems, poor health-maintenance behaviors), which themselves accumulate and contribute to additional problems (e.g., with physical health, work performance, and interpersonal relationships). The likelihood that the condition will trigger a negative cascade of consequences over time is greater if the initial symptoms of the condition are more severe and the afflicted individual has other sources of vulnerability (e.g., unstable family relationships, low socioeconomic status [SES], a prior history of psychopathology).

The studies we reviewed support this framework. They consistently show that individuals afflicted with one of these conditions experience worse consequences when they must simultaneously confront other sources of stress. In contrast, other sources of strength (e.g., supportive family relationships, high SES, high education) may serve as buffers, even for those whose symptoms are relatively severe.

The extant literature clearly documents that there are long-term negative repercussions of having these conditions if they remain untreated. Thus, efforts to identify and treat these conditions should be made as early as possible. Early interventions are likely to pay long-term dividends in improved outcomes for years to come; so, it is critical to help servicemembers and veterans seek and receive treatment. The literature also clearly indicates that individuals who have more resources (social, financial, educational) fare better; thus, policies that promote resilience by providing such resources could be as effective as programs that target the symptoms of these conditions directly.

Costs

To understand the long-term consequences of these conditions in economic terms, we developed a microsimulation model. Using data from the literature (which had limited information on specific populations and costs), we estimated the costs associated with mental health conditions (PTSD and major depression) for a hypothetical cohort of military personnel deployed to Afghanistan and Iraq. Then, we calculated the costs across the deployed population, based on an approximation for the whole distribution of the deployed population, using publicly available data on the proportion of those returning from deployment, by rank (see *Medical Surveillance Monthly Report* [2007]).

We defined *costs* in terms of lost productivity, treatment, and suicide attempts and completions, and we estimated costs over a two-year period (see Chapter Six). For each condition, we generated two estimates—one that included the medical costs and the value of lives lost to suicide, and one that excluded such costs. We were unable to estimate the costs associated with homelessness, domestic violence, family strain, and substance abuse, because there are no good data available to create credible dollar figures for these outcomes. However, if figures for these consequences were available, the costs of having these conditions would be higher. Our estimates represent costs incurred within the first two years of returning home from deployment, so they accrue at different times for different personnel. For servicemembers who returned more than two years ago and have not redeployed, these costs have already been incurred. However, these calculations omit costs for servicemembers who may deploy in the future, and they do not include costs associated with chronic or recurring cases that linger beyond two years. More details on the model assumptions and parameters can be found in Part IV (Chapter Six). Below, we briefly summarize the findings from our model, first for PTSD and major depression, then for TBI. All costs for PTSD and depression represent two-year post-deployment costs and are shown in 2007 dollars. Costs for TBI are one-year costs based on documented cases of TBI in 2005, inflated to 2007 dollars.

- *Estimates of the cost of a condition for two years post-deployment range from $5,904 to $25,757 per case for major depression and PTSD.*

Our microsimulation model predicts that two-year post-deployment costs to society resulting from PTSD and major depression for 1.6 million deployed servicemembers could range from $4.0 billion to $6.2 billion, depending on how we account for the costs of lives lost to suicide. For PTSD, average costs per case over two years range from $5,904 to $10,298; for depression, costs range from $15,461 to $25,757; and for PTSD and major depression together, costs range from $12,427 to $16,884. The majority of the costs were due to lost productivity. Because these numbers do not account for future costs that may be incurred if additional personnel deploy and because they are limited to two years following deployment, they underestimate total future costs to society.

- *Provision of proven (evidence-based) care will save money or pay for itself.*

The costs associated with PTSD and major depression are high, but savings can be attained if evidence-based treatments are provided to a higher percentage of the population suffering from these conditions. Providing evidence-based care to every individual with the condition would increase treatment costs over what is now being provided (a mix of no care, usual care, and evidence-based care), but these costs can be offset over time through increased productivity and lower incidence of suicide. Projected cost savings are highest for those with major depression; for those with PTSD or co-morbid PTSD and depression, the finding that evidence-based treatment saves money is sensitive to whether or not we include the cost of lives lost to suicide in our estimates.

