Invisible Wounds of War

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

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Sponsored by the California Community Foundation

Center for Military Health Policy Research

A JOINT ENDEAVOR OF RAND HEALTH AND THE
RAND NATIONAL SECURITY RESEARCH DIVISION

Summary

Since October 2001, approximately 1.64 million U.S. troops have deployed as part of Operation Enduring Freedom (OEF; Afghanistan) and Operation Iraqi Freedom (OIF; Iraq). The pace of the deployments in these current conflicts is unprecedented in the history of the all-volunteer force (Belasco, 2007; Bruner, 2006). Not only is a higher proportion of the armed forces being deployed, but deployments have been longer, redeployment to combat has been common, and breaks between deployments have been infrequent (Hosek, Kavanagh, and Miller, 2006). At the same time, episodes of intense combat notwithstanding, these operations have employed smaller forces and have produced casualty rates of killed or wounded that are historically lower than in earlier prolonged wars, such as Vietnam and Korea. Advances in both medical technology and body armor mean that more servicemembers are surviving experiences that would have led to death in prior wars (Regan, 2004; Warden, 2006). However, casualties of a different kind are beginning to emerge—invisible wounds, such as mental health conditions and cognitive impairments resulting from deployment experiences. These deployment experiences may include multiple deployments per individual servicemember and exposure to difficult threats, such as improvised explosive devices (IEDs).

As with safeguarding physical health, safeguarding mental health is an integral component of the United States' national responsibilities to recruit, prepare, and sustain a military force and to address Service-connected injuries and disabilities. But safeguarding mental health is also critical for compensating and honoring those who have served our nation.

Public concern over the handling of such injuries is running high. The Department of Defense (DoD), the Department of Veterans Affairs (VA), Congress, and the President have moved to study the issues related to how such injuries are handled, quantify the problems, and formulate policy solutions. And they have acted swiftly to begin implementing the hundreds of recommendations that have emerged from various task forces and commissions. Policy changes and funding shifts are already occurring for military and veterans' health care in general and for mental health care in particular.

However, despite widespread policy interest and a firm commitment from DoD and the VA 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 systems available to meet those needs, the experience of veterans and servicemembers who are in need of services, and factors related to whether and how injured servicemembers and veterans seek care.

To begin closing these gaps, RAND undertook this comprehensive study. We focused on three major conditions—post-traumatic stress disorder (PTSD), major depressive disorder and depressive symptoms, and traumatic brain injury (TBI)—because these are the conditions being assessed most extensively in servicemembers returning from combat. In addition, there are obvious mechanisms that might link each of these conditions to specific experiences in war—i.e., depression can be a reaction to loss; PTSD, a reaction to trauma; and TBI, a consequence of blast exposure or other head injury. Unfortunately, these conditions are often invisible to the eye. Unlike the physical wounds of war that maim or disfigure, these conditions remain invisible to other servicemembers, to family members, and to society in general. All three conditions affect mood, thoughts, and behavior; yet these wounds often go unrecognized and unacknowledged. The effects of traumatic brain injury are still poorly understood, leaving a large gap in knowledge related to how extensive the problem is or how to handle it.

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?

To answer these questions, we reviewed the existing literature on the prevalence of PTSD, major depression, and TBI among OEF/OIF veterans. We also fielded a survey of 1,965 servicemembers and veterans to provide data on levels of probable PTSD, major depression, and TBI, as well as on self-reported use of and barriers to health care. We examined the scientific literature on the short-term and long-term consequences associated with psychological and cognitive injuries. We developed a microsimulation model to estimate the individual and societal costs of these conditions in expenditures for treatment and lost productivity. We assessed the systems of care designed to provide treatment for these conditions, evaluated the evidence supporting the services being offered, and identified gaps in access to and quality of care

being provided. We supplemented that information by conducting focus groups with military servicemembers and their families and by interviewing key administrators and providers. We integrated our findings to offer recommendations for addressing these gaps and improving quality.

Key Findings

Prevalence of Mental Health Conditions and TBI

What is the scope of mental health and cognitive issues faced by OEF/OIF troops returning from deployment? Most of the 1.64 million military servicemembers who have deployed in support of OIF or OEF will return home from war without problems and readjust successfully, but many have already returned or will return with significant mental health conditions. Among OEF/OIF veterans, rates of PTSD, major depression, and probable TBI are relatively high, particularly when compared with the general U.S. civilian population. A telephone study of 1,965 previously deployed individuals sampled from 24 geographic areas found substantial rates of mental health problems in the past 30 days, with 14 percent screening positive for PTSD and 14 percent for major depression. A similar number, 19 percent, reported a probable TBI during deployment. Major depression is often not considered a combat-related injury; however, our analyses suggest that it is highly associated with combat exposure and should be considered as being along the spectrum of post-deployment mental health consequences. Although a substantial proportion of respondents had reported experiencing a TBI, it is not possible to know from the survey the severity of the injury or whether the injury caused functional impairment.

