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February 2008

# VA HEALTH CARE

## Mild Traumatic Brain Injury Screening and Evaluation Implemented for OEF/OIF Veterans, but Challenges Remain



G A O

Accountability \* Integrity \* Reliability



Highlights of [GAO-08-276](#), a report to congressional requesters

## Why GAO Did This Study

Traumatic brain injury (TBI) has emerged as a leading injury among servicemembers serving in the Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) combat theaters. The widespread use of improvised explosive devices, such as roadside bombs, in these combat theaters increases the likelihood that servicemembers will be exposed to incidents that can cause a TBI. TBIs can vary from mild to severe, and in general, mild TBI can be difficult to identify. Because mild TBI can have lasting effects if not identified and treated, concerns have been raised about how the Department of Veterans Affairs (VA) identifies and treats OEF/OIF veterans with a mild TBI. In this report GAO describes VA's (1) efforts to screen OEF/OIF veterans for mild TBI, (2) steps taken so that those OEF/OIF veterans at risk for mild TBI are evaluated and treated, and (3) challenges in screening and evaluating OEF/OIF veterans for mild TBI. GAO reviewed VA's policies, interviewed VA officials and TBI experts, and reviewed nine VA medical facilities' efforts to implement TBI screening and evaluation processes.

## What GAO Recommends

GAO recommends that VA expeditiously evaluate the clinical validity and reliability of its TBI screening tool. VA concurred with GAO's findings, conclusions, and recommendation and discussed its plans to evaluate its TBI screening tool. DOD declined to provide comments on the draft report.

To view the full product, including the scope and methodology, click on [GAO-08-276](#). For more information, contact Marjorie Kanof at (202) 512-7114 or [kanofm@gao.gov](mailto:kanofm@gao.gov).

## VA HEALTH CARE

### Mild Traumatic Brain Injury Screening and Evaluation Implemented for OEF/OIF Veterans, but Challenges Remain

#### What GAO Found

To screen OEF/OIF veterans for mild TBI, VA implemented in its medical facilities in April 2007 a computer-based screening tool to identify OEF/OIF veterans who may have a mild TBI. VA's tool consists of questions that VA must ask all OEF/OIF veterans when they come to a VA medical facility for care. VA issued a policy requiring its medical facilities to use the tool to screen all OEF/OIF veterans who present for care in any clinic in the facility, including primary care and specialty care clinics. The policy has guidance on what types of providers may administer the tool and directs providers that a positive screening result requires a further evaluation by a specialist to determine if the veteran has mild TBI. VA's screening efforts depend on its TBI screening tool and VA recognizes the importance of determining the tool's clinical validity and reliability—that is, how effectively the tool identifies those who are and are not at risk for mild TBI and if the tool would yield consistent results if administered to the same veteran more than once. However, VA is planning to but has not yet begun to determine the tool's validity and reliability. VA's screening tool was based largely on a tool developed and validated by the Defense and Veterans Brain Injury Center (DVBIC)—a medical and educational collaboration among DOD, VA, and two civilian partners—used at selected military bases to screen returning OEF/OIF servicemembers for TBI. However, because VA's tool is a modified version of DVBIC's tool and is used to screen a slightly different population, the results of the validity study of DVBIC's tool are not directly applicable to VA's tool.

To help ensure that OEF/OIF veterans identified as at risk for a mild TBI by VA's screening tool are evaluated and treated, VA developed a national protocol for their evaluation and treatment. According to VA's protocol, veterans with a positive screening result should be offered a follow-up evaluation by a specialist to determine if they have a mild TBI. The follow-up evaluation should include a history of the veteran's injury, a physical examination targeted to the veteran's symptoms, and the use of a checklist to assess the presence and severity of symptoms associated with mild TBI. VA has established training for its providers to enhance use of the protocol and help ensure veterans are evaluated and treated for mild TBI. Providers at some VA medical facilities we visited had difficulties fully following the protocol. However, the facilities had taken steps to resolve the difficulties, and VA has put in place measures to help providers follow the protocol.

VA faces clinical and cultural challenges in its efforts to screen and evaluate mild TBI in OEF/OIF veterans. Clinical challenges include the lack of existing objective diagnostic tests that can definitively identify mild TBI. Also, many symptoms of mild TBI are similar to those associated with other conditions, such as post-traumatic stress disorder, making a diagnosis of mild TBI harder to reach. Some characteristics of the OEF/OIF veteran population present cultural challenges in that they may affect veterans' willingness to seek care for TBI symptoms. For example, some may believe that being labeled with a TBI could affect their ability to stay in the National Guard or Reserves.

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## Abbreviations

ACRM	American Congress of Rehabilitation Medicine
BTBIS	Brief Traumatic Brain Injury Screen
CBOC	community-based outpatient clinic
CDC	Centers for Disease Control and Prevention
CT	computed tomography
DOD	Department of Defense
DVBIC	Defense and Veterans Brain Injury Center
IED	improvised explosive device
MRI	magnetic resonance imaging
MTF	military treatment facility
NIH	National Institutes of Health
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
PTSD	post-traumatic stress disorder
TBI	traumatic brain injury
VA	Department of Veterans Affairs

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February 8, 2008

Congressional Requesters

Traumatic brain injury (TBI) has emerged as a leading injury among U.S. forces serving in military operations in Afghanistan and Iraq—known as Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), respectively. The nature of the current conflicts—in particular the widespread use of improvised explosive devices (IED)<sup>1</sup>—increases the likelihood that active duty servicemembers will be exposed to incidents such as blasts that can cause a TBI, which is defined as an injury caused by a blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain.<sup>2</sup> According to the Defense and Veterans Brain Injury Center (DVBIC),<sup>3</sup> of the servicemembers who required medical evacuation for battle-related injuries from the OEF/OIF combat theaters to Walter Reed Army Medical Center from January 2003 through June 2007, 30 percent had sustained some form of TBI.<sup>4</sup>

TBIs can vary greatly in terms of severity—from mild cases that might involve a brief change in mental status, such as being dazed or confused, to severe cases that may involve an extended period of unconsciousness

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<sup>1</sup>An IED is a bomb designed to cause death or injury using explosives alone or in combination with chemicals or other materials. IEDs take a variety of shapes and sizes and have been employed in a number of different ways. For example, in Iraq, many IEDs have been hidden and disguised along traffic routes and then remotely detonated.

<sup>2</sup>See Centers for Disease Control and Prevention, <http://www.cdc.gov/ncipc/tbi/TBI.htm> (accessed Nov. 20, 2007).

<sup>3</sup>DVBIC is a multisite center that serves active duty servicemembers, their dependents, and veterans with TBI through medical care, clinical research initiatives, and educational programs. It is a collaboration between the Department of Defense (DOD), the Department of Veterans Affairs (VA), and two civilian partners, and is funded through DOD. In November 2007, DOD announced that the DVBIC had been integrated into DOD's new Defense Center of Excellence for Psychological Health and Traumatic Brain Injury, which began initial operations on November 30, 2007, and is expected to be fully functional by October 2009. The center will be developing a national collaborative network to advance and disseminate psychological health and TBI knowledge, enhance clinical and management approaches, and facilitate services for those dealing with psychological health issues or TBI, or both, according to DOD.

<sup>4</sup>Defense and Veterans Brain Injury Center, "OIF/OEF Fact Sheet" (Washington, D.C., June 2007).

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or amnesia after the injury. Servicemembers who sustain even a mild TBI may experience short-term physical symptoms such as headaches or dizziness, emotional symptoms such as anxiety or irritability, cognitive deficits such as difficulty concentrating, or sleep disturbances. Some servicemembers may experience symptoms related to mild TBI months or even years after the injury. In general, a mild TBI—which is commonly referred to as a concussion—can be more difficult to identify than a severe TBI. With mild TBI, there may be no observable head injury. In addition, in the combat theater, a mild TBI may not be identified when it occurs at the same time as other combat injuries that are more visible or life-threatening, such as orthopedic injuries or open wounds. Furthermore, some of the symptoms of mild TBI—such as irritability and insomnia—are similar to those associated with other conditions, such as post-traumatic stress disorder (PTSD). Identifying mild TBI is important, as treatment can mitigate the physical, emotional, and cognitive effects of the injury.

As the OEF and OIF military operations have continued, increasing numbers of servicemembers from these conflicts have transitioned to veteran status and have become eligible to receive health care from the Department of Veterans Affairs (VA). As of October 2007, roughly 750,000 OEF/OIF servicemembers had left active duty and become eligible for VA health care, and over one-third of these veterans—about 260,000—had accessed some type of VA health care services, which are provided at VA medical facilities nationwide. Some of these OEF/OIF veterans seeking care at VA medical facilities have been exposed to events during their military service that could cause a mild TBI.

An OEF/OIF veteran's first interaction with a VA provider may occur months or even years after exposure to an event that could have caused a mild TBI. Some of these veterans might not seek care from VA until several months or even years after their return from the combat theater and their transition to veteran status. Moreover, OEF/OIF veterans who do seek VA care soon after their return from the combat theater could have sustained a mild TBI many months prior to their return. While veterans who sustained a mild TBI during their military service may have successfully been treated by Department of Defense (DOD) providers for the condition or may have had their symptoms resolve on their own, other OEF/OIF veterans could still be experiencing mild TBI-related symptoms

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when they seek care from VA.<sup>5</sup> According to VA officials, it is important that OEF/OIF veterans who seek care from VA are screened to determine whether they might have a mild TBI, evaluated to confirm a diagnosis of mild TBI and have their symptoms assessed, and treated as needed.

Because mild TBI can have lasting effects if not identified and treated, concerns have been raised about the extent to which VA identifies and treats OEF/OIF veterans who have sustained a mild TBI.<sup>6</sup> You asked us to identify how VA ensures that OEF/OIF veterans who have experienced a mild TBI are identified and treated when they seek care at VA medical facilities, as well as the obstacles to identifying veterans with mild TBI. Specifically, in this report, we describe (1) VA's efforts to screen OEF/OIF veterans for mild TBI, (2) the steps that VA has taken to help ensure that OEF/OIF veterans identified as being at risk for a mild TBI are evaluated and treated, and (3) the challenges that VA faces in screening and evaluating OEF/OIF veterans for mild TBI.

To describe VA's efforts to screen OEF/OIF veterans for mild TBI; the steps VA has taken to help ensure that OEF/OIF veterans identified as being at risk for a mild TBI are evaluated and treated; and the challenges that VA faces in screening and evaluating OEF/OIF veterans for mild TBI, we reviewed VA policies and procedures for the screening, evaluation, and treatment of mild TBI in OEF/OIF veterans. The policies and procedures we reviewed included the guidance VA developed for its medical facilities

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<sup>5</sup>DOD is planning to begin routinely screening OEF/OIF servicemembers for possible TBI immediately upon their return from the combat theater as well as 3 to 6 months thereafter, as part of the required post-deployment health assessment process. See 10 U.S.C. § 1074f. DOD also plans to screen all servicemembers annually for possible TBI that may or may not be related to combat experience. The National Defense Authorization Act for Fiscal Year 2007 required GAO to study DOD's implementation of new requirements under 10 U.S.C. § 1074f that prescribed enhanced mental health screening, referral, and services for members of the Armed Forces. Pub. L. No. 110-364, § 738(e), 120 Stat. 2083, 2304 (2006). GAO's work in response to that mandate will include a review of DOD's implementation of TBI screening as part of the routine pre- and post-deployment health assessments of OEF/OIF servicemembers.

<sup>6</sup>Following a series of Washington Post articles in February 2007 that disclosed deficiencies in the provision of outpatient services at Walter Reed Army Medical Center and raised broader concerns about the care of returning servicemembers and veterans, three review groups were tasked with investigating the reported problems and making recommendations. Among the common areas of concern identified by the three review groups was the need to better understand and diagnose TBI. See GAO, *DOD and VA: Preliminary Observations on Efforts to Improve Health Care and Disability Evaluations for Returning Servicemembers*, [GAO-07-1256T](#) (Washington, D.C.: Sept. 26, 2007).



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to use to screen and evaluate OEF/OIF veterans who may have a TBI. Some of the VA policies and procedures we reviewed pertain to TBI generally, including mild TBI. We also interviewed VA headquarters officials responsible for VA's efforts to screen, evaluate, and treat OEF/OIF veterans with mild TBI. We also conducted site visits to a total of six VA medical facilities located in Decatur, Georgia;<sup>7</sup> Augusta, Georgia; Baltimore, Maryland; Dublin, Georgia; Richmond, Virginia; and the District of Columbia. In addition to these site visits, we conducted phone interviews with staff from three other VA medical facilities located in Hines, Illinois; Iron Mountain, Michigan; and Tomah, Wisconsin. The nine facilities we reviewed represent a judgmental sample that was selected in order to include (1) varying geographic areas, including rural areas; (2) facilities that had been utilized by relatively high numbers of OEF/OIF veterans as compared to other VA medical facilities as of the end of calendar year 2006; and (3) facilities from each of the four tiers of facilities that comprise VA's polytrauma system of care.<sup>8</sup> The findings from our site visits and phone interviews with VA medical facility staff cannot be generalized to other VA medical facilities.