Given that costs of problems related to mental health, such as homelessness, domestic violence, family strain, and substance abuse, are not factored into our economic models and would add substantially to the costs of illness, we may have underestimated the amount saved by providing evidence-based care. However, a caveat is that we did not consider additional implementation and outreach costs (over and above the day-to-day costs of care) that might be incurred if DoD and the VA attempted to expand evidence-based treatment beyond their current capacity.

- *Estimates of the cost of mild TBI range from $25,572 to $30,730 per case in 2005 ($27,259 to $32,759 in 2007 dollars); estimates of moderate or severe TBI costs range from $252,251 to $383,221 per case in 2005 ($268,902 to $408,519 in 2007 dollars).*

Given the dearth of literature on TBI-related costs and the effect of treatment on TBI, we conducted a prevalence-based cost-of-illness analysis. Because there is a high level of uncertainty around many of the parameters needed, we developed different assumptions and generated estimates for both a low-cost scenario and a high-cost scenario. We estimated that the cost of deployment-related TBI ranged from $90.6 million to $135.4 million in 2005 ($96.6 to $144.4 million in 2007 dollars), based on a total of 609 diagnosed cases of TBI reported in 2005. On a per-case basis, this translates to a range of from $158,385 in the low-cost scenario to $236,655 in the high-cost scenario, in 2007 dollars. These costs are applicable to servicemembers who have accessed the health care system and received a diagnosis of TBI; they do not reflect costs for all individuals who have met screening criteria for probable TBI.

Costs and cost drivers vary substantially by severity of the injury. The one-year per-case costs for mild TBI range from $27,259 to $32,759 in 2007 dollars. Productivity losses account for 47 to 57 percent of total costs, whereas treatment accounts for 43 to 53 percent in these estimates. Costs are much higher for moderate to severe cases, with per-case costs ranging from $268,902 to $408,519 in 2007 dollars. In moderate-to-severe cases, TBI-related death is the largest cost component (70 to 80 percent of

total costs); productivity losses account for only 8 to 13 percent, and treatment costs, 7 to 10 percent. Suicide, which we consider separately from TBI-related death, can account for up to 12 percent of total costs.

We estimated the total cost of deployment-related TBI by applying an adjusted per-case cost for 2005 to the total number of TBI cases reported in *Serve, Support, Simplify: The Report of the President's Commission on Care for America's Returning Wounded Warriors* (President's Commission on Care for America's Returning Wounded Warriors, 2007, p. 2). From this calculation, we estimated that one-year costs for diagnosed TBI range between $591 million and $910 million. As with the cost estimates for PTSD and major depression, these figures underestimate the total costs that will accrue in the future, both because they are one-year costs and because they do not account for TBI cases that may occur as the conflicts continue.

- *Lost productivity is a key cost driver for major depression, PTSD, and mild TBI.*

To date, other estimates of the costs associated with war have not always included those related to productivity; however, our model demonstrates that reduced productivity is a key cost driver. Thus, future efforts to tally the costs of mental health conditions should consider how the condition affects an individual's productivity (see Chapter Six). Supporting such efforts will require better information about how these conditions affect labor-market outcomes over both the short term and the long term, particularly for PTSD, for which current evidence is scant. Additional data on career labor-force transitions (within DoD and from DoD to civilian jobs) and participation could help refine our cost estimates.

Systems of Care

Our cost estimates and review of the literature suggest that providing care to servicemembers and veterans afflicted with PTSD, major depression, and TBI can help mitigate long-term consequences and offset the costs associated with these conditions. We examined the existing programs to determine whether there were sufficient resources to meet the needs of the afflicted population. We drew on existing documents and descriptions of programs, as well as interviews with key personnel and administrators of such programs within the Departments of Defense and Veterans Affairs. We included information from focus groups that we conducted with military servicemembers to understand their perspective as consumers of these health services. We also drew lessons from the broader general health and mental health services research field to provide a framework for understanding and illuminating both gaps in care and promising approaches for improving access and quality.

We integrated information from all of these sources to identify gaps in access and quality that must be addressed if the nation is to honor its commitment to provide care and support for service-related injuries and disabilities. Chapter Seven of this

monograph provides additional details of our analysis, including a summary of the available information on the efficacy and effectiveness of treatments for PTSD, major depression, and TBI.