Assuming that the prevalence found in this study is representative of the 1.64 million servicemembers who had been deployed for OEF/OIF as of October 2007, we estimate that approximately 300,000 individuals currently suffer from PTSD or major depression and that 320,000 individuals experienced a probable TBI during deployment. About one-third of those previously deployed have at least one of these three conditions, and about 5 percent report symptoms of all three. Some specific groups, previously understudied—including the Reserve Components and those who have left military service—may be at higher risk of suffering from these conditions.

Seeking and Receiving Treatment. Of those reporting a probable TBI, 57 percent had not been evaluated by a physician for brain injury. Military servicemembers 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. About half (53 percent) of those who met the criteria for current PTSD or major depression had sought help from a physician or mental health provider for a mental health problem in the past year.

Getting Quality Care. Even when individuals receive care, too few receive quality care. Of those who have a mental disorder and also sought medical care for that problem, just over half received a minimally adequate treatment. The number who received *quality* care (i.e., a treatment that has been demonstrated to be effective) would be expected to be even smaller. Focused efforts are needed to significantly improve both accessibility to care and quality of care for these groups. The prevalence of PTSD and major depression will likely remain high unless greater efforts are made to enhance systems of care for these individuals.

Survey respondents identified many barriers that inhibit getting treatment for their mental health problems. In general, respondents were concerned that treatment would not be kept confidential and would constrain future job assignments and military-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. These barriers suggest the need for increased access to confidential, evidence-based psychotherapy, to maintain high levels of readiness and functioning among previously deployed servicemembers and veterans.

Costs

What are the costs of these mental health and cognitive conditions to the individual and to society? Unless treated, each of these conditions has wide-ranging and negative implications for those afflicted. We considered a wide array of consequences that affect work, family, and social functioning, and we considered co-occurring problems, such as substance abuse, homelessness, and suicide.

The presence of any one of these conditions can impair future health, work productivity, and family and social relationships. Individuals afflicted with any of these conditions are more likely to have other psychiatric diagnoses (e.g., substance use) and are at increased risk for attempting suicide. They have higher rates of unhealthy behaviors (e.g., smoking, overeating, unsafe sex) and higher rates of physical health problems and mortality. Individuals with any of these conditions also tend to miss more days of work or report being less productive. There is also a possible connection between having one of these conditions and being homeless.

Suffering from these conditions can also impair relationships, disrupt marriages, aggravate the difficulties of parenting, and cause problems in children that may extend the consequences of combat experiences across generations.

Associated Costs. In dollar terms, the costs associated with mental health and cognitive conditions stemming from the conflicts in Afghanistan and Iraq are substantial. We estimated costs using two separate methodologies. For PTSD and major depression, we used a microsimulation model to project *two-year costs*—costs incurred within the first two years after servicemembers return home. Because there were insufficient data to simulate two-year-cost projections for TBI, we estimated one-year costs

for TBI using a standard, cost-of-illness approach. On a per-case basis, two-year costs associated with PTSD are approximately $5,904 to $10,298, depending on whether we include the cost of lives lost to suicide. Two-year costs associated with major depression are approximately $15,461 to $25,757, and costs associated with co-morbid PTSD and major depression are approximately $12,427 to $16,884. One-year costs for servicemembers who have accessed the health care system and received a diagnosis of traumatic brain injury are even higher, ranging from $25,572 to $30,730 in 2005 for mild cases ($27,259 to $32,759 in 2007 dollars), and from $252,251 to $383,221 for moderate or severe cases ($268,902 to $408,519 in 2007 dollars).

However, our cost figures omit current as well as potential later costs stemming from substance abuse, domestic violence, homelessness, family strain, and several other factors, thus understating the true costs associated with deployment-related cognitive and mental health conditions.

Translating these cost estimates into a total-dollar figure is confounded by uncertainty about the total number of cases in a given year, by the little information that is available about the severity of these cases, and by the extent to which the three conditions co-occur. Given these caveats, we used our microsimulation model to predict two-year costs for the approximately 1.6 million troops who have deployed since 2001. We estimate that PTSD-related and major depression–related costs could range from $4.0 to $6.2 billion over two years (in 2007 dollars). Applying the costs per case for TBI to the total number of diagnosed TBI cases identified as of June 2007 (2,726), we estimate that total costs incurred within the first year after diagnosis could range from $591 million to $910 million (in 2007 dollars).