At the six VA medical facilities we visited and for our phone interviews with the three additional VA medical facilities, we interviewed clinical and administrative staff to learn about their implementation of VA's policies and procedures for mild TBI screening, evaluation, and treatment as well as their experiences in screening, evaluating, and treating mild TBI in OEF/OIF veterans. For each of these facilities we reviewed documents related to mild TBI screening, evaluation, and treatment efforts. We conducted the facility interviews between April and July 2007. In addition, we conducted follow-up with the nine VA medical facilities in September and October 2007. Because VA implemented new mild TBI screening, evaluation, and treatment processes in April 2007, our review focused on the early implementation phase of these new processes.

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<sup>7</sup>This VA medical facility is referred to as the Atlanta VA medical facility.

<sup>8</sup>VA has classified its medical facilities into a four-tiered polytrauma system of care that helps address the medical needs of returning OEF/OIF veterans, in particular those who have suffered polytraumatic injuries—injuries to more than one part of the body or organ system, one of which may be life threatening, resulting in physical, cognitive, psychological, or psychosocial impairments and functional disability. Each tier represents a different level of available specialty services. For a list of the VA medical facilities and which tier they are assigned to, see app. I.

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In addition to reviewing VA's efforts related to screening, evaluation, and treatment of mild TBI in OEF/OIF veterans, we also interviewed TBI experts from DOD—including staff from the DVBIC—the Centers for Disease Control and Prevention (CDC), and the National Institutes of Health (NIH) about TBI screening, evaluation, and treatment issues and reviewed relevant documents from those organizations. We also interviewed TBI researchers and other TBI experts from academic institutions, advocacy organizations, and private sector rehabilitation facilities and asked them about various TBI issues. Finally, we conducted a literature review on research related to TBI—including mild TBI—within civilian and military populations.

We focused our work on VA policies and procedures regarding mild TBI screening, evaluation, and treatment and did not assess the clinical appropriateness or effectiveness of VA's mild TBI screening and evaluation efforts or the treatment provided to OEF/OIF veterans with mild TBI. We performed our work from December 2006 through February 2008 in accordance with generally accepted government auditing standards.

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## Results in Brief

To screen OEF/OIF veterans for mild TBI, in April 2007, VA medical facilities implemented a computer-based screening tool to identify OEF/OIF veterans who may have a mild TBI. VA's screening tool consists of a series of questions that VA providers are required to ask OEF/OIF veterans when the veterans come to a VA medical facility for care. VA issued a policy requiring providers at VA medical facilities to use the TBI screening tool to screen all OEF/OIF veterans who present themselves for care in any clinic in the medical facility, including the primary care clinic, dental clinic, urgent care clinic, or any specialty clinic. The policy provides guidance on what types of providers may administer the TBI screening tool. VA's policy also reminds providers that a positive result from the TBI screening does not mean that a veteran has a mild TBI and requires that veterans who screen positive on the TBI screening tool be offered a follow-up evaluation with a specialty provider who can determine whether the veteran has a mild TBI. While VA's screening efforts depend on its TBI screening tool, VA is planning to but has not yet begun to evaluate the clinical validity and reliability of the screening tool—that is, respectively, how effective the tool is in identifying those who are and are not at risk for mild TBI, and whether the screening tool would yield consistent results if administered to the same veteran more than once. When developing its screening tool, VA based the tool largely on a DVBIC screening tool that has been used at selected military bases to screen returning OEF/OIF

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servicemembers for TBI and has been shown to be clinically valid, according to DVBIC. However, because VA's TBI screening tool is a modified version of DVBIC's screening tool and is being used to screen a slightly different population, the results of the validity study of DVBIC's screening tool are not directly applicable to VA's screening tool. In order to avoid delaying the start of VA's TBI screening efforts, VA officials began implementing TBI screening for OEF/OIF veterans before evaluating the screening tool's validity and reliability. However, until such an evaluation takes place, VA providers will continue to use the screening tool without knowing how effective the tool is in identifying which OEF/OIF veterans are and are not at risk for a mild TBI.

To help ensure that OEF/OIF veterans identified as at risk for a mild TBI by VA's computerized screening tool are evaluated and treated, VA developed a national protocol for their evaluation and treatment. According to VA's evaluation and treatment protocol, veterans should be informed when they screen positive, offered a follow-up evaluation with a specialist to determine if they have a mild TBI, and contacted by facility staff to schedule the follow-up evaluation. The protocol also specifies that the follow-up evaluation should be completed by a provider from a specialty department and that the evaluation should include a complete history of the veteran's injury and current symptoms, a physical examination targeted to the veteran's symptoms, and the use of a checklist to assess the presence and severity of symptoms associated with mild TBI.<sup>9</sup> The protocol also provides guidance on developing an individualized treatment plan and information on referring veterans whose symptoms do not resolve for further VA care. VA has established training for its providers to help ensure veterans are evaluated and treated for mild TBI. Although VA has implemented the protocol nationwide, we found that some medical facilities had difficulty fully following some of the protocol requirements. One of the nine facilities we reviewed experienced difficulties implementing the electronic consultation request used to communicate to the designated specialty department the need for the veteran to have a follow-up evaluation and took corrective action to address the problem. At two facilities we reviewed, providers were not using the symptom checklist to evaluate a veteran at the time of our visit in July 2007, though the providers were using the symptom checklist several months later. VA has put in place measures to help ensure that all providers follow the protocol. For example, VA has implemented two

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<sup>9</sup>See app. II for VA's symptom checklist.

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performance measures designed to track whether facility staff contacted veterans who screened positive on the TBI screening tool to schedule the follow-up evaluation and whether the evaluation was completed. VA also implemented in November 2007 a computer-based template intended to help ensure providers follow the protocol when conducting a follow-up evaluation.

VA faces a number of clinical and cultural challenges in its efforts to screen and evaluate mild TBI in OEF/OIF veterans. One clinical challenge facing VA as well as other health care providers is the lack of any objective diagnostic tests—such as magnetic resonance imaging (MRI) or laboratory tests—that can definitively and reliably identify mild TBI. Another clinical challenge is the fact that many symptoms of mild TBI, such as insomnia and irritability, are similar to the symptoms associated with other conditions—such as PTSD—or are commonly found in the general population, making a definitive diagnosis of mild TBI more difficult to reach. An additional clinical challenge is that OEF/OIF veterans with mild TBI might not realize that they have an injury and should seek care. This can occur for several reasons—for example, symptoms of mild TBI that are subtle and easy to overlook and the fact that those with mild TBI may not have an obvious physical injury. Several characteristics of the OEF/OIF veteran population present cultural challenges to VA's screening and evaluation efforts in that they may affect OEF/OIF veterans' willingness to report TBI-related symptoms or veterans' ability to seek care for these symptoms. For example, officials at several VA medical facilities we reviewed told us that OEF/OIF veterans may not want to risk being labeled with a condition that could be perceived as a mental illness or that they believe could compromise their ability to remain in the National Guard or Reserves. Facility officials also reported that OEF/OIF veterans—who tend to be younger than other VA patient groups—may not schedule or keep appointments for VA care in a timely manner due to priorities or constraints such as full time jobs, school, and childcare needs.

To establish whether the use of VA's TBI screening tool is effective in identifying OEF/OIF veterans at risk for mild TBI, we recommend that the Secretary of Veterans Affairs direct the Under Secretary for Health to expeditiously evaluate the clinical validity and reliability of VA's TBI screening tool. In commenting on a draft of this report, VA concurred with our findings, conclusions, and recommendation to expedite the evaluation of the validity and reliability of the TBI screening tool, and discussed its plans to evaluate its TBI screening tool. VA further commented that the lack of any objective diagnostic test to definitively and reliably identify mild TBI is not unique to VA. We agree and have included clarifying

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language in the report to indicate that this is not a limitation unique to VA. VA also provided technical comments, which we have incorporated as appropriate. We provided a draft of this report to DOD for comment. DOD declined to provide comments on the draft report.

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## Background

In the military setting, mild TBI has become an increasing concern in recent years with respect to OEF/OIF servicemembers and veterans. Blasts due to IEDs and other explosive devices have been one of the leading causes of injury for those serving in OEF and OIF—and in particular have been a leading cause of TBI.<sup>10</sup> TBI has been a frequent diagnosis among OEF/OIF servicemembers medically evacuated to Walter Reed Army Medical Center or the National Naval Medical Center.<sup>11</sup> Mild TBI can also be present in servicemembers whose injuries do not result in medical evacuation out of the combat theater. According to DOD, TBI screening and assessments conducted from 2004 to 2006 for several groups of Army and Marine Corps servicemembers returning from OEF/OIF to selected military bases found that about 10 to 20 percent of those servicemembers had sustained a mild TBI, although those groups are not necessarily representative of the overall Army and Marine Corps populations returning from OEF/OIF or of the Air Force and Navy populations returning from OEF/OIF, who in general have much less combat exposure than other servicemembers.

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## Mild TBI

In the absence of a consensus definition of mild TBI among clinicians and medical associations, VA has adopted a definition for mild TBI that is consistent with the one developed by the American Congress of

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<sup>10</sup>DOD and VA officials have stated that it is unclear at this time whether mild TBI due to a blast differs from nonblast mild TBI.

<sup>11</sup>Servicemembers who sustain serious injuries in the OEF or OIF conflict areas are usually brought to Landstuhl Regional Medical Center in Germany for treatment. From there, they are usually transported to military treatment facilities located in the United States, with most admitted to Walter Reed Army Medical Center or the National Naval Medical Center, both of which are in the Washington, D.C., area. Once servicemembers are medically stabilized, DOD can elect to send those with TBI or other complex trauma, such as missing limbs, to VA medical facilities for medical and rehabilitative care. While many servicemembers who receive such rehabilitative services return to active duty after they are treated, others who are more seriously injured are likely to be discharged from their military obligations and return to civilian life with disabilities.

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Rehabilitation Medicine (ACRM).<sup>12</sup> The ACRM—and thus, VA—defines a person as having a mild TBI if the person had a traumatically-induced physiological disruption of brain function as demonstrated after an event by at least one of the following: (1) any period of loss of consciousness; (2) any loss of memory for events immediately before or after the event; (3) any alteration in mental state at the time of the event, for example feeling dazed, disoriented, or confused; and (4) a focal neurological deficit or deficits that may or may not have been transient, for example loss of coordination, speech difficulties, or double vision. ACRM's definition further specifies that a person may be designated as having a mild TBI only if the severity of the injury does not include a loss of consciousness that lasted longer than approximately 30 minutes, post-traumatic amnesia lasting longer than 24 hours, and, after 30 minutes from the event, an initial Glasgow Coma Score of less than 13.<sup>13</sup> Such symptoms may indicate a TBI more severe than mild TBI.

Mild TBI can result in symptoms that can be categorized as physical, cognitive, emotional, or sleep-related, and can cause short- or long-term difficulties that affect an individual's ability to function, according to CDC guidance. (See table 1 for examples of symptoms associated with mild TBI as categorized by CDC.) The symptoms of mild TBI can be subtle and may not appear for days or weeks after the injury. According to literature on mild TBI in the civilian population, the duration of mild TBI symptoms can vary. Most with mild TBI have symptoms that resolve within hours, days, or weeks. Others, however, experience persistent symptoms that last for several months or longer.

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<sup>12</sup>The mission of the American Congress of Rehabilitation Medicine is to enhance the lives of persons living with disabilities through a multidisciplinary approach to rehabilitation and to promote rehabilitation research and its application in clinical practice. For details about ACRM's mild TBI definition, developed by its Mild Traumatic Brain Injury Committee, see Thomas Kay et al., "Definition of Mild Traumatic Brain Injury," *Journal of Head Trauma Rehabilitation*, vol. 8, no. 3 (1993), pp. 86–87.

<sup>13</sup>According to CDC, the Glasgow Coma Scale is a widely-used 15-point scoring system for assessing coma and impaired consciousness. Higher scores indicate a less severe injury while lower scores indicate a more severe injury.