Below, we summarize our findings about the systems of care for post-deployment mental health and cognitive conditions. Since mental health conditions and cognitive problems related to TBI are, for the most part, handled in different systems of care, we consider each in turn.

- *Many mental health services are available for active duty personnel, but gaps and barriers are substantial.*

U.S. military personnel have several options when seeking help for mental health problems, including U.S. military chaplains, mental health practitioners embedded in operational units, counseling offered in community service programs, and mental health services provided by Military Treatment Facilities (MTFs) within both specialty mental health and primary care settings. The Department of Defense has also implemented innovations, such as collaborative care models (e.g., RESPECT-Mil) that bring mental health services into primary care settings. Additionally, information and counseling are available through Military OneSource, and a range of health and specialty mental health services is also available from TRICARE civilian network providers.

For active duty personnel and retired military with continued TRICARE coverage, efforts to expand the capacity to treat mental health and cognitive problems are under way (including the hiring and training of additional providers), but significant gaps in access and quality of care remain, owing both to structural aspects of the health care system (availability of providers, wait times, etc.) and to personal and cultural factors that may limit care-seeking.

Improving the efficiency and transparency of the system would address gaps in service use. For example, one strategy would be to reconsider policies that limit the scope of practice for military community-service program counselors so that they can provide evidence-based counseling to those afflicted with PTSD and major depression. Expanding training on evidence-based mental health treatments for these providers could aid early-intervention efforts. At the same time, increased reimbursement rates for TRICARE providers could help to increase the availability of civilian providers.

However, even if adequate capacity to provide high-quality mental health services were provided, policies and cultural issues make servicemembers hesitant to seek care. As noted earlier, many individuals in our survey and also in our focus groups reported concern that using mental health services would diminish their employment and military-career prospects. DoD is undertaking major efforts to overcome cultural and attitudinal barriers to getting help for mental health issues (see Chapter Seven), including providing educational efforts aimed at raising awareness among military leaders and embedding mental health professionals into line units. These initiatives can

help ensure that servicemembers are aware of the benefits of mental health care, but they do not address concerns about negative career consequences. In addition to educational efforts, institutional barriers, such as the required disclosure of use of mental health services, must be addressed if gaps in access and use are to be closed.

To reduce such barriers, DoD should consider providing access to off-the-record, confidential counseling—"safe" counseling. Providing access to "safe" mental health services would require the development of guidelines for command notification; however, the guidelines could be limited and transparent to servicemembers, thereby preserving trust that negative career consequences can be avoided. "Safe" counseling services in garrison could support and supplement mental health providers embedded in units to provide evidence-based psychotherapies for PTSD and major depression and to counsel for a broader range of emotional and situational problems, with confidentiality explicitly ensured and clearly communicated to the servicemember. In addition, it may be possible to harness the powerful buffering effect of social support from peers to help stem or even reverse the development of mental health problems, following recently developed models that engage noncommissioned officers in support of mental health issues in combat zones.

- *Attention to quality of mental health treatment within DoD is needed; the VA offers a promising model.*

Although DoD undertakes significant efforts to monitor quality and consumer satisfaction, it has not developed an infrastructure to routinely measure processes or outcomes of mental health care and has not examined the quality of its usual-care services. Thus, quality in many sectors of the care system is unknown. At the same time, efforts to train providers in evidence-based practices are under way but have not yet been integrated into larger system redesign for sustainability. The VA, which has focused on performance measurement and quality-of-care improvement for over a decade, can provide a model for DoD, particularly in informing efforts within the newly created Defense Center of Excellence for Psychological Health and Traumatic Brain Injury (see Chapter Seven). Quality monitoring for psychotherapy delivered to military personnel and veterans has been particularly lacking, as it is in the civilian sector, and should be addressed.