These figures are for diagnosed TBI cases that led to contact with the health care system; they do not include costs for individuals with probable TBI who have not sought treatment or who have not been formally diagnosed. To the extent that additional troops deploy and more TBI cases occur in the coming months and years, total costs will rise. Because these calculations include costs for servicemembers who returned from deployment starting as early as 2001, many of these costs (for PTSD, depression, and TBI) have already been incurred. However, if servicemembers continue to be deployed in the future, rates of detection of TBI among servicemembers increase, or there are costs associated with chronic or recurring cases that linger beyond two years, the total expected costs associated with these conditions will increase beyond the range.

Lost Productivity. Our findings also indicate that lost productivity is a key cost driver for major depression and PTSD. Approximately 55 to 95 percent of total costs can be attributed to reduced productivity; for mild TBI, productivity losses may account for 47 to 57 percent of total costs. Because severe TBI can lead to death, mortality is the largest component of costs for moderate to severe TBI, accounting for 70 to 80 percent of total costs.

Evidence-Based Treatment. Certain treatments have been shown to be effective for both PTSD and major depression, but these *evidence-based treatments* are not yet available in all treatment settings. We estimate that evidence-based treatment for PTSD and major depression would pay for itself within two years, even without considering costs related to substance abuse, homelessness, family strain, and other indirect consequences of mental health conditions. Evidence-based care for PTSD and major depression could save as much as $1.7 billion, or $1,063 per returning veteran; the savings come from increases in productivity, as well as from reductions in the expected number of suicides.

Given these numbers, investments in evidence-based treatment would make sense from DoD's perspective, not only because of higher remission and recovery rates but also because such treatment would increase the productivity of servicemembers. The benefits to DoD in retention and increased productivity would outweigh the higher costs of providing evidence-based care. These benefits would likely be even stronger (higher) had we been able to capture the full spectrum of costs associated with mental health conditions. 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 current capacity.

Cost studies that do not account for reduced productivity may significantly understate the true costs of the conflicts in Afghanistan and Iraq. Currently, information is limited on how mental health conditions affect career outcomes within DoD. Given the strong association between mental health status and productivity found in civilian studies, research that explores how the mental health status of active duty personnel affects career outcomes would be valuable. Ideally, studies would consider how mental health conditions influence job performance, promotion within DoD, and transitions from DoD into the civilian labor force (as well as productivity after transition).

Systems of Care

What are the existing programs and services to meet the health-related needs of servicemembers with PTSD or major depression? What are the gaps in the programs and services? What steps can be taken to close the gaps? To achieve the cost savings outlined above, servicemembers suffering from PTSD and major depression must be identified as early as possible and be provided with evidence-based treatment. The capacity of DoD and the VA to provide mental health services has been increased substantially, but significant gaps in access and quality remain.

A Gap Between Need and Use. For the active duty population in particular, there is a large gap between the need for mental health services and the use of such services—a pattern that appears to stem from structural aspects of services (wait times, availability of providers) as well as from personal and cultural factors. Institutional and cultural barriers to mental health care are substantial—and not easily surmounted.

Military servicemembers expressed concerns that use of mental health services will negatively affect employment and constrain military career prospects, thus deterring many of those who need or want help from seeking it.

Institutional barriers must be addressed to increase help-seeking and utilization of mental health services. In particular, the requirement that service usage be reported may be impeding such utilization. In itself, addressing the personal attitudes of servicemembers about the use of mental health services, although important, is not likely to be sufficient if the institutional barriers remain in place.

Quality-of-Care Gaps. We also identified gaps in organizational tools and incentives that would support the delivery of high-quality mental health care to the active-duty population, and to retired military who use TRICARE, DoD's health insurance plan. In the absence of such organizational supports, it is not possible to provide oversight to ensure *high quality of care*, which includes ensuring both that the treatment provided is evidence-based and that it is patient-centered, efficient, equitable, and timely. DoD has initiated training in evidence-based practices for providers, but these efforts have not yet been integrated into a larger system redesign that values and provides incentives for quality of care. The newly created Defense Center of Excellence for Psychological Health and Traumatic Brain Injury, housed within DoD, represents a historic opportunity to prioritize a system-level focus on monitoring and improving quality of care; however, continued funding and appropriate regulatory authority will be important to sustain this focus over time.