**Table 1: Examples of Mild TBI Symptoms, by Symptom Categories**

Physical	Cognitive	Emotional	Sleep-related
<ul style="list-style-type: none"> <li>• Headache</li> <li>• Nausea</li> <li>• Vomiting</li> <li>• Balance problems</li> <li>• Dizziness</li> <li>• Visual problems (e.g., blurred vision or eyes that tire easily)</li> <li>• Fatigue</li> <li>• Sensitivity to light</li> <li>• Sensitivity to noise</li> <li>• Numbness/tingling</li> <li>• Dazed or stunned</li> <li>• Ringing in the ears</li> </ul>	<ul style="list-style-type: none"> <li>• Feeling mentally “foggy”</li> <li>• Feeling slowed down</li> <li>• Difficulty concentrating</li> <li>• Difficulty remembering</li> <li>• Difficulty making decisions</li> <li>• Forgetful of recent information or conversations</li> <li>• Confused about recent events</li> <li>• Answers questions slowly</li> <li>• Repeats questions</li> </ul>	<ul style="list-style-type: none"> <li>• Irritability</li> <li>• Sadness</li> <li>• More emotional</li> <li>• Mood changes</li> <li>• Nervousness</li> </ul>	<ul style="list-style-type: none"> <li>• Drowsiness</li> <li>• Sleeping less than usual</li> <li>• Sleeping more than usual</li> <li>• Trouble falling asleep</li> </ul>

Source: GAO summary of CDC information.

Although symptoms of mild TBI may appear to be mild in nature, they can lead to significant long-term impairments that affect an individual’s ability to function. For example, individuals may have difficulty returning to routine daily activities and may be unable to return to work for weeks or months.<sup>14</sup> Individuals with mild TBI may also have multiple co-occurring physical injuries, such as orthopedic injuries, depending on the event that caused the mild TBI.

According to CDC, treatment for individuals who have sustained a mild TBI may include increased rest, refraining from participation in activities that are likely to result in additional head injury, management of existing symptoms, and education about mild TBI symptoms and what to expect during recovery. For some cases, rehabilitative or cognitive therapies, counseling, or medications might be used. Currently, there are no evidence-based clinical practice guidelines that address treatment of mild TBI.

<sup>14</sup>For more information on the symptoms and effects of mild TBI, see CDC’s “Heads Up: Brain Injury in Your Practice” tool kit for physicians, which was updated and revised in June 2007 and includes a booklet with information on the diagnosis and management of mild TBI. See also CDC’s “Report to Congress on Mild Traumatic Brain Injury in the United States: Steps to Prevent a Serious Public Health Problem” (Atlanta, Ga., September 2003). Both publications are available at [http://www.cdc.gov/ncipc/tbi/TBI\\_Publications.htm](http://www.cdc.gov/ncipc/tbi/TBI_Publications.htm) (accessed Sept. 28, 2007).

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## VA Health Care Services for OEF/OIF Veterans and DOD Servicemembers

Veterans who have served in combat in certain conflicts, including OEF/OIF veterans, are presumed to be eligible for VA health care services for any condition for a period of up to 5 years, even if there is insufficient medical evidence to conclude that the condition is attributable to military service.<sup>15</sup> This presumptive eligibility includes those National Guard and Reserve members who have left active duty and returned to their units. If veterans do not enroll until after the presumptive period, they will be subject to the same eligibility and enrollment rules as other veterans, who generally have to prove that a medical problem is connected to their military service or that they have incomes below certain thresholds.<sup>16</sup> As of October 2007, according to VA, about 260,000 or over one-third of veterans who had returned from service in OEF or OIF, including National Guard and Reserve members, had accessed VA for various health care needs.

In some circumstances, VA also provides health care to active duty OEF/OIF servicemembers. Under existing DOD-VA agreements, OEF/OIF servicemembers may obtain health care services, such as rehabilitative care, from VA facilities while the servicemembers are still on active duty. DOD determines whether servicemembers receive care from VA, at one of DOD's own military treatment facilities (MTF), or from a TRICARE civilian provider.<sup>17</sup> OEF/OIF servicemembers may be referred by MTFs to VA for care on an inpatient or outpatient basis.

OEF/OIF veterans and in some cases OEF/OIF servicemembers may obtain VA health care through VA's national health care system, which provided health care services to nearly 5.5 million patients in 2006. VA's health care system is organized into 21 regional health care networks that comprise VA medical facilities, community-based outpatient clinics

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<sup>15</sup>See National Defense Authorization Act for Fiscal Year 2008, Pub. L. No. 110-181, § 1707 (to be codified at 38 U.S.C. § 1710(e)(3)(C)). To be eligible, veterans must have served in combat during a period of war after the Persian Gulf War or against a hostile force during a period of hostilities after November 11, 1998. See 38 U.S.C. § 1710(e)(1)(D); VHA Directive 2005-020, Determining Combat Veteran Eligibility (June 2, 2005). "Hostilities" is defined as an armed conflict in which the servicemembers are subjected to danger comparable to the danger encountered in combat with enemy armed forces during a period of war, as determined by the Secretary of VA. See 38 U.S.C. § 1712A(a)(2)(B). Eligibility under 38 U.S.C. § 1710(e)(1)(D) does not extend, however, to veterans whose disabilities are found to have resulted from a cause other than the service described in the statute.

<sup>16</sup>See 38 U.S.C. §§ 1705, 1710; 38 C.F.R. § 17.36 (2007).

<sup>17</sup>DOD provides health care to its beneficiaries through TRICARE—a regionally structured program that uses civilian contractors to maintain provider networks to complement health care services provided at MTFs.



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(CBOC), and Vet Centers.<sup>18</sup> VA medical facilities offer services that range from primary care to complex specialty care, such as cardiac or spinal cord injury care. VA's CBOCs, which are associated with VA medical facilities, mainly provide primary care services. Vet Centers offer readjustment and family counseling, employment services, bereavement counseling, and a range of social services to assist veterans in readjusting from wartime military service to civilian life.<sup>19</sup>

VA has classified its medical facilities into a four-tiered polytrauma system of care to help address the medical needs of returning OEF/OIF veterans, in particular those who have suffered polytraumatic injuries—that is, injuries to more than one part of the body or organ system, one of which may be life threatening, resulting in physical, cognitive, psychological, or psychosocial impairments and functional disability. Veterans with polytraumatic injuries may have injuries or conditions such as TBI, amputations, multiple fractures, and burns to the body. Each of the four tiers in VA's polytrauma system of care, referred to by VA as components, represents medical facilities that offer different levels of specialty services. Medical facilities in the first three tiers have designated polytrauma teams to care for polytrauma patients.

- Component I sites, Polytrauma Rehabilitation Centers, are four regional medical facilities that provide acute comprehensive medical and rehabilitative care for the severely injured. These facilities have a team of rehabilitation professionals and consultants from other specialties related to polytrauma and serve as resources for other VA medical facilities and DOD MTFs.<sup>20</sup>
- Component II sites, Polytrauma Network Sites, are 21 medical facilities that provide specialized, post-acute rehabilitation services. There is one Polytrauma Network Site in each of VA's 21 regional health care networks, including one at each of the four Component I sites.

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<sup>18</sup>VA delegates decision making regarding financing and service delivery for health care services to its 21 health care networks, including most budget and management responsibilities concerning medical facility operations.

<sup>19</sup>Vet Centers offer counseling services to all OEF/OIF combat veterans with no cost to the veteran.

<sup>20</sup>VA plans to begin construction on a fifth polytrauma rehabilitation center in San Antonio, Texas, in 2008.

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- Component III sites, Polytrauma Support Clinic Teams, are medical facilities that have facility-based teams of providers with rehabilitation expertise who deliver follow-up services to veterans and assist in the management of stable polytrauma conditions that are a consequence of the injuries sustained by veterans.
  - Component IV sites, Polytrauma Points of Contact, are present at medical facilities that do not have Component I, II, or III services. Each of these medical facilities has a point of contact whose role is to ensure that veterans are referred to a facility capable of providing the services they require.

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## VA Has Implemented a TBI Screening Tool at Its Medical Facilities but Has Not Determined the Clinical Validity and Reliability of the Tool

In April 2007, VA implemented in its medical facilities a computer-based screening tool to identify OEF/OIF veterans who may have a mild TBI. VA's screening tool consists of a series of questions that VA providers must ask OEF/OIF veterans when the veterans come to a VA medical facility for care. Although VA's TBI policy does not require VA medical facilities to conduct outreach to veterans who have not been seen at the medical facility since the TBI screening tool was implemented, we found that a majority of the nine medical facilities we reviewed were conducting various forms of outreach to encourage OEF/OIF veterans to come to the medical facility for TBI screening. While VA's screening efforts depend on its TBI screening tool, VA has not determined the clinical validity and reliability of the screening tool—that is, respectively, how effective the tool is in identifying those who are and are not at risk for mild TBI and whether the screening tool would yield consistent results if administered to the same veteran more than once.

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## VA Has Implemented a TBI Screening Tool to Be Used in VA Medical Facilities

To screen OEF/OIF veterans for mild TBI, VA has implemented a TBI screening tool to be used when OEF/OIF veterans seek care at VA medical facilities. The screening tool, which VA implemented across its medical facilities in April 2007, can be used to screen for TBIs of varying severities, but is primarily intended to identify those OEF/OIF veterans at risk for mild TBI given that more severe forms of TBI are more easily identified. VA's screening tool consists of a series of questions asked of OEF/OIF veterans who come to a VA medical facility for care. VA requires its medical facilities to use the TBI screening tool to screen every OEF/OIF veteran who presents for care at any clinic in the medical facility, including primary care, dental, and urgent care clinics, CBOCs, or

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specialty clinics, such as cardiology or orthopedic clinics.<sup>21,22</sup> When a VA provider accesses a veteran's electronic VA medical record during a clinic appointment, the provider is prompted by a computer-based clinical reminder to complete the TBI screening tool.<sup>23,24</sup>

In order to complete the TBI screening, VA providers are required to ask OEF/OIF veterans a series of questions to identify those who are experiencing symptoms that may indicate a mild TBI. After prompting the provider to ask initial screening questions designed to confirm that the veteran is an OEF or OIF veteran, the screening tool then prompts the VA provider to ask whether the veteran has been previously diagnosed with a

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<sup>21</sup>VA issued a policy on April 13, 2007, that outlined key requirements related to the TBI screening tool, such as which veterans should be screened for TBI and in which clinical settings. See VHA Directive 2007-013, *Screening and Evaluation of Possible Traumatic Brain Injury in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) Veterans* (Washington, D.C.: Apr. 13, 2007). VA policy states that screening, evaluation, and the initial treatment for patients with both traumatic spinal cord injury and TBI are to be handled by VA Spinal Cord Injury team members, who have the expertise needed to provide the required evaluations and care for veterans who have a traumatic spinal cord injury and TBI. VA's policy also states that VA medical facilities are not required to screen OEF/OIF veterans who are seen solely for examinations related to disability claims. VA's policy does not require veterans who are receiving counseling only at Vet Centers to be screened for TBI.

<sup>22</sup>While active duty servicemembers may receive care at VA medical facilities under VA and DOD agreements, VA medical facilities are not required to screen active duty OEF/OIF servicemembers for mild TBI. Seven of the nine medical facilities we reviewed had opted to screen active duty OEF/OIF servicemembers for TBI. Facilities reported that if an active duty servicemember screens positive for TBI at their facility, the provider administering the TBI screening tool refers the servicemember for further TBI evaluation within his or her VA facility or at an MTF.

<sup>23</sup>All VA medical facilities have electronic medical record systems. The development of VA's electronic medical record began in the mid-1990s when VA integrated a set of clinical applications that work together to provide clinicians with comprehensive medical information about the veterans they treat. Electronic medical records allow clinical information to be readily accessible to health care providers at the point of care because the veteran's medical record is always available in VA's computer system.

<sup>24</sup>Clinical reminders are alerts in veterans' electronic medical records that remind providers to address specific health issues. VA uses a number of clinical reminders to alert providers that a veteran needs to be screened for conditions such as PTSD, substance abuse, and TBI.

