TBI Numbers Web Page – Frequently Asked Questions

1. Figures ranging from 45,000 to 360,000 have been cited as representative of the number of service members who may have suffered a TBI. Why are these numbers so different from those you are reporting here?

ANSWER: Numbers cited in other sources are reported to have been derived from the number of service members who possibly had a TBI in a combat theater. Often, those numbers were based upon the subjective response to non-specific screening questions asked of several hundred individuals and then that resulting percentage was generalized to the entire population of those who have been deployed (~1.5 million individuals). The numbers were not specific to individuals diagnosed by a medical provider as having had an actual TBI diagnosis.

The numbers presented here of clinically confirmed TBI cases are obtained by doing a search of electronic medical records of military personnel. Those service members (SMs) who are diagnosed with a traumatic brain injury (TBI) of any severity are identified by that search. These numbers are for SMs diagnosed anywhere in the world with a TBI caused by any injury to the head.

2. Why has it taken DoD so much time to produce a set of reliable numbers?

ANSWER: For the last several years, DoD has focused on answering the question of the incidence of/total numbers of TBI occurring in service members while deployed to Iraq or Afghanistan by looking at medical information from specific hospitals. While the information collected was accurate, it was recognized that it was not complete. Earlier this year, the decision was made to expand the data collection by using the military's electronic medical records to determine the number of all service members being diagnosed with TBI.

3. How does a military physician diagnose a case of TBI? Are there a series of steps he/she must take during an exam? Does it involve an MRI or a CT scan?

ANSWER: The diagnosis of TBI varies by severity of injury. CT, MRI and other imaging modalities are often used in the diagnosis of mild, moderate, severe or penetrating TBI. The diagnosis of concussion or mild TBI is based on a clinical interview during which time the military physician determines if an injury event lead to an alteration or loss of consciousness. The temporal relationships of symptoms, including headache, dizziness, cognitive difficulties and others are also captured during the clinical interview. These indicators can be used by the physician to conduct additional diagnostic tests as needed to include neuropsychological tests and/or MRI or CT scan to evaluate the extent of the head injury.

4. Why is DoD unable to tell us what "caused" the head injury in these cases?

ANSWER: The search of electronic medical records only "looks" at specific parts or fields of the medical record. The parts that indicate the TBI diagnosis for the patient do not include information about cause of the injury that lead to a TBI, such as fall from ladder or accident or blow to head.

5. What is the difference between a TBI "screening" and a TBI "diagnosis"?

ANSWER: A TBI "screening" involves asking a series of four questions to determine: If an event occurred that resulted in a blow to the head or exposure to a blast; if so, did the event result in a change in consciousness (dazed, confused, bell rung or knocked out); was the change of consciousness followed by symptoms such as headache, feeling tired, confusion, memory loss after the event; and, if so, which symptoms are present at the time of the screening. Positive answers to all four of these questions indicate a positive screening for TBI. A positive screen identifies a service member for further clinical evaluation. Further medical evaluation should be done to determine if a "diagnosis" of TBI can then be made. Over half of positive "screenings" done some time after an incident which could cause a TBI do not result in a medical diagnosis of TBI when the medical evaluation is done by a doctor.

A "diagnosis" of TBI is easiest for a doctor to make at the time of the event or shortly afterward as the history of the event and subsequent sequelae are most accurate then. Delayed evaluations may lead to "false negatives" as the service member may fill in gaps of memory based on information given to him by

colleagues, giving the appearance that there was no disruption in cerebral function. Conversely, issues of personal gain may lead to embellishment of symptoms over time, thereby creating "false positive" diagnosis.