The VA provides a promising model of quality improvement in mental health care for DoD. Significant improvements in the quality of care the VA provides for depression have been documented, and efforts to evaluate the quality of care provided within the VA for PTSD remain under way. However, it too faces challenges in providing access to OEF/OIF veterans, many of whom have difficulty securing appointments, particularly in facilities that have been resourced primarily to meet the demands of older veterans. Better projections of the amount and type of demand among the newer veterans are needed to ensure that the VA has the appropriate resources to meet the potential demand. At the same time, OEF/OIF veterans report feeling uncomfortable or out of place in VA facilities (some of which are dated and most of which treat patients who are older and chronically ill), indicating a need for some facility upgrades and newer approaches to outreach.

Going Beyond DoD and the VA. Improving access to mental health services for OEF/OIF veterans will require reaching beyond DoD and VA health care systems. Given the diversity and the geographic dispersal of the OEF/OIF veteran population, other options for providing health services, including Vet Centers, nonmedical centers that offer supportive counseling and other services to veterans (see Chapter Seven), and other community-based providers, must be considered. Vet Centers already play a critical role and are uniquely designed to meet the needs of veterans. Further expansion of Vet Centers 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.

Although Vet Centers and other community-based providers offer the potential for expanded access to mental health services, ways to monitor performance and quality among these providers will be essential to ensuring quality care. Although ongoing training for providers is being made broadly available, it is not supported with a level of supervision that will result in high-quality care. Systems for supporting delivery of high-quality care (information systems, performance feedback) are currently lacking in these sectors. Commercial managed health care organizations have some existing approaches and tools to monitor quality that may be of value and utility, but many of the grassroots efforts currently emerging to serve OEF/OIF veterans do not.

What are existing programs and services to meet the health-related needs of those with traumatic brain injuries? What are the gaps in care? What steps can be taken to close those gaps? The medical science for treating combat-related traumatic brain injury is in its infancy. Research is urgently needed to develop effective screening tools that are both valid and sensitive, as well as to document what treatment and rehabilitation will be most effective.

For mild TBI, a head injury that may or may not result in symptoms and long-term neurocognitive deficits, we found gaps in access to services stemming from poor documentation of blast exposures and failure to identify individuals with probable TBI. These gaps not only hamper provision of acute care but may also place individuals at risk of additional blast exposures.

Servicemembers with more-severe injuries face a different kind of access gap: lack of coordination across a continuum of care. Because of the complex nature of health care associated with severe combat injuries, including moderate and severe TBI,[1] an individual's need for treatment, as well as for supportive and rehabilitative services, will change over time and involve multiple transitions across systems. Task forces, commissions, and review groups have already identified multiple challenges arising from these complexities; these challenges remain the focus of improvement activities in both DoD and the VA.

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[1] Classification of TBI is based on a combination of the cause of the injury and the level of deficits suffered as a result. See Chapter Seven.

Recommendations

Current concern about the invisible wounds of war is increasing, and many efforts to identify and treat those wounds are already under way. But more is needed to ensure equitable and sustainable solutions. 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 in 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 needed to ensure that they are appropriately recognized and treated.

Looking across the dimensions of our analysis, and in light of the strengths and limitations of our methodology, we offer four specific recommendations that we believe will 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 successful implementation. We believe 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) and 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 before they can 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 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. Such professionals would include providers not just in specialty mental health settings but also those 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.

Although the precise number of newly trained providers required is not yet known, it is likely to be in the thousands. Additional training in evidence-based treatment for trauma will also be required for tens of thousands of existing providers. Moreover, since the dramatic increase in need for services exists now, the required expansion in trained providers is already several years overdue.

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

- Adjusting financial reimbursement for providers to offer appropriate compensation and incentives to attract and retain highly qualified professionals and ensure motivation for delivering quality care.
- Developing a certification process to document the clinical qualifications of providers. Providers would also be required to demonstrate requisite knowledge of unique military culture, military employment, and issues relevant to veterans.
- Expanding existing training programs for psychiatrists, psychologists, social workers, marriage and family therapists, and other counselors to include in their curricula and practice settings training in specific therapies related to trauma and military culture.
- Establishing 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 funded federally, possibly outside of DoD and VA budgets.
- Linking 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 expanding the number of existing providers within DoD and the VA (e.g., military community-service-program counselors) to include delivery or support of evidence-based care.
- Evaluating 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 only 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; since both military and civilian treatment providers already have a legal obligation to report to authorities/commanders any patients who represent a threat to themselves or others. Information about being in treatment is currently available to command staff, although 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 this would ultimately lead to better force readiness and retention, thus being a beneficial change both for the organization and for the individual.