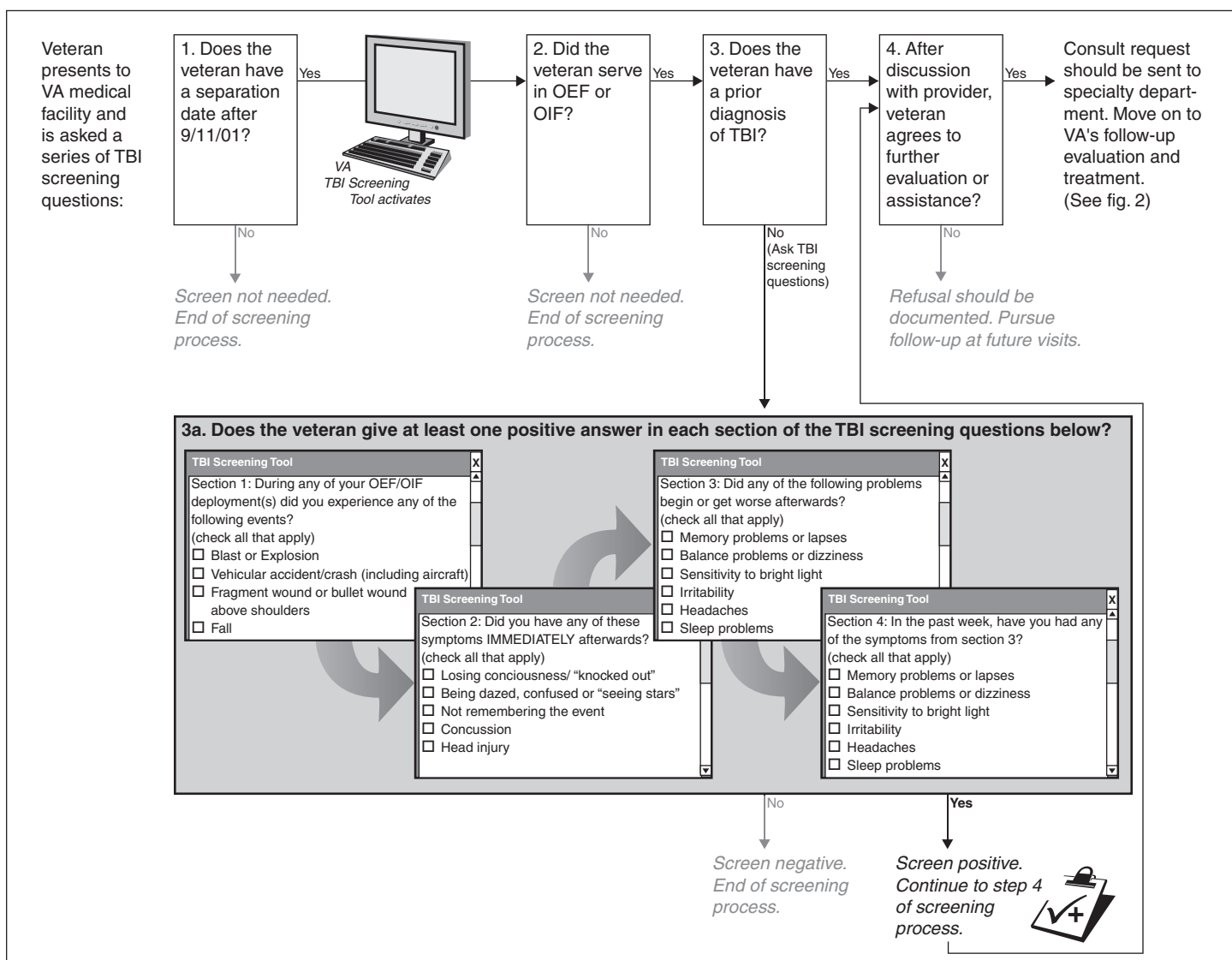
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TBI.<sup>25</sup> If the veteran has been previously diagnosed with a TBI, the screening is considered to be completed and the provider should ask whether the OEF/OIF veteran would like to obtain care from a VA specialty provider. The provider is to document any refusal of specialty care in the veteran's electronic VA medical record. A depiction of VA's TBI screening process is provided in figure 1.

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<sup>25</sup>The TBI screening tool automatically activates in the electronic medical record of veterans whose date of separation from military duty or active duty status occurred after September 11, 2001. VA's policy does not require VA providers to rescreen OEF/OIF veterans for TBI once they have been screened using the TBI screening tool. However, if OEF/OIF veterans, such as those who are members of the National Guard or Reserves, deploy again to the OEF or OIF theater of operations, the TBI screening tool should automatically reactivate in the veteran's electronic VA medical record on the veteran's next visit to a VA facility, even if the TBI screening tool has previously been completed.

**Figure 1: Overview of VA's TBI Screening Process**



Source: GAO analysis of VA TBI Screening Policy (data); Art Explosion (graphics).

For OEF/OIF veterans who have not been previously diagnosed with a TBI, VA's TBI screening tool prompts the provider to continue the screening process by asking four sequential sets of questions that are used to identify OEF/OIF veterans who are at risk for a mild TBI. The first set of questions asks whether the veteran has experienced an event that could increase the risk of a possible mild TBI—specifically blasts or explosions,

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a vehicle accident or crash, a fragment wound or bullet wound above the shoulders, or a fall. If the veteran reports experiencing any of these events, a second set of questions asks about the immediate effects after the event, including a loss of consciousness, being dazed or confused, not remembering the event, a concussion, or a head injury. If the veteran reports experiencing any of these effects, then a third set of questions asks the veteran about symptoms that may have begun or gotten worse after the event, specifically memory problems or lapses, balance problems or dizziness, sensitivity to bright light, irritability, headaches, or sleep problems. Finally, if the veteran reports experiencing any of these symptoms, a fourth set of questions asks whether the veteran has experienced, within the week prior to the TBI screening, any of the symptoms listed in the third set of questions.

Under VA's policy for its TBI screening tool, if the OEF/OIF veteran answers "no" to all of the questions in any of the four sections of the TBI screening tool, VA considers the veteran to have screened negative for a possible mild TBI. However, if the veteran answers "yes" to one or more questions in each of the four sections, then VA considers the veteran to have screened positive for a possible mild TBI. In guidance issued on the use of the TBI screening tool, VA directs providers to not diagnose a patient with a mild TBI based solely on the results of the TBI screening tool because it is possible to respond positively to all four sections and not have a mild TBI, due to the presence of conditions such as PTSD that present similar symptoms. Instead, VA policy requires that veterans who screen positive on VA's TBI screening tool be offered a follow-up evaluation with a specialty provider who can determine whether the veteran has a mild TBI. VA officials reported that as of August 2007 about 61,000 OEF/OIF veterans had been screened for TBI and of those, nearly 20 percent had screened positive for possible TBI.

Although VA has a requirement that its facilities screen OEF/OIF veterans for mild TBI, veterans can refuse to participate in the screening. While VA's policy does not specify what steps facility providers should take if a veteran refuses to be screened for TBI, according to a VA headquarters official, the provider must document the refusal in the veteran's electronic VA medical record. This official also stated that the clinical reminder for TBI screening should continue to appear at subsequent clinic visits. Seven of the nine facilities we reviewed estimated that 2 percent or less of the OEF/OIF veterans offered TBI screening refused. The remaining two facilities did not provide estimates of the number of OEF/OIF veterans that had refused the TBI screening tool.

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According to VA's policy for its TBI screening tool, the TBI screening tool may be administered by physicians or other clinical providers, such as nurse practitioners, physician's assistants, and nurses, who have the clinical background to review results with the veteran. Across the nine VA facilities we reviewed, we found variation in the types of VA providers who were responsible for administering the TBI screening tool to OEF/OIF veterans. At three facilities, we found that physicians or nurse practitioners were administering the TBI screening tool, and at the remaining six facilities, providers such as registered nurses or social workers in addition to physicians and nurse practitioners were administering the TBI screening tool. Further, in two of those six facilities, medical facility officials told us that dental technicians and licensed practical nurses were able to administer the TBI screening tool.

VA's policy on TBI screening includes a requirement that all VA clinical staff who administer the TBI screening tool complete VA's TBI training module. This training module—an online course produced by VA in January 2004—is designed to provide an overview of TBI, in order to help providers identify veterans at risk for a TBI. At seven of the nine VA facilities we reviewed, VA facility officials reported that VA providers administering the TBI screening tool had completed VA's required training. At one of the two remaining facilities, officials reported that many providers had completed VA's required training and that officials at the facility were reviewing providers' completion of VA's TBI training module to ensure that all providers administering the TBI screening tool had completed VA's required training. At the remaining facility, officials reported that nurses at the facility had just recently begun administering the TBI screening tool and had not yet completed VA's TBI training module at the time of our visit.

In addition to the required TBI training module, VA has also developed other training related to TBI screening for providers who administer the screen to OEF/OIF veterans. VA has provided training on TBI and the TBI screening tool to its medical facilities through satellite broadcasts and educational materials about TBI, including pamphlets and brochures, and held national conferences in April and August 2007 that focused in part on how to administer the TBI screening tool and who should be screened using it. In addition, VA has also conducted national conference calls between VA headquarters and VA medical facilities to address concerns facilities had in implementing and using the TBI screening tool.

In an effort to ensure that all VA medical facilities are utilizing the tool to screen OEF/OIF veterans for mild TBI, VA has implemented a TBI

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screening performance measure for fiscal year 2008. The performance measure is designed to assess the extent to which OEF/OIF veterans who seek care at VA medical facilities are being screened for TBI. Performance measures are routinely used by VA to hold managers accountable for the quality of health care provided to veterans at their medical facilities and to track facilities' progress in meeting performance goals established by VA.

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### VA Medical Facilities We Reviewed Conducted Various Forms of Outreach to OEF/OIF Veterans to Increase Participation in TBI Screening

To increase awareness of and participation in TBI screening of OEF/OIF veterans, the nine VA medical facilities we reviewed were conducting various outreach efforts to OEF/OIF veterans, even though VA's TBI policy does not require VA medical facilities to conduct outreach. Specifically we found that five of the nine facilities we reviewed were in the process of contacting veterans who had received care at the facility before the medical facility had implemented VA's TBI screening tool in order to encourage the veterans to be screened for mild TBI. Medical facility officials reported that they were contacting these veterans by telephone or mail. Officials from two of the five facilities reported administering the screening tool to OEF/OIF veterans over the phone, while medical officials at three of the five facilities reported encouraging OEF/OIF veterans to return to the medical facility to be screened for TBI.

Some VA medical facilities were providing outreach to OEF/OIF veterans through TBI-related education efforts. For example, VA medical facility officials told us they attend DOD post-deployment events<sup>26</sup> to provide OEF/OIF veterans—and OEF/OIF servicemembers who in the future will become OEF/OIF veterans—information about VA's health care system, including information about VA's TBI screening efforts. VA officials told us that they hope the information provided at the post-deployment events encourages those eligible for VA health care benefits to be screened for mild TBI at a VA medical facility. Moreover, two medical facilities we reviewed had administered the TBI screening tool during these post-deployment events.

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<sup>26</sup>DOD uses multiple health assessments to determine servicemembers' physical and mental health status at different points during the deployment cycle. VA providers commonly participate in DOD's post-deployment health reassessment efforts, which occur 90 to 180 days after return from deployment and are intended to focus on physical or mental health conditions that emerge over time after deployment. See GAO, *VA and DOD Health Care: Administration of DOD's Post-Deployment Health Reassessment to National Guard and Reserve Servicemembers and VA's Interaction with DOD*, [GAO-08-181R](#) (Washington, D.C.: Jan. 25, 2008).



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Facility officials also told us they reach out to veterans through Vet Centers by providing information on TBI rather than waiting for veterans to come into a VA medical facility for care. In addition, two facilities reported that they made TBI-related information available through community resources in order to reach out to OEF/OIF veterans. For example, one facility asked businesses and organizations such as doctors' offices, stores, churches, and schools to share information about TBI and VA health care services with community members. The other facility shared TBI-related information using media outlets such as television broadcasts, radio broadcasts, and newspapers to increase awareness of TBI in the community.

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### Although VA's TBI Screening Efforts Depend on the Screening Tool, VA Has Not Determined the Tool's Clinical Validity and Reliability

The key component of VA's efforts to screen OEF/OIF veterans for mild TBI is VA's requirement that VA medical facilities administer the TBI screening tool to these veterans when they seek care at VA facilities. However, VA has not assessed the clinical validity and reliability of the screening tool—that is, respectively, how effective the tool is in identifying those who are and are not at risk for mild TBI, and whether the screening tool would yield consistent results if the tool was administered to the same veteran more than once.<sup>27</sup>

VA based its screening tool largely on a TBI screening tool developed and used by the DVBIC—the Brief Traumatic Brain Injury Screen (BTBIS).<sup>28</sup> The BTBIS has been used at select military bases to screen returning OEF/OIF servicemembers for TBI and has been shown to be clinically

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<sup>27</sup>The reliability of a screening tool refers to whether the tool yields results that are reproducible. For example, reliability reflects whether the screening results are the same when a person is screened more than once by the same screener, as well as whether the screening results are the same when a person is screened by different screeners.

<sup>28</sup>VA's TBI screening tool was developed by a VA interdisciplinary task force created in December 2006 to address the need to screen OEF/OIF veterans for TBI as they are released from active duty and enter VA's health care system.

