

Traumatic Brain

Injury: The "Signature Injury" of the Iraq War

by Tania Aftandilians

When an explosive device detonates on the battlefield, soldiers often walk away seemingly unscathed. However, these soldiers often sustain serious injuries that are not readily detectable. One of the most common yet overlooked war-related afflictions is Traumatic Brain Injury, or TBI. TBI is a general term that refers to brain damage caused by sudden trauma. It can range from mild, severe, fatal, and is usually caused by a forceful blow to the head. Objects that pierce the skull and enter the brain can also be a cause of TBI. This affliction often remains undiagnosed because signs or symptoms are not always immediately obvious.

However, if left untreated, this injury can have severe consequences. For those dealing with TBI, there are long-term biological and psychological effects, as well as emotional consequences for the patients and their families. Due to TBI's serious symptoms as well as its inconspicuous nature, it should receive the same attention as any other long-term debilitating disease. There has been a rapid increase in military TBI cases in recent years, and even though the government has made great advances in life-saving technologies, the improvements in long-term care have not kept pace.

How does TBI fit into the context of war?

Studying the causes, treatments, and preventive measures of TBI is especially important for the current engagement in Iraq, as soldiers are being deployed daily. Landmines are being heavily utilized in this war and are by far the biggest cause of TBI. In fact, TBI has become known as the "signature injury" among soldiers fighting in Iraq. To date, at least 2,000 soldiers have been treated for TBI, along with an estimated 7,500 troops returning from Iraq with some degree of undiagnosed TBI (*Dead Men Walking* 2007).

The number of soldiers who survive brain injuries during battle is unprecedented thanks to advanced body armor and rapid on-site medical care. However, they are often at a loss when it comes to receiving long-term care. The new innovations that save so many lives also mean that more soldiers are coming home with varying degrees of brain injury that require treatment. Some victims sustain minor brain damage that can be treated with rehabilitation, while others have nearly all parts of their brain affected. The government is going to great lengths to *save* soldiers' lives in Iraq; however, funding is severely lacking when it

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comes to preserving the quality of life of TBI patients. Most of the funding is used to ensure that wounded soldiers immediately receive care from top physicians and to guarantee that they are

granted access to expensive drugs and technology. According to a Harvard University budget expert, the cost of lifelong care for the soldiers engaged in Iraq is estimated to be \$35 billion, but the question of who will foot the bill is still up in the air (*Dead Men Walking* 2007). So far, the government has not stepped up in terms of financing long-term care, and the families of soldiers cannot afford it. Saving the lives of TBI patients is therefore only half of the challenge. The other half, providing caring for TBI patients after "saving" their lives, requires years, perhaps a lifetime, of expensive medical care. The United States government needs to take a more active role in overseeing and ensuring care for the men and women who put their lives on the line.

What are the short- and long-term effects of TBI?

To comprehend the scope of TBI, one must understand its many symptoms and effects on family members. The short-term effects of TBI include unconsciousness, complications of other organs, and general trauma from the impact. The long-term effects include post-concussion syn-

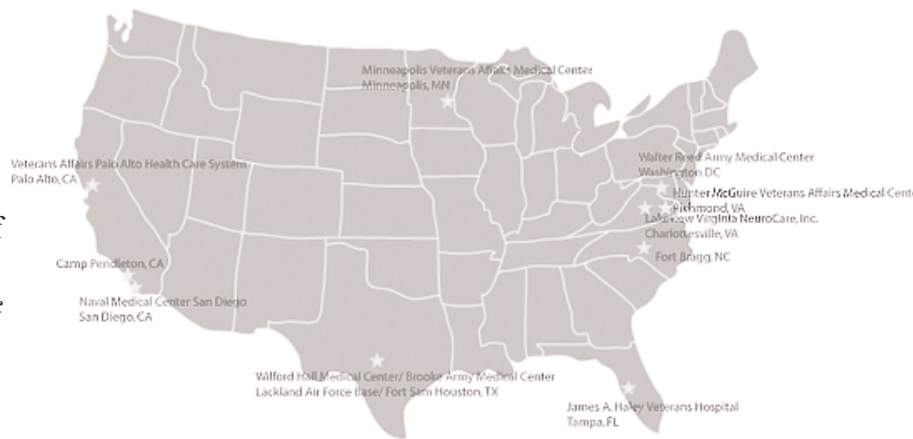
drome, cognitive problems, sensory deficits, a variety of physical problems, and emotional problems such as confusion, constant frustration and agitation, a feeling of isolation, substance addiction, etc. (*Traumatic Brain Injury*). But one must not overlook the effects on the family and friends of TBI patients.

Watching a loved one cope with some of the more severe symptoms of TBI can be very emotionally distressing. In our wartime society, death is seen as the more immediate consequence of battle, and disability is seldom discussed, making it difficult to cope with. Funding the discovery of new treatments is critical not only for the sake of the soldiers' lives, but also for the emotional well-being of their families.

What are the current treatments for soldiers with TBI?