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

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 problems lead to impairments in daily life, including job functioning 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. Doing so 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 2007 report from the Institute of Medicine shows reasonable evidence for treatments for PTSD among military servicemembers and veterans. 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 within two years, or even save money, by improving productivity and reducing medical and mortality costs. Providing evidence-based care is not only the humane course of action, it is also a cost-effective way to retain a ready and healthy military force for the future. The VA, which provides one model, is at the forefront of initiatives to ensure delivery of evidence-based care, but it has not yet fully evaluated the success of these initiatives across the entire system.

We suggest requiring that all providers who treat military personnel use treatment approaches empirically demonstrated to be the most effective. This requirement would include uniformed providers in theater and providers embedded in active duty units. It would also involve primary and specialty care providers in military health facilities, VA health care facilities, and Vet Centers, and civilian providers who serve military personnel when they return home. In addition to mental health providers, evidence-based care needs to be enforced among informal providers, to bolster promising prevention efforts pre-deployment, noncommissioned-officer support models in theater, and the work of chaplains and family-support providers. The goal of this requirement is not to stifle innovation or prevent tailoring of treatment to 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.

Key transformations may be required to achieve this improvement in quality of care:

- The "black box" of psychotherapy delivered to veterans must be made more transparent, so that providers are accountable for their services. Such accountability 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 those patients.
- Veterans should be empowered to seek appropriate care by being informed about what types of therapies to expect, the benefits of those treatments, and how to evaluate whether they are receiving quality care.

- A monitoring system should be used to ensure sustained quality and coordination of care and quality improvement. Transparency, accountability, and training/certification would facilitate monitoring. 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. Our nation urgently needs a better understanding 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. Such knowledge is required both to enable the health care system to respond effectively and to calibrate how disability benefits are ultimately determined. We also need 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 the 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 how policy changes implemented to address the needs of OEF/OIF veterans affect their health and well-being, 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. Further, to adequately address knowledge gaps will require funding mechanisms that encourage longer-term research examining a broader set of issues than can be financed within the mandated priorities of existing funders or agencies. Responsibility for conducting this research should not fall just to DoD and the VA; other federal agencies should be engaged, including 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 already have limited research activities relevant to military and veterans populations, but these populations have not always been prioritized within their programs. Initial strategies for implementing this national research agenda include the following:

- Launching a large, longitudinal study on the natural course of these mental health and cognitive conditions, including predictors of relapse and recovery, among OEF/OIF veterans. Ideally, such a study would gather data pre-deployment, during deployment, and at multiple time points post-deployment. It should also

be designed so that the findings can be generalized to all deployed servicemembers while still facilitating identification of those at highest risk, and should focus on examining the causal links between deployment and mental health conditions and the effects of the disorders on the families of servicemembers and veterans. A longitudinal approach, using proven techniques for achieving high response rates, would make it possible to evaluate how use of health care services affects symptoms, functioning, physical health, economic productivity, and social functioning over time. The resulting data would inform the arraying of services to meet evolving needs of OEF/OIF veterans and suggest what fiscally responsible investments in treatment and prevention programs should be made. Studies that are currently under way are not sufficient to answer the necessary questions.

- Continuing to aggressively support research to identify the most effective treatments and approaches, especially regarding TBI care and rehabilitation. Although many studies are already under way or under review (as a result of the congressional mandate over the past year for more research on PTSD and TBI), a strategic analysis of research needs 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.
- Evaluating 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 trainings, to use of care managers and recovery coordinators, to implementation of new therapies. Each of these efforts should be evaluated carefully 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 is a national priority. But it is not an easy undertaking. The prevalence of such wounds is high and may grow as the conflicts continue. And long-term negative consequences are associated with these conditions if they are not treated with evidence-based, patient-centered, efficient, equitable, and timely care. The systems of care available to address these wounds have been improved significantly, but critical gaps remain.

The nation must ensure that quality care is available and provided to 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 successful adjustment post-deployment and full recovery.

Meeting the goal of providing care for these servicemembers will require system-level changes, which means expanding the nation's focus to consider issues not just within DoD and the VA, from which the majority of veterans will receive benefits, but also across the overall U.S. health care system, in which many will 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 have the resources it needs to meet its responsibility not only to recruit, prepare, and sustain a military force but also to address Service-connected injuries and disabilities.

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