- *The VA faces challenges in providing access to mental health care for veterans and deactivated Reservists and Guard personnel.*

Because the VA operates within a fixed budget and uses a priority system to guide access, veterans from different eras are competing for treatment and support service programs within a system of limited resources. In addition, younger veterans report that they feel uncomfortable and out of place in VA facilities, in which many patients are much older and have different types of health care issues. This disconnect suggests

a need for some VA facilities to make special efforts to accommodate the younger generation of veterans. Geographical dispersion of individuals limits access as well. New approaches to reaching Afghanistan and Iraq veterans are likely to involve both marketing and system redesign. Additional data and analyses will be needed to inform capacity requirements, in addition to understanding the need for services (as might be accomplished with prevalence studies) and types of services offered within each system of care. For example, additional analyses of the number of trained providers available and current utilization at the local level are needed.

In addition, OEF/OIF veterans will need better access to mental health services beyond the VA health care system. Further expansion of Vet Centers (VA-run centers that offer benefits and supportive counseling) could broaden access, particularly for veterans in underserved areas. Networks of community-based mental health specialists (available through private, employer-based insurance, including TRICARE) may also provide an important opportunity to build capacity. However, taking advantage of this opportunity will require critical examination of the TRICARE reimbursement rates, which may limit network participation. Determining the best option for expanding services will require additional study. Furthermore, the quality of these services would need to be ensured.

- *The VA is a leader in assessment of health care quality and improvement, but Vet Centers and community providers, including those within TRICARE, still need evaluation.*

A congressionally mandated and independent study of the VA's mental health care services is under way and will be released soon.[3] It is likely to point to areas in which the VA can serve as a model of quality improvement for DoD and the nation, suggesting areas to target for future quality-improvement efforts. Approaches to assessment include examining administrative and claims data and collecting consumer-satisfaction survey data related to mental health services within the TRICARE network. But performance monitoring among general community providers is difficult. Approaches to ensure quality of services and to inform consumers about beneficial services would be helpful.

- *The science of treating traumatic brain injury is young.*

In the newly emerging field of medical care for combat-related TBI, a key gap is knowledge. Continued research on what treatment and rehabilitation are most effec-

[3] See Department of Veterans Affairs (2006). This evaluation should fulfill the ongoing requirements of P.L. 103-62, the Government Performance and Results Act of 1993; Title 38, §527, Evaluation and Data Collection; and 38 CFR §1.15, Standards for Program Evaluation.

tive is urgently needed, as is information on how to identify those in need of care and the level of their impairments.

- *The difficulty of identifying those with lasting effects from mild TBI hampers care.*

For mild TBI, in which cognitive deficits are less common and more transient (see Chapters One and Seven), gaps in access to services arise from poor documentation of blast exposure and failure to identify individuals with probable TBI, including inconsistent screening practices, personal attitudes and military cultural factors, the overlap of symptoms with acute stress reactions and PTSD symptoms, and possible delayed emergence of symptoms. Materials (e.g., fact sheets, resource guides) developed for more-severe brain injury can misguide or unnecessarily stigmatize or alarm those with mild TBI.

The Defense Veterans Brain Injury Center, now reorganized under the Defense Center of Excellence, is increasing its outreach and training to meet the need for more-accurate materials. Strategies to better educate the military community, service providers, and families about mild TBI will complement screening efforts.

- *The complex health care needs of military servicemembers with more-severe injuries require coordination of services.*

Those severely wounded in OEF/OIF face different kinds of gaps in care. Their injuries typically involve complex needs for treatment, and supportive and rehabilitative services, and these needs change over time. Particularly problematic, and the focus of joint VA and DoD efforts, are transitions from the DoD acute care health system to the specialized Polytrauma Services within the VA health care system.

Work is under way to address these issues. However, principles of patient-centered care and collaborative care could appropriately be applied to the complex needs of TBI patients. Widely applied and evaluated in civilian-sector primary care, these approaches organize care around patients' specific needs and preferences. They are particularly relevant for moderate to severe TBI, for which coordination of care to ensure access to needed services is also critical for more seriously injured personnel.

The VA has announced plans to rapidly hire and expand capacity to provide care coordination, and over the past year the Defense Veterans Brain Injury Center implemented a TBI-specific care coordinator system for those who have been medically evacuated from a war zone. Evaluating the effectiveness of care coordinators will be important. Key challenges to expanding DoD and VA capacity to meet the needs of those with TBI are hiring qualified staff and providing appropriate training in and supervision and oversight of their work. The training of recovery coordinators will be critical, as will training for those providing evaluation, medical, and rehabilitative services.