In most TBI cases, little can be done to reverse the damage that has already incurred, so physicians tend to focus on maintaining life and preventing further injury. The first line of care administered immediately following trauma at the military site includes providing adequate oxygen supply, maintaining proper blood flow, regulating blood pressure, and preventing any movement, as these soldiers may also have spinal cord injuries. They also need to check for abnormally high intracranial pressure (due to an increased buildup of cerebrospinal fluid in the skull), which can be a side effect of brain or bodily injury. Barbiturates may be used to relieve the pressure in the patient's skull; however, if the condition is more severe, surgery may be necessary to drain the excess fluid. In the most severe cases, a part of the skull must be removed to relieve very high levels of intracranial pressure (*Traumatic Brain Injury*).

Various types of imaging are first used to identify specific damage in or of the skull. X-rays may show fractures in the skull itself. Computed tomography (CT) scans are used in more severe cases to identify hemorrhages, hematomas, contusions, brain tissue swelling, and tumors. Magnetic resonance imaging (MRI) scans are often used to show changes in neural activity due to changing oxygen content in the brain. These tools, along with cerebral angiographies, electroencephalographies (EEG), transcranial Doppler ultrasounds, and single photon emission computed tomographies (SPECT), aid medical personnel in



A map showing the locations of The Defense and Veterans Head Injury Program's specialized care centers for TBI.

deciding how to proceed with treatment (*The Basics of Brain Imaging*).

Surgery, if necessary, is performed very rapidly at the military bases. Soldiers must usually undergo surgical procedures to remove foreign objects such as bullets and

shrapnel from the skull. Most soldiers endure the treatments at the military bases and are sent home. At one such site, the Balad Air Base in northern Iraq, 96% of TBI survive the procedures (*Dead Men Walking* 2007). When patients return home they require a great deal of long-term care, and are sent to military health care centers in the US for further care and rehabilitation. Care at these elite centers is highly individualized; however, there is no cure for TBI and research on this injury is fairly new – as Michael Mason of Discover Magazine affirms, “the book is still being written” (*Dead Men Walking* 2007).

What is being done to improve the TBI crisis?

In the past few years, huge strides have been made in TBI treatment. The speed of care at the military bases has greatly increased, allowing medical personnel to save the lives of many more soldiers. During the Vietnam War, it would take at least two weeks to get the same care that soldiers can now receive in less than a day (*Dead Men Walking* 2007). Advances in technology and the presence of specialized physicians at military bases allow for faster access to top quality care. New treatments and drugs are also proving to be very effective in aiding medical teams. For instance, the new hemophilia drug Recombinant Active Factor VII assists in stopping bleed-outs and causes the blood to form clots. There are claims that this drug

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may cause dangerous clots along with the beneficial ones; in fact, despite its widespread use in the military, it has not yet been approved for use in trauma. Nevertheless, the drug has proven to be extremely effective, and the government is willing to pay its expensive price. The cost amounts to \$6,000 per dose, at \$3,000 per bottle and two

http://www.atrioia.org/case_files/pdp/pdp08c_slides

doses per treatment (*Factor VII* 2006). The government and military are certainly dedicated to bringing soldiers home alive, but they cannot stop there. Treatment must continue after the soldiers return home.

What needs to be improved?

Technology and pharmacological research have made it much easier to save the lives of the severely injured. As reassuring as this may sound, it has led to a new problem: a rapidly growing population of veterans that are permanently disabled, many to the point at which they can no longer earn an income. It will cost either the victims or the government billions of dollars to provide proper long-term care. Once a soldier is taken off active duty, his or her health care expenses are no longer fully covered, leaving many veterans with few options for long-term brain trauma treatment and rehabilitation. Very few specialized,

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acute rehabilitation centers for veterans with TBI exist in the United States, and outside of specialized care, there are some states with health centers that provide basic care, but unfortunately the care provided is inadequate for most military TBI cases. The Defense and Veterans Head Injury Program (DVHIP), a collaboration of the Department of Defense and the Department of Veterans Affairs, conducts clinical research and is committed to finding new treatments for TBI. However, its resources can only extend so far – DVHIP only carries out clinical trials at eight health care facilities nationwide (*DVBIC Sites*). The Veterans Administration itself only has four polytrauma centers and twenty-one designated polytrauma rehabilitation sites throughout the nation, a “painfully small number to deal with the great many injured troops” (*Dead Men Walking* 2007). The treatment centers that exist are top-notch but access to them is limited because only so many patients can be treated at one time, and care can be very expensive. Most families cannot pay for the recommended ninety days of rehabilitation – each day can cost upwards of \$1,000 – especially if the injured person is not able to earn an income. The government needs to provide more resources, either by opening up new centers or providing money to veterans for private care.

Many strides have been made in improving the effectiveness and speed of care to soldiers with TBI. However, we must also take into account that the sheer number of soldiers with TBI has increased rapidly and the number of

veterans left disabled without proper health care has paralleled this increase. We can applaud the great advances made in saving the lives of soldiers with TBI, but we should also be aware of the fact that not enough is being done to preserve their quality of life in the long run.

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