

Rocky Bleier *Answers the Call* | Attack on the Pentagon

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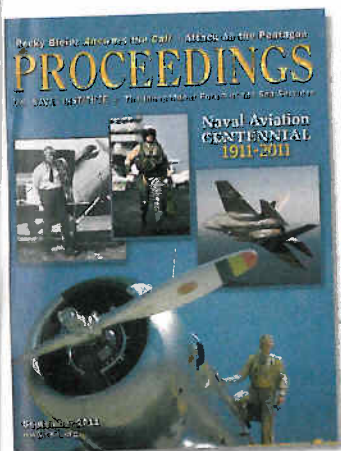
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Clockwise from left: Lieutenant Al Williams in 1923 with a Curtiss R3C-2 (U.S. NAVAL INSTITUTE PHOTO ARCHIVE); On 9 November 2010 in the Arabian Sea, Marine Captain William Paxton walks the flight deck of the USS *Harry S. Truman* (CVN-75) (U.S. NAVY [KILHO PARK]); The F-35C tests engines and airframe (JSF.MIL); Cadet at Naval Air Base Corpus Christi, Texas, August 1942 (LIBRARY OF CONGRESS). Our Naval Aviation Focus begins on page 16.

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The Independent Forum of the Sea Services
 291 Wood Rd.
 Annapolis, MD 21402
 Tel: (410) 268-6110 • Fax: (410) 295-1049
 www.usni.org

EDITOR-IN-CHIEF

Paul Merzlak
 pmerzlak@usni.org

MANAGING EDITOR

Fred Schultz
 freds@usni.org

ASSOCIATE EDITORS

Robin Bisland
 rbisland@usni.org

Eric Mills
 emills@usni.org

Donald Ross
 dross@usni.org

EDITOR-IN-CHIEF NAVAL HISTORY

Richard G. Latture
 rlatture@usni.org

EDITORIAL PROJECT COORDINATOR

Liese Doherty
 ldoherty@usni.org

DIRECTOR OF DESIGN AND PRODUCTION

Kelly Erlinger
 kerlinger@usni.org

SENIOR DESIGNER

Jen Mabe
 jmabe@usni.org

PHOTO EDITOR

Amy Voight
 avoight@usni.org

ADVERTISING SALES

Director - William K. Hughes
 wmkhughes@comcast.net

Manager - David Sheehan
 dsheehan@usni.org

Advertising Assistant - Michelle Mullen
 mmullen@usni.org

PUBLISHER

William Miller
 wmiller@usni.org

CEO

VADM Peter H. Daly, USN (Ret.)
 phdaly@usni.org

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Mired in

Muddy Studies'

By Noel Koch

Military medicine is woefully behind the curve on traumatic brain injury. Much of the research to date is at best inconclusive, offers little hope, and kindles a sense of despair.

It was once said that military medicine is to medicine as military music is to music—the implication being that neither is very good. While John Philip Sousa is not in Gustav Mahler's league, military medicine today probably is as good as medical science has to offer. I regularly caution skeptics that if they don't believe in miracles they haven't visited a military treatment facility recently.

While that is true, it is not sufficient. The "miracles" thus far fall into the categories of preventing combat deaths and repairing bodies or otherwise restoring gratifying levels of physical functionality. For a time those achievements overshadowed that category of damage gathered under the rubric of "invisible" wounds: traumatic brain injury, post-traumatic stress, and the residual consequences of one, the other, or both. It is in those realms that miracles are in short supply, while confusion is abundant.

Much of the confusion results from the effort to catch up to phenomena that have been neglected for years. Trau-

matic brain injuries are the wounds by which our present wars will be remembered.¹ They result from our adversaries' weapons of choice, i.e., variants of the improvised explosive device (IED). This has been so since the onset of hostilities nearly a decade ago. During that period we have had more success countering IEDs than we have had countering the damage they do to our warfighters.

As a result, two "classes" of wounded have evolved:

- Those with physical damage that can be seen, understood, and repaired
- Those with "invisible" damage to the brain, the psyche, and the soul

I spent a great deal of time in the execution of my responsibilities for wounded, ill, and injured warriors simply being with these individuals and their families. The most heartening and amazing engagements invariably were with those young soldiers who had suffered physical impairment—the more severe, the more amazing. There are, to be sure, long, intensely



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painful, and frustrating steps along the way from, say, the loss of a limb to getting past that loss through acceptance and rehabilitation. But for most who suffer physical damage there is an end point and, for that reason, hope.

That hope is the ineffable quality that infuses the atmosphere in the workout rooms of military treatment facilities where young warrior/athletes bounce about enjoying and showing off their restored dexterities.