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valid, according to the DVBIC.<sup>29</sup> When developing its screening tool, VA made some changes to the questions contained in the BTBIS.<sup>30</sup> These changes were based on a review of other TBI screening instruments, published reports of the symptoms that follow a mild TBI, and the experience of MTFs with using modified versions of the BTBIS. The goal of VA's changes was to develop a highly sensitive screening tool that would err on the side of being overly-inclusive in identifying veterans who may be at risk for having a TBI. VA recognized that using a highly sensitive TBI screening tool would result in some veterans who screen positive for possible TBI later being found after follow-up evaluation to not have a TBI. According to VA officials, VA specifically chose to develop a highly sensitive TBI screening tool to reduce the risk of not identifying those veterans who have a TBI.

A study of the validity and reliability of VA's TBI screening tool is important for several reasons. First, because VA's TBI screening tool is a modified version of the BTBIS and is being used to screen a slightly different population,<sup>31</sup> the results from DVBIC's validity study of the BTBIS would not be directly applicable to VA's screening tool. In addition, a study of the validity of VA's screening tool would provide information on how well the TBI screening tool distinguishes between OEF/OIF veterans who are at risk for a mild TBI and those who are not, according to VA officials. Like other screening tools, VA's TBI screening tool may result in some false positives—OEF/OIF veterans who screen positive for possible mild TBI but do not have the condition—and some false negatives—OEF/OIF veterans who screen negative on VA's TBI screening tool but

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<sup>29</sup> According to DVBIC, BTBIS was validated in a small, initial study conducted with active duty servicemembers who served in Iraq or Afghanistan between January 2004 and January 2005. The BTBIS is available at [www.dvbic.org](http://www.dvbic.org). See also Karen A. Schwab, et al., "The Brief Traumatic Brain Injury Screen (BTBIS): Investigating the validity of a self-report instrument for detecting traumatic brain injury (TBI) in troops returning from deployment in Afghanistan and Iraq," *Neurology*, vol. 66, no. 5, supp. 2 (2006), p. A235, and Karen A. Schwab, et al., "Screening for Traumatic Brain Injury in Troops Returning From Deployment in Afghanistan and Iraq: Initial Investigation of the Usefulness of a Short Screening Tool for Traumatic Brain Injury," *Journal of Head Trauma Rehabilitation*, vol. 22, no. 6 (2007), pp. 377–389.

<sup>30</sup> The changes VA made included, for example, some changes in the examples and wording of the events and symptoms a veteran could have experienced while deployed.

<sup>31</sup> For example, one key difference between the OEF/OIF active duty population and the OEF/OIF veteran population is the potential time that may have elapsed since possible exposure to a TBI-causing event. In general, OEF/OIF active duty servicemembers will have experienced such events more recently than OEF/OIF veterans.

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actually have a mild TBI. One consequence of false positives is that OEF/OIF veterans who screen positive for possible mild TBI on VA's TBI screening tool but do not have a mild TBI may worry that they have the condition when they do not. Also, because veterans who screen positive are to receive a follow-up evaluation by a specialty provider to determine whether they actually have a mild TBI, false positives affect specialty providers' workload and may affect their capacity to see other veterans. In contrast, OEF/OIF veterans who screen negative for possible mild TBI but actually have the condition are at risk for not being evaluated and treated for their symptoms. Knowing both the validity and reliability of the TBI screening tool would help VA providers and OEF/OIF veterans understand the significance of the TBI screening results, including the likelihood of veterans having the same screening results if they were screened again by the same provider or a different provider.

VA officials recognize the need to conduct a study to assess the clinical validity and reliability of the TBI screening tool. VA officials decided to begin implementing TBI screening for OEF/OIF veterans before conducting such a study in order to avoid delaying the start of VA's TBI screening efforts. According to VA officials, VA planned to study the TBI screening tool after its medical facilities had begun using the tool to screen OEF/OIF veterans. Officials informed us in September 2007 that a validity and reliability study was in the development phase and would assess issues such as the likelihood that an OEF/OIF veteran who screens positive for possible mild TBI actually has a mild TBI and the likelihood that an OEF/OIF veteran who screens negative for possible mild TBI does not have a mild TBI. At that time, VA had not yet determined when the study would take place, which researchers would conduct it, how it would be performed, or what funding mechanism would be used.<sup>32</sup> As of December 2007, VA had not begun the study.

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<sup>32</sup>In addition to a study of the TBI screening tool's validity and reliability, VA also plans to conduct a study of the effect of its TBI screening effort by studying topics including veterans' use of health care services following TBI screening.

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## VA Has Implemented a Protocol to Help Ensure Evaluation and Treatment of OEF/OIF Veterans Who Screen Positive for Possible TBI; However, Some Medical Facilities Had Difficulties Fully Following the Protocol

VA has implemented a national protocol to help ensure that OEF/OIF veterans who screen positive on its TBI screening tool are evaluated by a specialty provider and receive treatment, if necessary, for mild TBI. VA requires providers at its facilities to follow the evaluation and treatment protocol, which reminds providers to offer follow-up evaluations, establishes requirements for setting evaluation appointments, and provides guidance for evaluating and treating veterans' symptoms. VA has established training for its providers to enhance providers' use of the protocol and thereby help ensure veterans are evaluated and treated for mild TBI. However, providers at some VA facilities have had difficulties fully following the protocol. Specifically, some providers reported difficulties implementing electronic requests for follow-up evaluations and did not always use a symptom checklist—used to assess the presence and severity of symptoms associated with mild TBI—during follow-up evaluations. VA medical facilities have taken steps to resolve these difficulties, and VA has put in place measures to help ensure that all VA providers follow the protocol. At the VA medical facilities we reviewed, providers stated that conducting VA's TBI follow-up evaluations was not currently causing significant capacity problems for their specialty departments responsible for conducting the follow-up evaluations. However, specialty providers at some facilities we reviewed reported that an increased need for follow-up evaluations could cause increases in specialty providers' workloads and that additional specialty providers could be needed in order to expand the specialty departments' capacity to evaluate OEF/OIF veterans for mild TBI.

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## VA Has Implemented a Protocol to Help Ensure Evaluation and Treatment of OEF/OIF Veterans Who Screen Positive on VA's TBI Screening Tool

To help ensure that OEF/OIF veterans who screen positive on VA's TBI screening tool are evaluated for a possible mild TBI and treated if necessary, VA has implemented a national evaluation and treatment protocol for its medical facility providers to follow.<sup>33</sup> One way the protocol helps ensure that OEF/OIF veterans are evaluated for mild TBI is by requiring the provider administering the TBI screening tool to discuss positive results with veterans and offer them the opportunity for a follow-up evaluation with a specialty provider. The purpose of the follow-up evaluation is to further evaluate the veteran's symptoms and to determine whether the veteran has a mild TBI. If the veteran refuses to participate in the follow-up evaluation, the protocol requires the provider to document

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<sup>33</sup>VA's protocol was issued to VA facilities in April 2007, along with the computer-based TBI screening tool.

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the refusal in the veteran's electronic VA medical record. Providers are encouraged to provide education on TBI and to maintain an open door for veterans refusing to participate in the follow-up evaluation by advising them to return if they want care at a later date.

Another way VA's evaluation and treatment protocol helps to ensure that OEF/OIF veterans receive follow-up evaluations for mild TBI is by establishing requirements for scheduling appointments for these evaluations with specialty providers. For veterans who have agreed to participate in the follow-up evaluation, providers are to send an electronic request for consultation to a specialty department designated by the VA medical facility as responsible for the evaluations. According to the protocol, the specialty department receiving the consultation request must contact the veteran within 1 week to set up an appointment for the follow-up evaluation. If the contact effort is unsuccessful, the protocol states that subsequent efforts are to include two telephone calls 1 week apart and, if still unsuccessful, a certified letter sent to the veteran. According to the protocol, efforts to contact the veteran to schedule a follow-up evaluation are to be documented in the veteran's electronic VA medical record.

Under VA's evaluation and treatment protocol, VA medical facilities can designate, within VA headquarters guidelines, which specialty department—and thus which type of provider—should conduct the follow-up evaluations.<sup>34</sup> VA medical facilities we reviewed varied as to which types of specialty providers were designated to conduct the follow-up evaluation following a positive TBI screen. Five VA medical facilities we reviewed referred OEF/OIF veterans to an interdisciplinary team of specialists affiliated with the facility's polytrauma team, while the four other facilities referred veterans to a neurologist, physical medical and rehabilitation physician, or psychiatrist for the follow-up evaluation. One of the medical facilities we reviewed made these referrals for a follow-up evaluation to a local specialty provider practicing in the community, while

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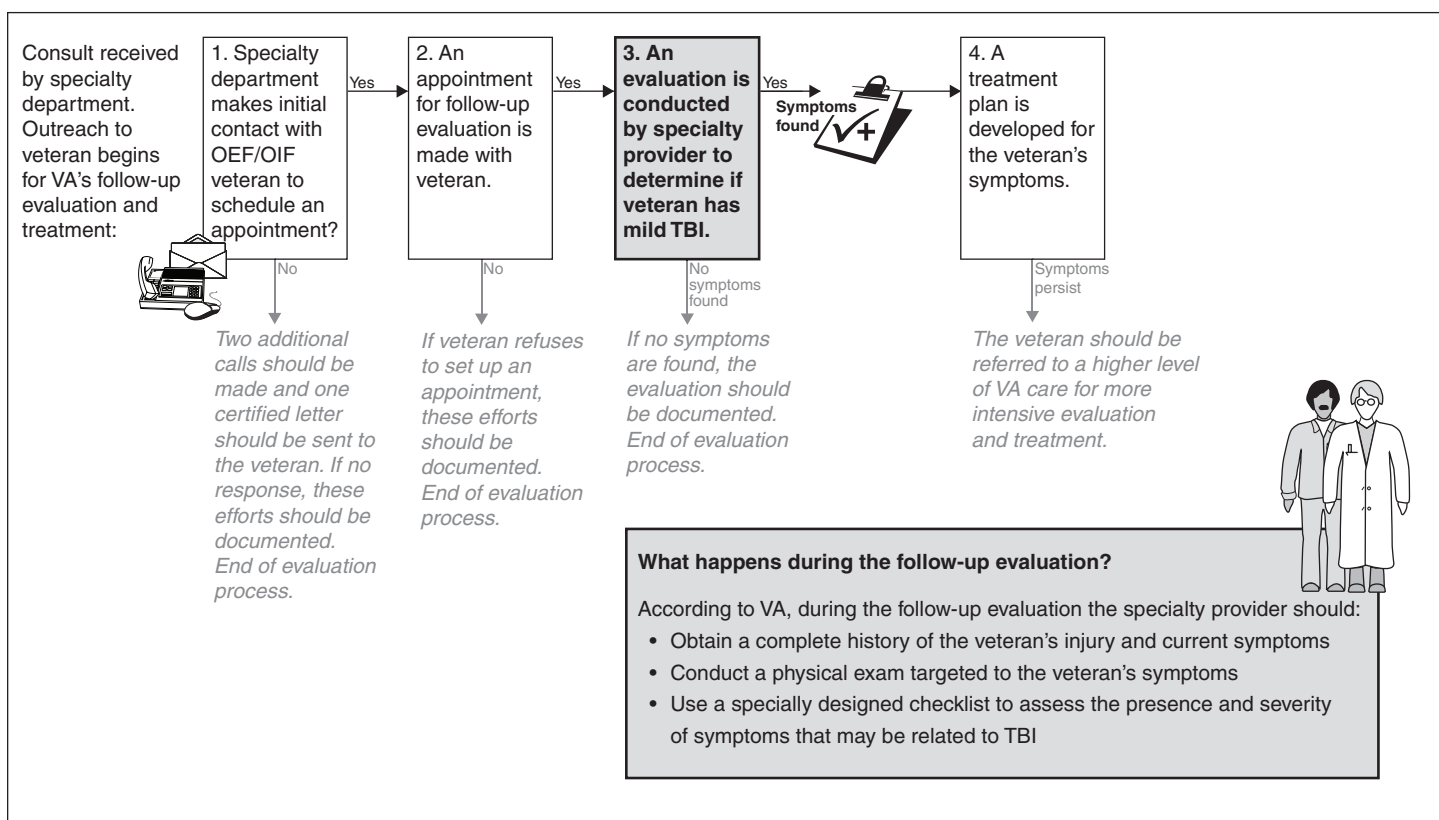
<sup>34</sup>The follow-up evaluation can be completed by a variety of specialty providers. According to the protocol, the follow-up evaluation should be completed by a specialty provider from a VA Component II Polytrauma Network Site; a Component III Polytrauma Support Clinic Team; or, when not available at the medical facility, a specialist with the appropriate background and skills, such as a neurologist. In addition, according to a VA official, a medical facility can refer a veteran to a non-VA provider for the follow-up evaluation for mild TBI. Medical facilities may refer to non-VA providers when those providers have the expertise required and when there would be a significant burden to the veteran to travel. VA recommends that, when possible, community providers with expertise come to the VA to provide the follow-up evaluation on a contract or part-time basis.