Strengths and Limitations

Both the strengths and limitations of our study approach should be considered alongside the recommendations stemming from this work. Our *survey* was conducted independently and was population-based; thus, it provides estimates not previously available, obtained from populations not included in prior reports. Because it was conducted independently of the military and VA, it may contain a smaller potential for bias in reporting than do surveys that are linked to an individual in military records. However, the telephone-survey methodology limited respondents to those with a land-based telephone and those who lived in proximity to a military base. We used standard statistical methods to partially account for these limitations (see Chapter Four). Nevertheless, certain groups are underrepresented in our sample, and thus the overall results may not accurately generalize to the entire deployed population.

Our *estimation of costs* for PTSD and major depression was based on a state-of-the-art microsimulation model, adding valuable information to other cost estimates. However, scant research was available for some cost-estimate parameters associated with mental health conditions, and we were unable to use the modeling approach for TBI because of the absence of relevant research. These cost estimates are unavoidably imprecise, owing to uncertainty in estimates of prevalence rates, individuals' willingness to seek care, treatment efficacy, the effect of mental health conditions on productivity, and other estimates used to parameterize our model. Nevertheless, all of the parameters used in our model are grounded on prior literature, and we have done our best to be conservative in generating the cost predictions.

Finally, our *review of the programs* now available to OEF/OIF veterans applied a health services model, bringing to bear a focus on access and quality that has been missing from examinations of these systems of care. In our analyses, we focused on three specific mental health and cognitive conditions that affect servicemembers and veterans post-deployment, the costs associated with addressing those conditions, and the services available post-deployment to assist in recovery. The delivery of post-deployment services is part of a larger continuum of ensuring the health of servicemembers, which includes pre-deployment screenings, education, and trainings about the potential effects of combat and deployment. It was beyond the scope of this study to fully assess the adequacy of pre-deployment screenings and training/education programs. However, these programs do require more in-depth analyses to determine their effectiveness. Our findings offer guidance at the system level for improving post-deployment services for those in need following deployment, regardless of the individual's pre-deployment experiences. We also did not comprehensively examine issues affecting determination of service-related injuries or disability determination, both of which are critical for determining eligibility for care within the VA. Finally, we relied solely on publicly available information, because requests for official data were still under review at the time of this writing.

Recommendations

Concern about the invisible wounds of war is increasing, and many efforts to identify and treat those wounds are already under way. Our data show that these mental health and cognitive conditions are widespread; in a cohort of otherwise-healthy, young individuals, they represent the primary type of morbidity or illness for this population in the coming years. What is most worrisome is that these problems are not yet fully understood, particularly TBI, and systems of care are not yet fully available to assist recovery for any of the three conditions. Thus, these invisible wounds of war require special attention and high priority. An exceptional effort will be required to ensure that they are appropriately recognized and treated.

Looking across the dimensions of our analysis, we offer four specific recommendations that we believe would improve the understanding and treatment of PTSD, major depression, and TBI among military veterans. We briefly describe each recommendation and then discuss some of the issues that would need to be addressed for its successful implementation. We believe that efforts to address these recommendations should be standardized to the greatest extent possible *within DoD* (across Service branches, with appropriate guidance from the Assistant Secretary of Defense for Health Affairs), *within the VA* (across health care facilities and Vet Centers), and *across these systems* and extended *into the community-based civilian sector*. These policies and programs must be consistent within and across these sectors in order to have the intended effect on care-seeking and improvements in quality of care for our nation's veterans.

1. **Increase the cadre of providers who are trained and certified to deliver proven (evidence-based) care, so that capacity is adequate for current and future needs.**

There is substantial unmet need for treatment of PTSD and major depression among military servicemembers following deployment. Both DoD and the VA have had difficulty in recruiting and retaining appropriately trained mental health professionals to fill existing *or* new slots. With the possibility of more than 300,000 new cases of mental health conditions among OEF/OIF veterans, a commensurate increase in treatment capacity is needed. Increased numbers of trained and certified professionals are needed to provide high-quality care (evidence-based, patient-centered, efficient, equitable, and timely care) in all sectors, both military and civilian, serving previously deployed personnel. Although the precise increase of newly trained providers is not yet known, it is likely to number in the thousands. These would include providers not just in specialty mental health settings but also embedded in settings such as primary care, where servicemembers already are served. Stakeholders consistently referred to challenges in hiring and retaining trained mental health providers. Determining the exact number of providers will require further analyses of demand projections over

time, taking into account the expected length of evidence-based treatment and desired utilization rates.