The Wounds Within

There are others, however, watching from the sidelines as their physically wounded comrades defiantly fight their way back to capacity. They are individuals suffering some degree of traumatic brain injury, and many of them take no delight in these scenes of exuberance. On separate occasions I heard young men use, with bitter sincerity, the same words while watching their comrades: "I really hate those f---ing guys."

Are such impulsive expressions of anger driven by envy and self-regard? Or do they stem from the impairment of judgment affecting social behavior that can result from traumatic brain injury? Or both? Either or both, the number of military personnel who suffer from traumatic brain injury greatly exceeds the number coping with physical wounds. (A RAND Corporation study in 2008 numbered the former at 320,000.) The most egregious distinction between the two is that quantum strides have been made—and continue to be—in dealing with the physical wounds.

One source sums it up this way: "The military's awakening [to] the severity of the traumatic brain injury comes nine years after the flow of victims began. Critics such as Cheryl Lynch, founder of American Veterans With Brain Injuries, say the delayed response is nothing short of a dereliction that has left severely injured veterans suffering for years."² If current studies are any indication, those

same severely injured veterans will continue to suffer in the years to come, and their suffering may worsen.

Trying To Understand TBI

Authorities rank traumatic brain injuries as mild, moderate, or severe, with a mild TBI (mTBI) being a concussion and heretofore a matter of lesser concern than the higher-ranked TBIs.³ Now it appears mTBI is cause for

evolving injuries.” In other words, the blast effects were dynamic: the victims’ conditions were worsening.

This study suggests progress, however belated, in the effort to deal with traumatic brain injury, but that would be an overly optimistic conclusion. In a news article discussing the study, Katherine Helmick, the deputy director of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury is quoted as wishing the study might



U.S. NAVY (ANDREW N. MCINTYRE)

Veterans with severe physical wounds generally respond to treatment because they see an end point, the author says, and for that reason have hope—something often not seen among those suffering traumatic brain injury. Here, Navy Explosive Ordnance Disposalman First Class Patrick Woodruff reacts to a missed shot as a Navy/Coast Guard team squares off against an Air Force squad in the Warrior Games at Colorado Springs, Colorado, in May.

“help us understand what blast is doing to the brain, and help us get what we really want in diagnosing traumatic brain injury, which is objective markers.”⁶ So, not much progress after all.

And apparently not much coordination of effort either. Less than two weeks earlier doctors at Fort Campbell, Kentucky, were reported using a different scanning technology called single-photon emission computed tomography (SPECT) since 2010 to identify brain damage not detected by standard CT scans. The Army officer in charge of this effort, Major Andrew Fong, is quoted as saying the technology is underused in the military, with Fort Campbell being one of only two military treatment facilities using it.⁷

Studies in Ambiguity

Meanwhile, as the search for an agreed-upon methodology for

greater concern than first believed. [See “TBI Is Not Just Concussion,” p. 78] A study published by the *New England Journal of Medicine* (*NEJM*) concedes that “little is known about the nature of these ‘mild’ injuries, and the relationship between traumatic brain injury and outcomes remains controversial.” The abstract of the study begins: “Blast-related traumatic brain injuries have been common in the Iraq and Afghanistan wars, but fundamental questions about the nature of these injuries remain unanswered.” The study, conducted in collaboration with Landstuhl Regional Medical Center, was published June 2011.⁴

Traumatic brain injuries are evaluated using standard computed tomography (CT) scans. Where circumstances permit, a magnetic resonance imaging (MRI) scan may be used.⁵ The *NEJM* study employed an advanced MRI technology called diffusion tensor imaging (DTI). It discovered that blast victims clinically diagnosed as having mTBIs actually had brain damage that had not been detected by CT or MRI scans. Further to this discovery, the study noted that “Follow-up DTI scans in subjects with traumatic brain injury 6 to 12 months after enrollment showed persistent abnormalities that were consistent with

determining the medical consequences of traumatic brain injury goes on, so does the search for ways to mitigate the behavioral consequences of TBI as well as other behaviors, e.g. excessive risk-taking, depression, suicide, whose associations with military life are problematical. This search is led by the military services, chiefly the Army, and it also relies on studies. The results themselves often appear to be a study in cognitive dissonance.

The common thread linking these studies mirrors that characterizing the search for answers to TBI, i.e., by the time they produce results, assuming they ever do, the problems they are studying will have been adversely transformed by the passing of time. Along the way, findings and characterizations of findings contribute to further confusion.