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the remaining eight medical facilities utilized specialty providers within their facility. Furthermore, as part of the follow-up evaluation at one facility, all OEF/OIF veterans who screened positive on the TBI screening tool were being seen by a vision specialist and some vision problems had been identified through that process.

In addition to helping ensure that appointments for follow-up evaluations are made, VA's evaluation and treatment protocol also provides guidance for VA specialty providers on evaluating and treating veterans for mild TBI. VA requires that the VA specialty providers who conduct the follow-up evaluations and the providers who provide treatment for mild TBI use VA's protocol to help determine if a diagnosis of mild TBI should be made and, if so, what course of treatment should be followed. According to the protocol, providers conducting the follow-up evaluations should obtain a complete history of the veteran's injury and current symptoms, conduct a physical examination targeted to the veteran's symptoms, and use a symptom checklist to assess the presence and severity of various symptoms associated with mild TBI. (VA's TBI follow-up evaluation process is depicted in fig. 2.) The symptom checklist lists 22 neurobehavioral symptoms associated with mild TBI, such as headaches, dizziness, memory problems, irritability problems, and poor concentration. (See app. II for VA's symptom checklist.) For each symptom on the checklist the OEF/OIF veteran reports experiencing, VA's protocol provides recommendations on additional physical examinations and tests that should be conducted and guidance on creating an individualized treatment plan for the veteran. If the veteran's symptoms persist, the protocol includes guidance on when the veteran should be referred to other VA medical facilities for more intensive evaluation or treatment.

**Figure 2: Overview of VA's TBI Follow-up Evaluation Process**



Source: GAO analysis of VA TBI Evaluation and Treatment Protocol (data); Art Explosion (graphics).

As allowed by VA's evaluation and treatment protocol, medical facilities we reviewed varied in how they used the symptom checklist, including which type of provider administered the symptom checklist, when the symptom checklist was administered, and how the symptom checklist results were utilized. Some facilities reported that specialty providers administered the symptom checklist during the course of their evaluation. Another facility reported that a nonspecialist provider, such as a nurse or social worker, administered the symptom checklist prior to the specialty provider meeting with the veteran. Afterwards, the specialty provider used the responses to guide the follow-up evaluation or treatment plan. Still other facilities reported that a multidisciplinary team used the symptom checklist as a tool to help determine which specialty provider in the facility would be best to conduct the follow-up evaluation of the veteran.

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To help VA monitor the extent to which its medical facilities are following the evaluation and treatment protocol, VA has implemented for fiscal year 2008 two TBI performance measures related to the follow-up evaluation. One of the two VA performance measures is designed to track whether facility staff contacted veterans who screened positive on the TBI screening tool within 1 week of screening to schedule the follow-up evaluation and, if unsuccessful, made subsequent attempts to contact the veteran. The other TBI performance measure is designed to track whether specialty providers completed the follow-up evaluation for veterans who screened positive on VA's TBI screening tool within 30 days of VA's initial contact with the veterans. In addition, VA implemented in November 2007 a computer-based template intended to help ensure providers follow the protocol when conducting a follow-up evaluation. The template will also provide a standardized method to document the results of this evaluation.

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### VA Has Established Training for Its Providers to Help Enhance Their Use of the Protocol

VA has established nationwide training to help enhance its providers' use of the evaluation and treatment protocol and thereby help ensure veterans are evaluated and treated for mild TBI. Under VA policy, VA providers conducting the follow-up evaluations are required to complete training VA developed on its protocol for evaluating and treating veterans with mild TBI. The training consists of VA's online TBI training module, which is also required of providers conducting VA's TBI screening, and three satellite broadcasts providing information on the TBI screening tool and on the evaluation and treatment protocol. While the TBI training module provides an overview of TBI, the satellite broadcasts—produced in 2007 and aired to VA medical facilities periodically—are designed to provide information and guidance on using the protocol for evaluation and treatment efforts related to mild TBI. In particular, the satellite broadcasts provide information on how to perform the follow-up evaluation, how to confirm a mild TBI diagnosis, how to establish a treatment plan, and when to make referrals to a higher level of VA care. According to VA officials, the non-VA specialty providers that medical facilities may use to conduct the follow-up evaluations are not required to complete VA's online TBI training module and the training VA developed on the evaluation and treatment protocol. A VA official told us this was the case because VA expects that referrals for follow-up evaluations will be made to specialty providers with TBI expertise. A VA official also noted that VA is willing to provide training on VA's evaluation and treatment protocol to non-VA providers.

In addition to the training VA requires, VA has provided other training to help its providers use the evaluation and treatment protocol. At two



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national training conferences held in April and August of 2007, VA provided training on evaluating and treating veterans with mild TBI, including training on using the protocol. In addition, through conference calls between staff at VA headquarters and VA medical facilities and through educational materials contained on VA's internal Web site, VA has also provided training on using the protocol. According to a VA official, VA decided to provide some of its training, such as the second satellite broadcast, after learning during conference calls between VA headquarters and VA medical facilities that some providers conducting follow-up evaluations focused on using the symptom checklist and did not always obtain a detailed medical history and conduct a targeted physical examination.

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### Two VA Medical Facilities We Reviewed Had Difficulty Fully Following VA's Protocol

Although VA has implemented its evaluation and treatment protocol across its facilities, we found one of the VA medical facilities we reviewed had difficulty following the part of the protocol that specifies how facilities should contact OEF/OIF veterans who screened positive to schedule the follow-up evaluation. According to the protocol, if a veteran screens positive, the TBI screening tool should automatically prompt the VA provider administering the screen to electronically send a request for consultation to the specialty department that will conduct the follow-up evaluation. However, providers at this facility identified cases where OEF/OIF veterans had screened positive on VA's TBI screening tool, but the specialty department responsible for completing the follow-up evaluation did not receive the electronic consultation request, as specified by VA's protocol. As a result, 27 veterans that screened positive on the TBI screening tool at this medical facility had not been contacted by the specialty department responsible for conducting the follow-up evaluation to schedule an appointment.

During the period of our review, officials at the facility recognized the problem with the electronic notification and took corrective action. Because of the potential for this problem at other VA medical facilities, we notified a VA headquarters official about this problem. When asked if this problem had been discussed with VA medical facilities systemwide, VA officials told us that the problem had not been specifically addressed or investigated at other VA medical facilities, but that facilities generally had not reported this type of problem during conference calls between VA headquarters and VA medical facilities held to discuss potential problems. In the future, similar problems scheduling follow-up evaluations may be identified through one of VA's new performance measures related to the TBI follow-up evaluation process. The performance measure, which was

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implemented in the first quarter of fiscal year 2008, is designed to retrospectively track whether veterans who screened positive on the TBI screening tool—including those who screened positive on the TBI screening tool in fiscal year 2007—were contacted by the specialty department in a timely manner to schedule the follow-up evaluation as required by VA's evaluation and treatment protocol. However, because this performance measure was not implemented until the first quarter of fiscal year 2008, veterans who screened positive in fiscal year 2007 who were not contacted by the specialty department may not be identified until the performance measure results are made available to the medical facilities in fiscal year 2008, unless the medical facilities identify these veterans through their own tracking mechanisms.

At two of the VA medical facilities we reviewed, including the facility that reported problems with the electronic notification, we also found that providers were not fully following VA's evaluation and treatment protocol at the time of our site visit, though they were doing so several months later. For example, at one facility we reviewed in July 2007, three months after national implementation of the protocol, one of two specialty providers designated to conduct the follow-up evaluation at the medical facility had not learned about the protocol or the symptom checklist until the day before our site visit. At another VA medical facility we reviewed in July 2007, the designated specialty providers were familiar with the protocol, including the symptom checklist, but facility staff told us that they were not yet using the symptom checklist as part of the follow-up evaluations due to staff workload and clinic capacity issues. Facility staff told us that they planned to fully implement the protocol, by using the symptom checklist once an additional provider had been hired and trained. When we followed up with the facilities in September and October 2007, the facilities told us that the specialty providers are now using the symptom checklist. Both facilities told us that they had created a template in the computerized medical record system that helps specialty providers ensure they are following the protocol and completing the symptom checklist in the course of their follow-up evaluation.

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### Some VA Specialty Providers Reported That an Increased Need for Follow-up Evaluations Could Create a Need to Expand Specialty Departments' Capacity

At the VA medical facilities we reviewed, providers stated that conducting VA's TBI follow-up evaluations was not currently causing significant capacity problems for their specialty departments. However, according to providers at some facilities, an increased need for such evaluations could result in increases in specialty providers' workloads. At the time of our review, VA medical facilities were just beginning to screen and evaluate OEF/OIF veterans for mild TBI using VA's new screening and evaluation processes, and providers reported no significant capacity problems in their specialty departments caused by the TBI follow-up evaluations. However, VA providers and officials at several facilities told us that as VA screens more OEF/OIF veterans over time, the resulting demand for follow-up evaluations is likely to increase. In addition, DOD is planning to but has not yet begun to routinely screen OEF/OIF servicemembers for possible TBI after their return from combat theaters as part of DOD's post-deployment health assessment process. Once DOD begins its screening efforts, VA facilities could see an increase in demand for TBI-related evaluations for OEF/OIF veterans, including those veterans who are deactivated members of the National Guard and Reserves and—like other OEF/OIF veterans—are presumptively eligible for VA care at no cost for up to 5 years. According to VA specialty providers at some facilities, an increase in demand for follow-up evaluations could result in VA's specialty departments needing to add more providers in order to expand specialty departments' capacity to provide follow-up TBI evaluations for OEF/OIF veterans.

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### VA Faces Clinical and Cultural Challenges in Screening and Evaluating OEF/OIF Veterans for Mild TBI

VA faces a number of clinical and cultural challenges in its efforts to screen and evaluate OEF/OIF veterans for mild TBI. The lack of objective diagnostic tests that can identify mild TBI, and the fact that many symptoms of mild TBI are similar to those of other conditions, such as PTSD, represent clinical challenges to VA's screening and evaluation efforts. In addition, several characteristics of the OEF/OIF veteran population create cultural challenges to VA's efforts to the extent that the characteristics make OEF/OIF veterans unwilling to report experiencing TBI-related symptoms or unwilling to seek care for such symptoms.

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## Lack of Objective Diagnostic Tests and Overlap of Mild TBI Symptoms with Those of Other Conditions Present Clinical Challenges

VA faces a number of clinical challenges in its efforts to screen OEF/OIF veterans for mild TBI and evaluate those who screen positive on the TBI screening tool. One challenge is that there are currently no objective diagnostic tests—such as laboratory tests or neuroimaging tests like MRI and computed tomography (CT) scans—that can definitively and reliably identify mild TBI.<sup>35</sup> While neuroimaging tests yield information about injury to the brain for some patients with mild TBI, most patients with mild TBI have normal neuroimaging test results. Similarly, there are no laboratory tests such as blood tests that can detect whether an OEF/OIF veteran has a mild TBI.<sup>36</sup>

In the absence of objective diagnostic tests that definitively determine if an OEF/OIF veteran has a mild TBI, VA providers must screen and evaluate veterans using the veterans' own descriptions of their exposures to incidents that might have caused a mild TBI as well as their descriptions of past and current symptoms that could indicate a mild TBI. However, using self-reported information to screen and evaluate in order to make a clinical diagnosis can be challenging. Self-reported information can reflect the veteran's own recollections of the incident and symptoms but can also reflect what the veteran was told by others who observed the incident if the veteran had lost consciousness or had memory loss. According to officials we interviewed at several VA medical facilities, it can be difficult to obtain from veterans a clear history of the veteran's exposure to incidents as well as symptoms. One reason officials cited was the lapse of time between the incident that could have caused a mild TBI and the screening for TBI. Officials explained that in many instances, months or even years have passed between an incident and the time a veteran undergoes TBI screening and subsequent evaluation, and that amount of time can complicate the veteran's ability to accurately and completely recall the incident and the symptoms experienced afterwards. At one VA medical facility, for example, officials reported that it could be 2 to 3 years after the initial injury before VA providers see veterans for their initial TBI screening. Finally, medical facility officials also noted that memory problems due to the mild TBI itself can adversely affect the accuracy of the information that an OEF/OIF veteran provides.

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<sup>35</sup>The lack of objective diagnostic tests to identify mild TBI is not a challenge that is unique to VA.

<sup>36</sup>Researchers are studying whether there are diagnostic laboratory tests that could be used to identify mild TBI, according to an NIH official.