Additional training in evidence-based approaches for trauma will also be required for tens of thousands of existing providers. Moreover, since there is already an increased need for services, the required expansion in trained providers is already several years overdue.

This large-scale training effort necessitates substantial investment immediately. Such investment could be facilitated by several strategies, including the following:

- Adjustment of financial reimbursement for providers to offer appropriate compensation and incentives to attract and retain highly qualified professionals and ensure motivation for delivering quality care.
- Development of a certification process to document the qualifications of providers. To ensure that providers have the skills to implement high-quality therapies, substantial change from the status quo is required. Rather than rely on a system in which any licensed counselor is assumed to have all necessary skills regardless of training, certification should confirm that a provider is trained to use specific evidence-based treatment for specific conditions. Providers would also be required to demonstrate requisite knowledge of unique military culture, military employment, and issues relevant to veterans (gained through their prior training and through the new training/certification we are recommending).
- Expansion of existing training programs for psychiatrists, psychologists, social workers, marriage and family therapists, and other counselors. Programs should include training in specific therapies related to trauma and to military culture.
- Establishment of regional training centers for joint training of DoD, VA, and civilian providers in evidence-based care for PTSD and major depression. The centers should be federally funded, possibly outside of DoD and VA budgets. This training could occur in coordination with or through the Department of Health and Human Services. Training should be standardized across training centers to ensure both consistency and increase fidelity in treatment delivery.
- Linkage of certification to training to ensure that providers not only receive required training but also are supervised and monitored to verify that quality standards are met and maintained over time.
- Retraining or expansion of existing providers within DoD and the VA (e.g., military community-service program counselors) to include delivery or support of evidence-based care.
- Evaluation of training efforts as they are rolled out, so that we understand how much training is needed and of what type, thereby ensuring delivery of effective care.

2. Change policies to encourage active duty personnel and veterans to seek needed care.

Creating an adequate supply of well-trained professionals to provide care is but one facet of ensuring access to care. Strategies must also increase demand for necessary services. Many servicemembers are reluctant to seek services for fear of negative career repercussions. Policies must be changed so that there are no perceived or real adverse career consequences for individuals who seek treatment, except when functional impairment (e.g., poor job performance or being a hazard to oneself or others) compromises fitness for duty. Primarily, such policies will require creating new ways for servicemembers and veterans to obtain treatments that are confidential, to operate in parallel with existing mechanisms for receiving treatment (e.g., command referral, unit-embedded support, or self-referral).

We are not suggesting that the confidentiality of treatment should be absolute; both military and civilian treatment providers already have a legal obligation to report to authorities/commanders any patients that represent a threat to themselves or others. However, information about being in treatment is currently available to command staff, even though treatment itself is not a sign of dysfunction or poor job performance and may not have any relationship to deployment eligibility. Providing an option for confidential treatment has the potential to increase total-force readiness by encouraging individuals to seek needed health care before problems accrue to a critical level. In this way, mental health treatment would be appropriately used by the military as a tool to avoid or mitigate functional impairment, rather than as evidence of functional impairment. We believe that this option would ultimately lead to better force readiness and retention, and thus be a beneficial change for both the organization and the individual.

This recommendation would require resolving many practical challenges, but it is vital for addressing the mental health problems of servicemembers who, out of concern for their military careers, are not seeking care. Specific strategies for facilitating care-seeking include the following:

- Developing strategies for early identification of problems that can be confidential, so that problems are recognized and care sought early before the problems lead to impairments in daily life, including job function or eligibility for deployment.
- Developing ways for servicemembers to seek mental health care voluntarily and off-the-record, including ways to allow servicemembers to seek this care off-base if they prefer and ways to pay for confidential mental health care (that is not necessarily tied to an insurance claim from the individual servicemember). Thus, the care would be offered to military personnel without mandating disclosure, unless the servicemember chooses to disclose use of mental health care or there is a command-initiated referral to mental health care.