Joint Mental Health Advisory Team 7 (J-MHAT-7) surveyed Army and Marine maneuver units in Afghanistan in 2010 and reported its findings in February 2011. These were striking, pointing to a “significant decline” in morale and “significantly higher” acute stress rates (baselines in both cases being 2009 and 2005).⁸

Regarding the effects of multiple deployments: “Soldiers on their third/fourth deployment report significantly more

psychological problems and use of mental health medications than Soldiers on their first or second deployment”; “Marines on three or more deployments report lower morale than those on first deployment. Multiple deploying Marines also show increased psychological problems.”

The correlation between multiple deployments and adverse outcomes ranging from divorce to suicide is difficult to establish statistically. Anecdotally, however, support for the link accumulates weekly in media accounts of military suicides and homicides. One of the factors complicating analysis of multiple deployments as a contributor to adverse outcomes is the role of circumstantial and environmental change over time.

Missing the Forest for the Trees

The continuum on which repeated deployments accumulate also includes other events. Change in the recruiting demographic is such an event.

From roughly 2005 to 2007, when a strong economy sent potential soldiers looking elsewhere for jobs with better pay, the Army lowered its recruiting and retention standards to meet the demands of two wars. As a result . . . tens of thousands of recruits were granted waivers for the kind of behavior, including felonies, that would have kept them out of the service in earlier years.⁹

The preceding is drawn from a 350-page, 15-month study by the Army that attempts to tie suicides to leaders so preoccupied with preparing the force for combat that they are ignoring disciplinary problems such as drug abuse and criminal behavior.¹⁰ This tautological argument is curiously self-exculpating, viz. “we are working so hard fighting a war that we are missing the problems associated with fighting a war.”

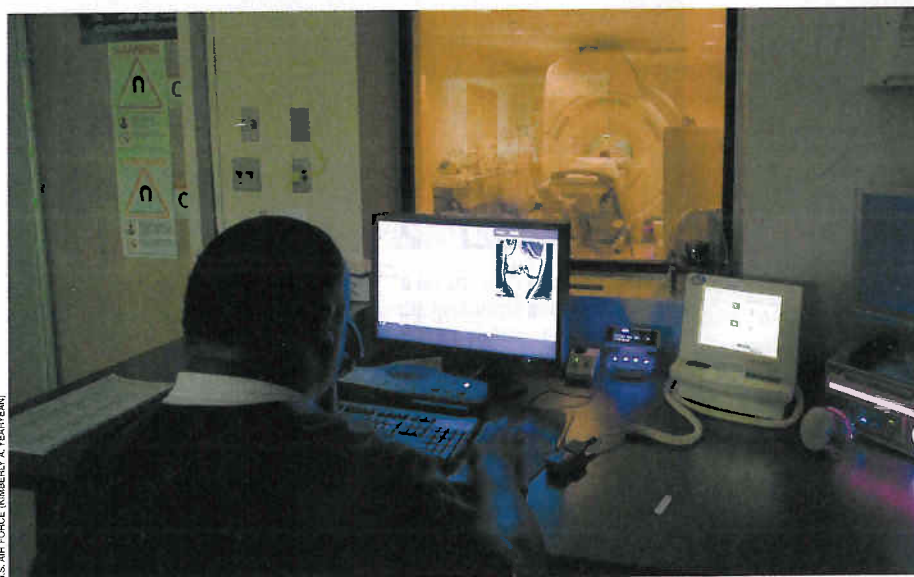
While reports from the field such as J-MHAT-7 affirm the connection between multiple deployments and “significantly more psychological problems,” the Army study tortuously links suicides to preoccupied leaders and ill-behaved soldiers rather than to those greater psychological problems found to result from multiple deployments (and their concomitant: limited dwell times). Putting the “preoccupied leadership” argument to further dubious use, the study declares that “enforcement of policies designated to ensure good order and discipline has atrophied. This, in turn, has led to an increasing population of soldiers who display high risk behavior which erodes the health of the force.” So, it is poor leadership rather than the recruitment and

retention of poor soldiers that is to blame for “the health of the force” (the latter being a euphemism for the high suicide rate).¹¹

The Army recognizes drug use as high-risk behavior, and it is indisputable that some of this has been “imported” through reduced recruiting standards. But that misstep accounts for only a portion, and almost certainly a lesser portion, of the problem. In other wars, Vietnam being the first of note, the enemy was the drug provider. This time, it’s us. Repeatedly, as I visited Warrior Transition Units and Military Treatment Facilities, I confronted people who were so heavily medicated they were barely communicative. An article subtitled “Distressed Combat Veterans and Handfuls of Prescription Drugs” notes that “psychiatric drugs have been used more widely across the military than in any previous war [and] those medications, along with narcotic painkillers, are being increasingly linked to a rising tide of other problems, among them drug dependency, suicide, and fatal accidents.”¹²