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Another clinical challenge VA faces in its TBI screening and evaluation effort is the fact that many symptoms of mild TBI are similar to the symptoms associated with other conditions, which makes a definitive diagnosis of mild TBI more difficult to reach. Many symptoms of mild TBI—such as insomnia and irritability—are similar to those of PTSD.<sup>37</sup> Officials at all nine medical facilities we reviewed reported that this overlap in symptoms posed a challenge for them. They noted that OEF/OIF veterans may have symptoms that could indicate either PTSD or mild TBI, or both, and that it can be difficult to determine which condition or conditions the OEF/OIF veteran has. Deployment to a combat theater can put OEF/OIF veterans at risk for other mental health conditions as well—such as anxiety or depression. These mental health conditions may be symptoms of mild TBI themselves and may also lead to additional symptoms—such as difficulty sleeping or memory problems—that overlap with those of mild TBI. Complicating this challenge is the fact that certain combat experiences, such as exposure to an explosive blast, can put OEF/OIF veterans at risk for mental health conditions as well as for mild TBI. In addition, some symptoms of mild TBI—such as headaches and anxiety—are commonly found in the general population or may predate the injury, which can make it difficult to determine whether these symptoms can be attributed specifically to a mild TBI.

An additional clinical challenge reported by VA medical facility officials is that OEF/OIF veterans with mild TBI might not realize that they have an injury and should seek health care. VA officials and TBI experts stated that for some OEF/OIF veterans, their mild TBI symptoms may be subtle and easy to overlook, while other OEF/OIF veterans may not realize they have an injury because they do not have an obvious physical injury, such as a head wound. In addition, OEF/OIF veterans with mild TBI might be aware that they are experiencing symptoms such as headaches or difficulties completing tasks, but they might not connect those problems to a specific deployment-related incident or realize that the problems indicate a physical injury that needs to be evaluated and treated. For example, officials at several VA medical facilities reported that many OEF/OIF veterans notice problems after they attempt to resume their regular activities after deployment. Officials also noted that difficulties such as memory or concentration problems may arise once veterans return to

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<sup>37</sup>See Charles W. Hoge, et al., “Mild Traumatic Brain Injury in U.S. Soldiers Returning from Iraq,” *New England Journal of Medicine*, vol. 358, no. 5 (2008), pp. 453–463.

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work or school. These veterans may not, however, connect these difficulties to a possible injury and realize that they need to seek care.

Facility officials have found that OEF/OIF veterans' family members are often recognizing the veterans' behavioral or emotional changes or symptoms and encouraging them to seek VA care. This has led several facilities to take steps to educate their local communities about TBI symptoms and VA services, to help OEF/OIF veterans, their families, and community members learn more about the condition and to facilitate veterans being screened and evaluated for TBI.

Memory problems that can occur in OEF/OIF veterans with mild TBI can create a challenge when OEF/OIF veterans forget that they are due to come to a VA medical facility for screening and evaluation appointments. Officials at several facilities we reviewed have observed that many OEF/OIF veterans with mild TBI need help remembering when they have appointments. Officials have found that hand-held computers and reminder phone calls can be effective in helping to ensure that OEF/OIF veterans keep their appointments and receive needed care.

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### Characteristics of Military Culture and of OEF/OIF Veterans Create Cultural Challenges to VA's Mild TBI Screening and Evaluation Efforts

Several characteristics of the OEF/OIF veteran population create cultural challenges to VA's effort to screen OEF/OIF veterans for mild TBI and evaluate those who screen positive. For example, several aspects of military culture may discourage OEF/OIF veterans from seeking care for TBI-related symptoms, even though the veterans have returned to civilian life. According to VA officials, some OEF/OIF veterans may have concerns about being perceived as physically weak, and these concerns may stem in part from the military culture that emphasizes being strong and self-sufficient. In addition, VA officials stated that OEF/OIF veterans may not want to risk being labeled with a condition that could be perceived as a mental illness, due to the stigma associated with mental illness. Finally, according to staff at several of the VA facilities we reviewed, some OEF/OIF veterans have expressed concerns that reporting symptoms associated with a TBI could compromise their ability to remain in the National Guard or Reserves or to obtain law enforcement or security jobs after their military obligation is completed. Such veterans are concerned that documentation in their medical record regarding TBI-related symptoms could adversely affect their future employment plans.

Another cultural challenge to screening and evaluating OEF/OIF veterans for TBI is that these veterans may not schedule appointments or keep existing appointments for VA care in a timely manner due to work and

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family priorities or constraints. OEF/OIF veterans tend to be younger than other VA patients and often work or are in school full-time or have young children to care for, according to VA medical facility officials. OEF/OIF veterans may be returning to the jobs they held prior to deployment or starting new jobs. Facility officials have found that some employed OEF/OIF veterans are concerned with the possible consequences of taking too much time off from work to seek care and have difficulty coming to VA facilities to be screened and evaluated for mild TBI due to their work schedules. Other OEF/OIF veterans are enrolled in school and have difficulties making it to appointments because of their class schedules. Facility officials also noted that some veterans do not have available childcare and must miss appointments to stay home with their children. Facility staff also reported that OEF/OIF veterans often want to return to their lives in the community after their deployment and, as a result, may not make their own health care needs a priority when they first return home. Lastly, according to officials at several VA facilities, OEF/OIF veterans who screen positive for a possible TBI may have to travel a substantial distance to reach VA facilities for their follow-up evaluations. At one facility we reviewed, officials reported that the area it serves is characterized by small towns and farms and that some OEF/OIF veterans may have to drive 100 miles to reach the VA facility. These factors have contributed to VA facilities having high rates of no-shows for appointments for OEF/OIF veterans. For example, two facilities we reviewed reported a 50 percent or greater clinic no-show rate for OEF/OIF veterans.

In order to address these cultural challenges related to screening and evaluating OEF/OIF veterans for TBI, officials at the medical facilities we reviewed reported using various strategies. For example, in order to facilitate veterans coming to the appointments or rescheduling appointments they were unable to keep, some facilities sent reminder letters to or called OEF/OIF veterans to inform them about the day and time of their upcoming follow-up evaluation. At some facilities we reviewed, social workers, case managers, or nurses used phone calls and letters to contact OEF/OIF veterans who did not show up for follow-up evaluations or other appointments, to encourage them to come in for care. Several facilities we reviewed arranged for the follow-up evaluation to take place on the same day that the OEF/OIF veteran was screened for TBI, or have scheduled multiple appointments on one day so the OEF/OIF veteran does not have to miss multiple days of work or school for appointments.

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Another characteristic of OEF/OIF veterans that creates a cultural challenge for VA is that OEF/OIF veterans may not want to seek care, such as TBI screening and evaluation services, at VA medical facilities due to their perceptions about VA health care or the population served by VA facilities. Officials at some VA medical facilities told us that some OEF/OIF veterans saw VA facilities as serving an elderly veteran population and not the younger OEF/OIF population—or thought that VA providers did not want to treat younger veterans. These impressions made some OEF/OIF veterans hesitant to seek VA care. Facility officials reported that they sought to counter these impressions by educating OEF/OIF veterans about VA’s health care system and emphasizing that VA is providing care for the OEF/OIF population.

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## Conclusions

With TBI a leading injury among U.S. forces serving in military operations in Afghanistan and Iraq, VA has taken positive steps in its efforts to ensure that veterans from these conflicts who are still experiencing the effects of mild TBI are identified, evaluated, and treated when they seek care at VA medical facilities. Our work during the start-up phase of VA’s efforts shows that VA facilities have made progress implementing VA’s TBI screening tool and VA’s national TBI evaluation and treatment protocol. Although we found that there were difficulties following some of the protocol’s requirements at two VA medical facilities, those facilities had taken steps to address those issues. VA has implemented new TBI-related performance measures for fiscal year 2008 as well as a computer-based template to be used with the follow-up evaluation, which are both designed to help ensure that VA providers are following the TBI protocol.

As VA moves beyond the start-up phase of its TBI efforts, one of VA’s remaining challenges is ensuring that the basis of its efforts—its TBI screening tool—is valid and reliable. VA recognizes the importance of evaluating the screening tool’s validity and reliability—and is planning to do so. However, VA has not yet begun its evaluation. Until VA evaluates the TBI screening tool’s validity and reliability, VA providers will continue to use the screening tool without knowing how effective the tool is in identifying which veterans are and are not at risk for having mild TBI.

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## Recommendation for Executive Action

To establish whether the use of VA’s TBI screening tool is effective in identifying OEF/OIF veterans at risk for mild TBI, we recommend that the Secretary of Veterans Affairs direct the Under Secretary for Health to expeditiously evaluate the clinical validity and reliability of VA’s TBI screening tool.



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## Agency Comments

In commenting on a draft of this report, VA concurred with our findings, conclusions, and recommendation to expedite the evaluation of the validity and reliability of the TBI screening tool. In its comments, VA updated its plans to finalize a validation study of the TBI screening tool and agreed to fast-track the validation study, with preliminary results expected by the end of 2008. VA noted that it also plans to study the health needs and outcomes of veterans with TBI and to look for more accurate methods of diagnosing TBI, with a particular focus on veterans who may have coexisting conditions such as PTSD, substance abuse, and physical trauma. VA also noted that more time and research may be needed to ensure consensus in the medical community about the diagnosis of TBI and the implications for recovery. VA further commented that the lack of any objective diagnostic test to definitively and reliably identify mild TBI is not unique to VA. We agree and have included clarifying language in the report to indicate that this is not a limitation unique to VA. VA's written comments are reprinted in appendix III. VA also provided technical comments, which we have incorporated as appropriate.

We provided a draft of this report to DOD for comment. DOD declined to provide comments on the draft report.

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We are sending copies of this report to the Secretary of Veterans Affairs and the Secretary of Defense. We will also provide copies to others upon request. In addition, the report is available at no charge on the GAO Web site at <http://www.gao.gov>. If you or your staff have any questions about this report, please contact me at (202) 512-7114 or [kanofm@gao.gov](mailto:kanofm@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff that made major contributions to this report are listed in appendix IV.



Marjorie Kanof  
Managing Director, Health Care

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*List of Requesters*

The Honorable Daniel K. Akaka  
Chairman  
Committee on Veterans' Affairs  
United States Senate

The Honorable Michael H. Michaud  
Chairman  
Subcommittee on Health  
Committee on Veterans' Affairs  
House of Representatives

The Honorable Wayne Allard  
United States Senate

The Honorable Christopher S. Bond  
United States Senate

The Honorable Barbara Boxer  
United States Senate

The Honorable Tom Harkin  
United States Senate

The Honorable Joseph I. Lieberman  
United States Senate

The Honorable Claire McCaskill  
United States Senate

The Honorable Patty Murray  
United States Senate

The Honorable Barack Obama  
United States Senate

The Honorable Ken Salazar  
United States Senate

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The Honorable Bernard Sanders  
United States Senate

The Honorable Peter Welch  
House of Representatives

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# Appendix I: List of VA Medical Facilities, by Type of Polytrauma Component Site

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Component I sites, Polytrauma Rehabilitation Centers, are four regional medical facilities that provide acute comprehensive medical and rehabilitative care for the severely injured. These centers have a team of rehabilitation professionals and consultants from other specialties related to polytrauma and serve as resources for other Department of Veterans Affairs (VA) medical facilities.<sup>1</sup>

- 
- |                   |                |
|-------------------|----------------|
| • Minneapolis, MN | • Richmond, VA |
| • Palo Alto, CA   | • Tampa, FL    |
- 

Component II sites, Polytrauma Network Sites, are 21 medical facilities that provide specialized, post-acute rehabilitation services. There is one Polytrauma Network Site in each of VA’s 21 regional health care networks, including one at each of the four Component I sites.

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- |                 |                    |                        |
|-----------------|--------------------|------------------------|
| • Augusta, GA   | • Houston, TX      | • Seattle, WA          |
| • Boston, MA    | • Indianapolis, IN | • St. Louis, MO        |
| • Bronx, NY     | • Lexington, KY    | • Syracuse, NY         |
| • Cleveland, OH | • Minneapolis, MN  | • Tampa, FL            |
| • Dallas, TX    | • Palo Alto, CA    | • Tucson, AZ           |
| • Denver, CO    | • Philadelphia, PA | • Washington, DC       |
| • Hines, IL     | • Richmond, VA     | • West Los Angeles, CA |
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<sup>1</sup>VA plans to begin construction on a fifth polytrauma rehabilitation center in San Antonio, Texas, in 2008.

Component III sites, Polytrauma Support Clinic Teams, are medical facilities that have facility-based teams of providers with rehabilitation expertise who deliver follow-up services to veterans and assist in the management of stable polytrauma conditions that are a consequence of the injuries sustained by veterans.