- Separating the system for determining deployment eligibility from the mental health care system. This may require the development of new ways to determine fitness for duty and eligibility for deployment that do not include information about mental health service use.
- Making the system transparent to servicemembers so that they understand how information about mental health services is and is not used. This may help mitigate servicemembers' concerns about detriments to their careers.

3. Deliver proven, evidence-based care to servicemembers and veterans whenever and wherever services are provided.

Our extensive review of the scientific literature documented that treatments for PTSD and major depression vary substantially in their effectiveness. In addition, the recent report from the Institute of Medicine shows reasonable evidence for treatments for PTSD among military servicemembers and veterans (Institute of Medicine, 2007). Our evaluation shows that the most effective treatments are being delivered in some sectors of the care system for military personnel and veterans, but that gaps remain in systemwide implementation. Delivery of evidence-based care to all veterans with PTSD or major depression would pay for itself, or even save money, by improving productivity and reducing medical and mortality costs within only two years. Providing evidence-based care is not only the humane course of action but also a cost-effective way to retain a ready and healthy military force for the future. Providing one model, the VA is at the forefront of trying to ensure that evidence-based care is delivered to its patient population, but the VA has not yet fully evaluated the success of its efforts across the entire system.

We suggest requiring all providers who treat military personnel to use treatment approaches empirically demonstrated to be effective. This requirement would include uniformed providers in theater and embedded in active duty units; primary and specialty care providers within military and VA health care facilities and Vet Centers; and civilian providers. Evidence-based approaches to resilience-building and other programs need to be enforced among informal providers, including promising prevention efforts pre-deployment, noncommissioned officer support models in theater, and the work of chaplains and family-support providers. Such programs could bolster resilience before mental health conditions develop, or help to mitigate the long-term consequences of mental health conditions.

The goal of this requirement is not to stifle innovation or prevent tailoring of treatments to meet individual needs, but to ensure that individuals who have been diagnosed with PTSD or major depression are provided the most effective evidence-based treatment available.

Some key transformations may be required to achieve this needed improvement in the quality of care:

- The "black box" of psychotherapy delivered to veterans must be made more transparent, making providers accountable for the services they are providing. Doing so might require that TRICARE and the VA implement billing codes to indicate the specific type of therapy delivered, documentation requirements (i.e., structured medical note-taking that needs to accompany billing), and the like.
- TRICARE and the VA should require that all patients be treated by therapists who are certified to handle the diagnosed disorders of that patient.
- Veterans should be empowered to seek appropriate care by being informed about what types of therapies to expect, the benefits of such therapies, and how to evaluate for themselves whether they are receiving quality care.
- A monitoring system could be used to ensure sustained quality and coordination of care and quality improvement. Transparency, accountability, and training/certification, as described above, would facilitate ongoing monitoring of effectiveness that could inform policymaking and form the basis for focused quality-improvement initiatives (e.g., through performance measurement and evaluation). Additionally, linking performance measurements to reimbursement and incentives for providers may also promote delivery of quality care.

4. Invest in research to close information gaps and plan effectively.

In many respects, this study raises more research questions than it provides answers. Better understanding is needed of the full range of problems (emotional, economic, social, health, and other quality-of-life deficits) that confront individuals with post-combat PTSD, major depression, and TBI. This knowledge is required both to enable the health care system to respond effectively and to calibrate how disability benefits are ultimately determined. Greater knowledge is needed to understand who is at risk for developing mental health problems and who is most vulnerable to relapse, and how to target treatments for these individuals.

We need to be able to accurately measure the costs and benefits of different treatment options so that fiscally responsible investments in care can be made. We need to document how these mental health and cognitive conditions affect families of servicemembers and veterans so that appropriate support services can be provided. We need sustained research into the effectiveness of treatments, particularly treatments that can improve the functioning of individuals who do not improve from the current evidence-based therapies. Finally, we need research that evaluates the effects of policy changes implemented to address the injuries of OEF/OIF veterans, including how such changes affect the health and well-being of the veterans, the costs to society, and the state of military readiness and effectiveness.