The Army study suggests internal uncertainty over how to deal with a self-generated problem, e.g., “As we continue to wage war on several fronts, data would suggest we are becoming more dependent on pharmaceuticals to sustain the force. In fact, anecdotal information suggests that the force is becoming increasingly dependent on both legal and illegal drugs.” Yet, following that acknowledgment, the report comes back to its central thesis, that this is a leadership problem: “Serial drug abuse contradicts Army values. The large number of soldiers with three or more positive drug tests demonstrates that the Army *by its inattention* [emphasis added] is condoning high risk behavior. . . . One should question the readiness and fitness of a soldier who has been identified as a serial abuser.”

General Peter Chiarelli, the Army’s vice chief of staff suggests that these people should be put out of the service.



Elbert Johnson, a technician with the 59th Medical Wing at Lackland Air Force Base, Texas, oversees a magnetic resonance imaging (MRI) scan. MRIs are a valuable diagnostic tool for brain injuries, but they cannot be administered to patients whose wounds contain metallic shrapnel.

Apart from the issues that might arise from the Army discharging its drug problem into the civilian sector, the effect such discharges would have on the morale and readiness of the force must be considered. Soldiers in the field are regularly prescribed drugs for battle stress, and to help them get up and back in the fight. Authorities might be hard put to distinguish between those and “serial abusers.”

The Alarm Has Been Sounded

But in fact this is neither a failure of leadership nor, in the first instance, bad behavior by soldiers. It is a result chiefly of a shortage of medical manpower. The limited number of therapists available to help service members deal with stress-induced problems forces doctors to rely instead on medication. Moreover, “given the depth of the medical problems facing combat veterans, as well as the medical system’s heavy reliance on drugs, few experts expect the widespread use of multiple medications to decline significantly anytime soon.”¹³

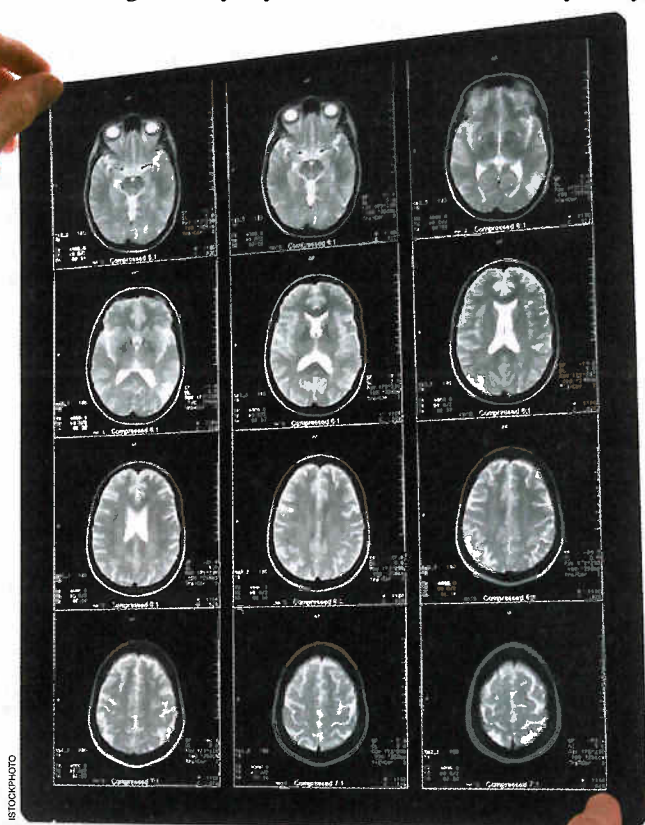
If there are reasons for hope in the studies and reports being piled up against the problem of mTBI and all the behavioral health issues associated with it, with the best will in the world it is difficult to find them. It may be argued that the research referred to here is far too limited to justify pessimism about the prospects for a breakthrough in the search for a “cure” for traumatic brain injury, and that may be so. At this point, however, the literature does not appear to encourage optimism. Anyone who can contradict that conclusion with objective evidence will be welcomed by sufferers and those who care for them.

There is no way now to know whether earlier attention to TBI might have produced mitigating measures in the areas of prevention or extenuation. What can be said is that we are starting late, and in doing so have already catalogued hundreds of thousands of victims. There is one more study worth noting. It falls, like so many others, into the category of a “muddy study,” one that explains in elaborate detail that we are in the swamp—and it may even tell us how we got there. It just doesn’t tell us how to get out. But this particular study does have the virtue of sounding the proverbial “fire bell in the night.”