• Albany, NY	• Detroit, MI	• Muskogee, OK
• Albuquerque, NM	• East Orange, NJ	• Nashville, TN
• Alexandria, LA	• Erie, PA	• New York, NY
• Altoona, PA	• Gainesville, FL	• North Chicago, IL
• Ann Arbor, MI	• Grand Junction, CO	• Northport, NY
• Atlanta, GA	• Hampton, VA	• Pittsburgh, PA
• Baltimore, MD	• Huntington, WV	• Portland, OR
• Bath, NY	• Iowa City, IA	• Sacramento, CA
• Bay Pines, FL	• Jackson, MS	• Salisbury, NC
• Birmingham, AL	• Kansas City, MO	• Salt Lake City, UT
• Black Hills, SD	• Knoxville, IA	• San Antonio, TX
• Boise, ID	• Lebanon, PA	• San Diego, CA
• Brooklyn, NY	• Little Rock, AR	• Sioux Falls, SD
• Buffalo, NY	• Long Beach, CA	• St. Albans, NY
• Butler, PA	• Loma Linda, CA	• Temple, TX
• Canandaigua, NY	• Louisville, KY	• Togus, ME
• Castle Point, NY	• Lyons, NJ	• Tomah, WI
• Charleston, SC	• Madison, WI	• Tuscaloosa, AL
• Chicago, IL	• Martinsburg, WV	• West Haven, CT
• Cincinnati, OH	• Memphis, TN	• West Palm, FL
• Coatesville, PA	• Miami, FL	• Wilkes-Barre, PA
• Columbia, MO	• Milwaukee, WI	• Wilmington, DE
• Danville, IL	• Montrose, NY	• White River, VT
• Dayton, OH	• Mountain Home, TN	

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Component IV sites, Polytrauma Points of Contact, are present at medical facilities that do not have Component I, II, or III services. Each of these medical facilities has a point of contact whose role is to ensure that veterans are referred to a facility capable of providing the services they require.

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• Amarillo, TX	• Fayetteville, AR	• Poplar Bluff, MO
• American Lake, WA	• Fayetteville, NC	• Prescott, AZ
• Anchorage, AK	• Fort Harrison, MT	• Providence, RI
• Asheville, NC	• Fresno, CA	• Reno, NV
• Battle Creek, MI	• Grand Island, NE	• Roseburg, OR
• Beckley, WV	• Honolulu, HI	• Saginaw, MI
• Bedford, MA	• Iron Mountain, MI	• Salem, VA
• Big Spring, TX	• Kerrville, TX	• San Francisco, CA
• Biloxi, MS	• Las Vegas, NV	• Sepulveda, CA
• Cheyenne, WY	• Lincoln, NE	• Sheridan, WY
• Chillicothe, OH	• Manchester, NH	• Shreveport, LA
• Clarksburg, WV	• Manila, PI	• Spokane, WA
• Columbia, MO	• Marion, IL	• St. Cloud, MN
• Columbus, OH	• Marion, IN	• Topeka, KS
• Des Moines, IA	• New Orleans, LA	• Tuskegee, AL
• Dublin, GA	• Northampton, MA	• Viera, FL
• Durham, NC	• Oklahoma City, OK	• Waco, TX
• El Paso, TX	• Omaha, NE	• Walla Walla, WA
• Fargo, ND	• Orlando, FL	• Wichita, KS
	• Phoenix, AZ	• White City, OR

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Source: GAO summary of VA information.

# Appendix II: Symptom Checklist Included in VA's National Traumatic Brain Injury Evaluation and Treatment Protocol

## NEUROBEHAVIORAL SYMPTOM INVENTORY

Please rate the following symptoms with regard to how much they have disturbed you  
*SINCE YOUR INJURY.*

**0 = None-** Rarely if ever present; not a problem at all

**1 = Mild-** Occasionally present, but it does not disrupt activities; I can usually continue what I'm doing; doesn't really concern me.

**2 = Moderate-** Often present, occasionally disrupts my activities; I can usually continue what I'm doing with some effort; I feel somewhat concerned.

**3 = Severe-** Frequently present and disrupts activities; I can only do things that are fairly simple or take little effort; I feel like I need help.

**4 = Very Severe-** Almost always present and I have been unable to perform at work, school or home due to this problem; I probably cannot function without help.

1. Feeling dizzy:

0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

2. Loss of balance:

0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

3. Poor coordination, clumsy:

0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

4. Headaches:

0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

5. Nausea:

0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

6. Vision problems, blurring, trouble seeing:

0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

**Appendix II: Symptom Checklist Included in  
VA's National Traumatic Brain Injury  
Evaluation and Treatment Protocol**

7. Sensitivity to light	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
8. Hearing difficulty:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
9. Sensitivity to noise:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
10. Numbness or tingling on parts of my body:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
11. Change in taste and/or smell:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
12. Loss of appetite or increase appetite:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
13. Poor concentration, can't pay attention, easily distracted:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
14. Forgetfulness, can't remember things:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
15. Difficulty making decisions:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
16. Slowed thinking, difficulty getting organized, can't finish things:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
17. Fatigue, loss of energy, getting tired easily:	0	1	2	3	4
	NONE	MILD	MODERATE	SEVERE	VERY SEVERE



**Appendix II: Symptom Checklist Included in  
VA's National Traumatic Brain Injury  
Evaluation and Treatment Protocol**

18. Difficulty falling or staying asleep:				
0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE
19. Feeling anxious or tense:				
0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE
20. Feeling depressed or sad:				
0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE
21. Irritability, easily annoyed:				
0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE
22. Poor frustration tolerance, feeling easily overwhelmed by things:				
0	1	2	3	4
NONE	MILD	MODERATE	SEVERE	VERY SEVERE

# Appendix III: Comments from the Department of Veterans Affairs



THE SECRETARY OF VETERANS AFFAIRS

WASHINGTON

January 31, 2008

Ms. Marjorie E. Kanof  
Managing Director, Health Care  
U. S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Ms. Kanof:

The Department of Veterans Affairs (VA) has reviewed the Government Accountability Office's (GAO) draft report, ***VA HEALTH CARE: Mild Traumatic Brain Injury Screening and Evaluation Implemented for OEF/OIF Veterans but Challenges Remain*** (GAO-08-276), agrees with GAO's conclusions, and concurs with GAO's recommendations.

The Department of Veterans Affairs concurs with GAO's findings and the recommendation to expedite the evaluation of the clinical validity and reliability of VA's traumatic brain injury (TBI) screening tool. I agree that mild TBI should be screened, evaluated and treated to mitigate physical, emotional, and cognitive effects of the injury.

The enclosure specifically addresses GAO's recommendation and provides comments to the draft report. VA appreciates the opportunity to comment on your draft report.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James B. Peake".

James B. Peake, M.D.

Enclosure

Enclosure

Department of Veterans Affairs (VA) Comments to  
Government Accountability Office (GAO) Draft Report  
***VA HEALTH CARE: Mild Traumatic Brain Injury Screening and Evaluation  
Implemented for OEF/OIF Veterans but Challenges Remain***  
(GAO-08-276)

**To establish whether the use of VA's TBI screening tool is effective in identifying OEF/OIF veterans at risk for mild TBI, GAO recommends that the Secretary of Veterans Affairs take the following action:**

- **Direct the Under Secretary for Health to expeditiously evaluate the clinical validity and reliability of VA's TBI screening tool.**

**Concur** - As GAO reports, VA began implementing TBI screening for Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) veterans before conducting a study on the clinical validity and reliability of the TBI screening tool to avoid delaying the start of TBI screening efforts. The screening tool is appropriate for identifying veterans who require a full evaluation for mild traumatic brain injury (MTBI). MTBI is considered a signature injury of the OEF/OIF conflict, often called an invisible wound, and as such, VA is committed to identifying and treating veterans with all levels of a TBI. Because no validated screening tool existed for MTBI, both DoD and VA developed new ways of screening for MTBI based on best available evidence. When VA was directed to improve rates of screening OEF/OIF veterans for mild TBI, the Polytrauma Quality Enhancement Research Initiative (QUERI) conducted a literature review and determined that no screening tool existed except for the DoD model. Any other tools that did exist were designed for use immediately at time of injury, and none existed that would assess months after time of injury. Further, no tools existed for assessing combat-related injuries; e.g., blast. In December 2006, VA established a task force to develop a MTBI screening procedure. By April 2007, the task force completed developing a MTBI screening instrument and evaluation protocol. An automated MTBI Clinical Reminder was established in the clinical patient record system, policy was established (VHA Directive 2007-013), and national training was completed for over 50,000 VA practitioners. VA implemented the national clinical reminder for screening on April 14, 2007. All OEF/OIF veterans who enter the VA system of care are screened for possible MTBI.

VA's Office of Research and Development is finalizing a validation study for the VA MTBI screening tool. VA will fast-track this validation study with preliminary results expected by the end 2008. The protocol will be made available to the VA health system within 12 months of study initiation. Additional important questions, such as estimates of the health needs of veterans with TBI and outcomes over a planned 2 year follow-up period, will be addressed during the entire study duration, estimated at approximately 4 years. Finally, the Veterans Health Administration

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(Continued)

(VHA) Office of Research and Development (ORD) is actively soliciting proposals to develop, evaluate, and validate new, more accurate methods of diagnosing TBI, with a particular focus on situations that involve co-occurring conditions such as post traumatic stress disorder, substance use disorders, and physical trauma.

There is no "gold standard" for the diagnosis of TBI, and in particular, mild TBI. The goal of this protocol is both to assess the present screening tool, and to develop a better one. The goal of such an instrument is to reliably predict the long-term outcomes and care needs of TBI patients and thus provide clinically targeted interventions earlier in the care process. Such predictions require long-term follow-up of patients. This is particularly true for mild TBI, where clinical problems often appear 18-months or later post injury. The initial assessment of the current instrument, as compared with an in-depth neuropsychological assessment (criterion validity) will be available after the first year. Determining the predictive validity of the instrument and any alternative measures will take the full 4 years because of the clinical course of this condition. VHA will issue the service directed research (SDR) in early February with proposals due in late March. We expect funding to begin in May. It is likely to take 6 months to obtain institutional review board (IRB) approval from the many sites this protocol will require. We anticipate data collection to begin in November 2008 with phase one results available in December 2009. Second phase result will be available 3 years later.

VA's strategy to carefully evaluate and validate its screening program for TBI is reinforced by recently published research from DoD: "Screening for mild TBI months after injury [which is the case with the VA screening] is likely to result in the referral of a large number of persons for evaluation and treatment of nonspecific brain injuries, with potential unintended iatrogenic consequences. Evaluation of the screening programs for TBI is needed to ensure that the risks do not outweigh the benefits and that screening is conducted within an effective structure of care" (see New England Journal of Medicine, January 31, 2008, article entitled "Mild Traumatic Brain Injury in U.S. Soldiers Returning from Iraq"). Results of this research further advocate that screening for TBI should be "conducted within an effective structure of care," which is consistent with VA's deployment of its screening tool within the TBI/polytrauma system of care. Although the DoD research concludes that persistence of "post-concussive symptoms" is related to emotional-behavioral components, this may be the case with most symptom-based disorders and not unique to MTBI. VA and DoD health care systems uniquely treat patients at different phases of their life and career, and more time and research

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(Continued)

may be needed to ensure consensus in the medical community about the  
diagnosis of TBI and the implications for recovery.

Page 34 of the report notes that VA lacks any objective diagnostic test, such as  
laboratory tests or neuroimaging tests like magnetic resonance imaging (MRI) and  
computed tomography (CT) scans that definitively and reliably identify mild TB;  
However, it should also be noted that this limitation is not unique to VA, as there is  
no universally used diagnostic tool currently available anywhere.

Now on p. 31.

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# Appendix IV: GAO Contact and Staff Acknowledgments

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## GAO Contact

Marjorie Kanof, (202) 512-7114 or [kanofm@gao.gov](mailto:kanofm@gao.gov)

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## Acknowledgments

In addition to the contact named above, Marcia Mann, Assistant Director; Robin Burke; Sarah Burton; Krister Friday; Adrienne Griffin; Kelli Jones; Giao N. Nguyen; and Jessica Cobert Smith made key contributions to this report.

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# Related GAO Products

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*VA and DOD Health Care: Administration of DOD's Post-Deployment Health Reassessment to National Guard and Reserve Servicemembers and VA's Interaction with DOD.* [GAO-08-181R](#). Washington, D.C.: January 25, 2008.

*DOD and VA: Preliminary Observations on Efforts to Improve Health Care and Disability Evaluations for Returning Servicemembers.* [GAO-07-1256T](#). Washington, D.C.: September 26, 2007.

*VA and DOD Health Care: Efforts to Provide Seamless Transition of Care for OEF and OIF Servicemembers and Veterans.* [GAO-06-794R](#). Washington, D.C.: June 30, 2006.

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