Addressing these vital questions will require a substantial, coordinated, and strategic research effort. We see the need for several types of studies to address these information gaps. A coordinated federal research agenda on these issues within the veter-

ans' population is needed. Further, to adequately address knowledge gaps will require funding mechanisms that encourage longer-term research that examines a broader set of issues than can be financed within the mandated priorities of an existing funder or agency. Such a research program would likely require funding in excess of that currently devoted to PTSD and TBI research through DoD and the VA, and would extend to the National Institutes of Health, the Substance Abuse and Mental Health Services Administration, the Centers for Disease Control and Prevention, and the Agency for Healthcare Research and Quality. These agencies have limited research activities relevant to military and veteran populations, but these populations have not always been prioritized within their programs.

Initial strategies for implementing this national research agenda include the following:

- Launch a large, longitudinal study on the natural course of these mental health and cognitive conditions among OEF/OIF veterans, including predictors of relapse and recovery. Ideally, such a study would gather data pre-deployment, during deployment, and at multiple time points post-deployment. The study should be designed so that its findings can be generalized to all deployed servicemembers while still facilitating identification of those at highest risk, and it should focus on the causal associations between deployment and mental health conditions. A longitudinal approach would also make it possible to evaluate how use of health care services affects symptoms, functioning, and outcomes over time; how TBI and mental health conditions affect physical health, economic productivity, and social functioning; and how these problems affect the spouses and children of servicemembers and veterans. These data would greatly inform how services are arrayed to meet evolving needs within this population of veterans. They would also afford a better understanding of the costs of these conditions and the benefits of treatment so that the nation can make fiscally responsible investments in treatment and prevention programs. Some ongoing studies are examining these issues (Smith et al., 2008; Vasterling et al., 2006); however, they are primarily designed for different purposes and thus can provide only partial answers.
- Continue to aggressively support research to identify the most effective treatments and approaches, especially for TBI care and rehabilitation. Although many studies are already under way or under review (as a result of the recent congressional mandate for more research on PTSD and TBI), an analysis that identifies priority-research needs within each area could add value to the current programs by informing the overall research agenda and creating new program opportunities in areas in which research may be lacking or needed. More research is also needed to evaluate innovative treatment methods, since not all individuals benefit from the currently available treatments.

- Evaluate new initiatives, policies, and programs. Many new initiatives and programs designed to address psychological and cognitive injuries have been put into place, ranging from screening programs and resiliency training, to use of care managers and recovery coordinators, to implementation of new therapies. Each of these initiatives and programs should be carefully evaluated to ensure that it is effective and is improving over time. Only programs that demonstrate effectiveness should be maintained and disseminated.

Treating the Invisible Wounds of War

Addressing PTSD, depression, and TBI among those who deployed to Afghanistan and Iraq should be a national priority. But it is not an easy undertaking. The prevalence of these injuries is relatively high and may grow as the conflicts continue. And long-term negative consequences are associated with these injuries if they are not treated with evidence-based, patient-centered, efficient, equitable, and timely care. The systems of care available to address these injuries have been improved significantly, but critical gaps remain.

The nation must ensure that quality care is available and provided to its military veterans now and in the future. As a group, the veterans returning from Afghanistan and Iraq are predominantly young, healthy, and productive members of society. However, about a third are currently affected by PTSD or depression, or report exposure to a possible TBI while deployed. Whether the TBIs will translate into any lasting impairments is unknown. In the absence of knowing, these injuries cause great concern for servicemembers and their families. These veterans need our attention now, to ensure a successful adjustment post-deployment and a full recovery.

Meeting the goal of providing quality care for these servicemembers will require system-level changes, which means expanding our focus to consider issues not just within DoD and the VA, from which the majority of veterans will receive benefits, but across the overall U.S. health care system, where veterans may seek care through other, employer-sponsored health plans and in the public sector (e.g., Medicaid). System-level changes are essential if the nation is to meet not only its responsibility to recruit, prepare, and sustain a military force but also its responsibility to address Service-connected injuries and disabilities.

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