It was reported on 18 July at the Alzheimer’s Association International Conference in Paris.¹⁴ It concurred with the studies cited here, which found that mild traumatic brain injury was not “mild” in the sense that it did not compare with moderate or severe TBI as a producer of significant pathologies. The study is characterized as the most expansive veteran-focused look at brain injury ever carried out. It looked at veterans at least 55 years of age. Of the 281,540 medical records studied, 4,902 had suffered a traumatic brain injury of some severity, including concussion or mTBI. None of the veterans had been diagnosed with dementia at the outset of the study.

Over the life of that study “more than 15 percent of those who had suffered a brain injury were diagnosed with dementia versus only 7 percent of the others (i.e., those who had not suffered any type of brain injury)—a more than doubled risk. *Severity of the injury made no difference in the odds of developing dementia.*” [Emphasis added.]

If we take the study’s 4,902 veterans who had suffered a TBI, and whose incidence of dementia is more than double that of the general population,



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Veterans’ advocates are critical of the fact that TBI is only now receiving significant attention in the military and elsewhere—nearly a decade after the influx of wounded veterans from Iraq and Afghanistan began. A study in the *New England Journal of Medicine*, for example, using an advanced MRI technology called diffusion tensor imaging (DTI), revealed that standard MRIs do not always detect the full extent of TBI damage. It was published in June.

and we match that with the approximately 320,000 TBI victims in the RAND estimate, we have a rough approximation of the magnitude of the wave of behavioral problems that will confront our nation generally and our veterans and their families specifically in the years to come.¹⁵ On precedent we can expect those problems to include homelessness, substance abuse (exacerbated by soldiers having been weaned onto drugs during their service), broken families, depression, and suicide. (The high incidence of suicide troubling the Army today includes soldiers on active duty, not veterans.)

A Less-Than-Optimistic Diagnosis

Is there a ray of light anywhere in the perceived darkness ahead? It is difficult to find one. There certainly is none in the state of the nation's economy and general acceptance that spending must be curtailed. That point was made in a *New York Times* article of 28 July 2011, "Cost of Treating Veterans Will Rise Long Past Wars." It notes that the Department of Veterans Affairs likely will have to make do without budget increases and that "new research into things like traumatic brain injury" will suffer.

The studies will keep coming. The latest, in the *Journal of the American Medical Association* on 3 August, announced that an antipsychotic drug brand-named Risperdal, used to treat victims of post-traumatic stress (PTS), doesn't work. Risperdal is part of a family of powerful antipsychotics approved only for schizophrenia, bi-polar disorder, and complications associated with autism. The Food and Drug Administration did not approve it for use with PTS sufferers. Nevertheless, it has been widely administered "off-label" (i.e., put to a use for which it is not approved) for years, its effectiveness being *assumed* "because it was so widely [used]."

In 2009, more than 85,000 veterans diagnosed with PTS were administered an antipsychotic like Risperdal. When the value of Risperdal was tested against a placebo, it was found those taking the placebo fared better. Those on Risperdal experienced weight gain, fatigue, and sleepiness.¹⁶

The conclusion? "These findings should stimulate careful review of the benefits of these medications in patients with chronic PTSD" (post-traumatic stress disorder).

The next to look for will be a \$50 million joint Army-National Institutes of Health five-year "Study to Assess Risk and Resilience of Service Members." In addition to suicide, it is targeting depression, anxiety disorders, and PTSD. It is due in 2013. It will be instructive to see if it validates the finding



Many of those attending the Alzheimer's Association International Conference in Paris in June heard a "fire bell in the night"—an extensive study of veterans showing that those with a traumatic brain injury are at twice the risk of developing dementia. Extrapolating the results with the large number of TBI veterans does not bode well for the future, the author warns.

in the Army's 2010 study that bad leadership is responsible for the high number of suicides. ✨

1. The post-conflict medical issues flowing from the Iraq-Afghanistan conflicts are complex and significant. It is not the author's intention to address the spectrum of these issues. The rate of co-morbidity between traumatic brain injury (TBI) and post-traumatic stress (PTS) is one of the deferred complexities. See, for example, Murray B. Stein and Thomas W. McAllister, "Exploring the Convergence of Post-traumatic Stress Disorder and Mild Traumatic Brain Injury," *American Journal of Psychiatry*, 15 May 2009.
2. *The Washington Post*, "It Changes Who We Are," 3 October 2010.
3. There does not appear to be a solid consensus attending these definitions. Mild, moderate, and severe will serve for present purposes.
4. Christine L. Mac Donald, et al., "Detection of Blast-Related Traumatic Brain Injury in U.S. Military Personnel," *New England Journal of Medicine*, 2 June 2011.
5. MRI cannot be used where the victim's wound may contain metallic shrapnel.
6. *The New York Times*, "Advanced Scans Reveal Veterans' Brain Injuries," 2 June 2011.
7. *The Philadelphia Inquirer*, "Army tries new scans to find damage to brain," 24 May 2011.
8. These were for the Army; findings for the Marines were comparable.
9. *The New York Times*, "Army Studies Thrill-Seeking in Its Ranks," 31 October 2010.
10. "Health Promotion, Risk Reduction, and Suicide Prevention Report," U.S. Army, 30 July 2010.
11. Unless one follows these arguments closely it is easy to miss the nexus between multiple deployments and the reduced recruiting standards that brought drug addicts and felons into the force. That nexus is the All Volunteer Military.
12. *The New York Times*, "A Deadly Mixture," 13 February 2011.
13. *Ibid.*
14. Associated Press, "Brain injury raises dementia risk, US study finds," 19 July 2011.
15. The RAND figure is now three years old; the number has to have increased substantially in the interval.
16. In an unrelated study, researchers found a high use of antipsychotic drugs with elderly nursing home residents suffering from dementia, despite such use not being approved and an increased risk of death. The same government audit discovered the use of antipsychotics was driven by kickbacks from pharmaceutical companies.

Mr. Koch served for 11 months as Deputy Under Secretary of Defense for Wounded Warrior Care and Transition Policy in the Obama administration. He also served as Principal Deputy Assistant Secretary of Defense for International Security Affairs, Deputy Assistant Secretary of Defense for Africa, and Director of Special Planning with responsibility for anti-terrorism and counter-terrorism as well as the restoration of special operations forces during the Reagan administration.

TBI Is Not Just CONCUSSION

By J. Patricia Blanco Kiely

**To treat brain-injured warfighters,
we must first call a spade a spade.**

As it struggles to cope with the emerging battlefield reality of Traumatic Brain Injury (TBI), the Department of Defense has developed a mantra: "Improve detection, treatment, and prevention." Despite this chant, the military chronically underestimates the number of troops who have TBI. The misrepresentation stems from current policy and warfighting culture,

in addition to imperfect detection measures. Understating brain injury's significance only exacerbates the epidemic.

The Defense and Veterans Brain Injury center estimates that in the year 2010 alone, about 31,200 service members sustained TBIs. And those high rates were not isolated: from 2007 to 2009, an average of 27,000 new such injuries occurred each year.¹ These staggering numbers actually underrate TBI prevalence. Yet another form of underestimation stems from the cultural environment surrounding TBI diagnoses. About 80 percent of all military TBIs are classified as only



The type of brain injury caused by an improvised explosive device detonating nearby is a combat wound. In front of this mine-resistant, ambush-protected vehicle, Marines assigned to Route Clearance Platoon 3, 1st Combat Engineer Battalion, 1st Marine Division, destroy IEDs discovered near Sangin, Afghanistan.

“concussions,” despite having been caused by explosive blast exposure.² This underrating of both the prevalence and the severity of TBI is a significant problem for those affected.

More Than a Bump on the Head

Military medicine officially considers mild traumatic brain injury (mTBI) to be synonymous with concussion. Equating these two different diagnoses trivializes mTBI, harming warfighters in the long term by delegitimizing a lasting injury.

The difficulty lies in how the terms are understood in popular culture. They evoke a different level of severity, extent of cognitive impairment, and recovery outcome. To most Marines and soldiers, “concussion” suggests a fleeting sports injury sustained during a high-school football game or a boxing knockout, whereas “mTBI” conveys real brain damage and the emergency room. It connotes the trauma of structural and functional brain damage.

To athletic military members, a diagnosis of concussion likely appears benign, since it is associated with sports. This social construction carries important practical consequences for America’s warfighters, who do not link TBI to neural damage. Faced with high operational tempos and little recovery time, both on deployment and at home, warfighters are accustomed to toughing it out. In a setting where people already use willpower to overcome mental, physical, and tactical setbacks, labeling mTBI as concussion downplays brain injury. This attitude is a problem because willpower cannot overcome brain damage.

Most Veterans’ Administration hospitals cannot distinguish between military mTBI and sports concussion. Yet the Defense and Veterans Brain Injury Center attributes about 60 percent of all military mTBIs to the force of explosive blasts, not hits to the head. Most of these injuries result in brain pathway damage (known as diffuse axonal injury, DAI), the most common underlying anatomical cause of unconsciousness after brain injury.

The Differences Are Visible

Concussions are characterized by immediate impairments such as feeling dazed and confused (alteration of consciousness), along with visual and sensory disturbances. Unconsciousness does not typically occur, even in grade 3 concussions, the most severe. In this way, military mTBIs are fundamentally different because they often result in unconsciousness.

Physical impact causes most concussions, for example localized brain damage from a boxer’s fist at the site of impact. But an mTBI resulting from a blast injury includes the energy and overpressure forces from blast waves with

supersonic velocity. These robust overpressure and electromagnetic forces lead to widespread damage as they travel throughout the entire brain.

Usage of the two terms interchangeably comes from a perception that both conditions heal completely with time. *Head Injury*, a renowned medical textbook in the field, speaks for all neurology primers in asserting that “post-concussive deficits occur with minimal detectable anatomic pathology and often resolve completely over time, suggesting that they are based on temporary neuronal dysfunction rather than cell death.”³ The word “detectable” deserves further analysis.

Most imaging technologies are insensitive to blast mTBI damage. They lack the combination of spatial and temporal resolution needed to capture wounded brain pathways. But mTBI damage is detectable: Recent evidence published in the *New England Journal of Medicine* shows that brain tissue does not completely repair after an mTBI.⁴ Six to twelve months after blast injury, service members still exhibited injured connectivity tracts. This new finding, though groundbreaking, will take years to permeate medical literature and shape practice.

The imaging method, called Diffusion Tensor Imaging, shows promise as a military mTBI detector capable of distinguishing that condition from concussion. But its scarcity, cost, and the requisite expertise preclude its use at many VA centers in the near future. Until medical centers around the country incorporate these new findings into routine practice, medical technology cannot produce adequate images of the brain regions that are most likely damaged in a mild TBI.

This is why medical professionals are often tempted to state that mild TBI, which “shows up negative” on brain scans, does not result in significant injury. But because most hospitals and VA centers cannot image blast TBI, the assumption that military mTBI damages the brain in the same way as sports concussion seems not only bold but unfounded.

Healing Takes Time

Downplaying mTBI by calling it concussion may boost troop morale in the short term. But the negative consequences outweigh the immediate psychological benefits. It is true that most mTBI symptoms resolve with time, and that most affected service members feel healed after a week or two of recovery. But feeling better does not mean that brain damage has healed. Symptoms may simply not be noticeable, or may appear unrelated. For instance, a brain injury that involves the frontal lobe may cause emotional disinhibition and anger issues. Since most people would associate emotional irregularity with psychological instability and not with concrete tissue injury, brain injury would likely proceed undiagnosed. As one Marine at the National Naval Medical Center explained it to me:

After the IED went off, I went unconscious and came to after a couple minutes. Later on, the doc told me I had a concussion. I felt better about a week later. A month or two later, though, stuff started to happen. . . . I’d forget

things, wicked headaches, I'd get angry really easily. It's gotten better I guess, but I still forget stuff pretty often. I don't really know. I don't like to think about it too much.

Slower reaction times, diminished memorization ability, and other aspects of cognition are not always obvious. Equating mTBI with concussion hinges on "symptomatic resolution." Latent symptoms may emerge, existing symptoms may linger though slightly diminished, or, as noted and perhaps most important, symptoms may be unnoticeable.

Understating an mTBI can contribute to patients denying brain damage. Indeed, denial is a significant obstacle to ensuring that personnel receive appropriate treatment.

Don't Force Combat Readiness

Downplaying mTBI may appear to keep higher numbers of troops in the fight in the short term, but this attitude



Sergeant Jorge Segura (right), an artilleryman, was diagnosed in 2010 with a grade 2 concussion when a 100-pound roadside bomb exploded 30 meters from him in the Kajaki region of northern Helmand Province. Commander Keith Stuessi examines him in Camp Leatherneck's Concussion Restoration Care Center, the first of its kind in the province to treat IED blast injuries.

actually decreases combat readiness. Because entire chains of command believe concussions "resolve quickly and completely," cumulative blast exposure rates are increasing among troops. This perception shapes return-to-duty decisions at all levels of command.

Cognitive impairments, especially those that persist without proper recovery, decrease military-occupation-specialty-specific technical dexterity. Reduced work quality becomes chronic, which places the entire mission at risk. A service member who exhibits a delayed reaction time when firing

a weapon, repairing a vehicle, or surveying an area is a liability.

Not only does downplaying mTBI lead to decreased combat effectiveness, it also pushes troops back into the field, dramatically raising the likelihood of multiple blast exposures. The transient-concussion assumption allows troops who experience telltale mTBI signs such as headaches, blurred vision, and memory impairments to forgo treatment in favor of continued fighting.

Mission requirements may supersede individual welfare in certain operational environments, but affording blast-exposed service members time to recuperate is generally feasible. Post-injury, the brain is especially vulnerable to damage. Ensuring adequate recovery is paramount. As seen in National Football League cases of Second Impact Syndrome, a blast-exposed brain likely experiences a window of sensitivity to further damage after the initial wound, eliciting a serious, sometimes life-threatening reaction in the brain.

Extrapolated to military cases, repeated exposures can multiply to greater damage. Legitimizing mTBI, instead of understating the condition, is the first step to limiting blast events. The Army and Navy's recent decision to award the Purple Heart to those who experience mTBI as a result of direct or indirect enemy actions is a positive step toward recognizing this combat wound—but cultural misconceptions about its severity remain pervasive.

Take the Long View

Greater numbers of warfighters are returning with not-readily-visible wounds. Both the military and society bear caretaking responsibility. An understated diagnosis undermines prospects of receiving adequate disability compensation and medical care, which shortchanges troops. If a service member returns from deployment with memory impairments, a benign concussion label delegitimizes those injuries.

Such cognitive deficits diminish chances for success in both the military and the civilian job market. Whether they hamper memory, personality, spatial awareness, or dexterity, these injuries will plague service members for the rest of their lives. For these reasons, disability compensation is paramount. MTBI,

which includes the word "trauma," gives automatic credibility to patients experiencing its latent effects, affording opportunities for treatment and compensation.

Chronic headaches and selective memory loss may be livable, but neurodegenerative disease is devastating. The NFL reported in 2009 that former players are nine times more likely than the national average to experience diseases such as Parkinsons or Alzheimer's.⁵ These findings, when applied to military populations exposed to blast forces, appear grim.



U.S. NAVY (ALEXANDRA SNOW)

Among those working to break new ground in indentifying and treating TBI and mental-health issues are Dr. David Williamson, medical director for the Inpatient Psychological Health and Traumatic Brain Injury program at the National Naval Medical Center, Bethesda, Maryland, and his staff.

The number of repeated exposures, and details about the nature of each one, become important facets of a service member's medical record on which "concussions" may appear instead of "mild TBIs." Medical records inform treatment, especially with Parkinsons or Alzheimer's. Obviously, downplaying the extent of potential damage and obscuring the reasons is counterproductive in a treatment setting.

The government's ability to fund TBI research, generate effective treatment, and perhaps even find a cure hinges on mTBI's recognition as an invisible wound. As detailed here, the chief obstacle is cultural, and recognizing mTBI's legitimacy as a nonphysical condition starts with divorcing the injury from concussion.

Unfortunately, the U.S. government feels little pressure to pursue more sophisticated anti-blast armor, improve TBI detection technology, and devise innovative treatments for injured brains. The greater TBI's visibility, the more research funding will become available. The situation is urgent, as no cures for damaged brains currently exist. Given TBI's limited treatment options, visibility-driven research findings are especially crucial. They can both determine causes and improve treatment.

The Fix

Cultural change starts with Navy and Army medical structures. At all levels of the medical chain of command, personnel must emphasize routine specificity. In general, an mTBI diagnosis should be used in blast TBI cases. For impact injuries such as motor-vehicle accidents, "concussion" may continue to be used. In addition, medical documentation and TBI paperwork should be revised to emphasize the use of mTBI terminology where appropriate. It should

enter the military medical vernacular, eclipsing concussion diagnosis frequency to the same extent that blast TBI cases eclipse impact head injuries on deployment. Treating head trauma with caution is preferable to underestimation.

After medical personnel, documentation, and training modules reflect this syntax change, warfighters will follow suit. Soldiers and Marines will adopt the use of "mTBI" where appropriate, implicitly legitimizing their not-so-visible wounds. On deployment, acknowledging the sensitivity of an injured brain will increase the likelihood of detection and rehabilitation. At home, using this word instead of "concussion" will foster greater understanding as service members reintegrate into family life. And as TBI veterans reenter society, employers, social workers, and civilian healthcare institutions will interact with more empathy. Mild traumatic brain injury's visibility will ensure that society treats cognitive impairments with greater sensitivity and respect. ✨

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Ms. Kiely has been a clinical researcher at Walter Reed Army Medical Center since 2008, specializing in amputee and traumatic brain injury wounded-warrior care. She works with Marine Corps Base Quantico in shaping tactical TBI education, and with the Navy Bureau of Medicine and Surgery in tracking TBI symptoms and recovery among deployed Marines.