6. How do physicians treat TBI? Are there medicines, therapies, or other steps which can alleviate its effects?

ANSWER: Management of TBI is based on the severity of injury. Severe and penetrating TBI is managed in accordance with national guidelines (Guidelines for the Management of Severe Traumatic Brain Injury, 3rd edition). Care for this population includes control of intracranial pressure, seizure prophylaxis, and generalized care in the intensive care unit. Aggressive rehabilitation consisting of physical therapy, occupational therapy, and speech/language pathology is often required following the acute phase. Less than 4% of combat-related TBI is in this category.

Management of mild TBI or concussion is based on individual symptoms. Medications can be used to treat common symptoms such as headaches, sleep disturbances and some psychological symptoms. Visual rehabilitation and vestibular rehabilitation may be indicated for those with persistent visual or balance complaints.
The DoD has partnered with the VA to develop an evidence based guideline for the evaluation and management of concussion/mild TBI. This document was released in March 2009.

Early education regarding the natural history of the injury and expected recovery process is the only intervention that has been consistently shown to improve the outcomes in those with TBI.

7. What is an ICD-9 code and how is it used to determine if a patient has TBI?

ANSWER: An ICD-9 code or the International Statistical Classification of Diseases and Related Health Problems are a list of codes published by the World Health Organization (WHO), which categorizes and codes all known diseases and health problems. There is a list of ICD-9 codes that represent a TBI diagnosis. The specific code assigned to the patient depends on several factors including, but not limited to, the duration of loss of consciousness, presence of skull fracture(s), open head wound (penetration of the fibrous membrane forming the outermost coverings of the brain), and/or bleeding, bruising or laceration of the brain.

8. Why is there a spike in the number of reported incidents between 2006 and 2008?

ANSWER: Further evaluation would have to be done to reach a conclusion as to why the numbers spiked between 2006 and 2008. Such evaluation would be difficult, and DoD wishes to focus its efforts and funds to develop TBI treatments. Currently, the purpose of this web site is to provide the number of service members diagnosed with TBI.

9. The Defense and Veterans Brain Injury Center (DVBIC) has a TBI surveillance database of its own. Are these numbers related to that database, and if so in what way?

ANSWER: Previously, DVBIC had maintained its own surveillance database based on surveillance activities at DVBIC sites. Following an October 2007 memo from the Office of the Assistant Secretary of Defense for Health Affairs, which named DVBIC as the office of responsibility for TBI surveillance for the armed forces, DVBIC expanded its surveillance activities to include all known DoD TBI cases through DVBIC's partnership with Armed Forces Health Surveillance Center (AHFSC).

10. If you cannot determine TBI rates based on the four questions contained within the Post Deployment Health Assessment (PDHA) and Post Deployment Health Reassessment (PDHRA), what is their relevance?

ANSWER: The PDHA and the PDHRA are both health assessments designed to provide specific individual medical care to each service member returning from a deployment. The screening questions are designed to identify individuals who should be further evaluated medically to determine if they require additional testing or treatment for TBI. Neither of these health assessments are diagnostic medical tools, but they provide a standardized and broad evaluation for the majority of medical issues which may arise from a deployment. The PDHA and PDHRA questions are based upon an instrument known in the medical literature as the Brief TBI Screen (BTBIS). This instrument was endorsed by the Institute of Medicine who recommended its use by the Department of Defense.

11. What is the process by which cases of TBI are *reported* to this database?

ANSWER: All patients assigned a corresponding TBI ICD-9 code are included in the TBI surveillance database. These cases are accounted for only once in the database to accurately determine the scope of the TBI in our service members. If a service member sustains more than one TBI, that service member is still only accounted for once in the database.

12. What is the process by which these numbers are gathered?

ANSWER: Medical encounters, whether in an outpatient or inpatient setting, are labeled with a series of ICD-9 diagnostic codes. A group of experts from within and outside the military developed a list of codes that indicate healthcare encounters for TBI. The same type of data / codes has been used by the CDC to estimate the prevalence of traumatic brain injuries in the US population in reports to Congress and other documents.

The Defense Medical Surveillance System (DMSS) links personnel data about service members with their healthcare encounters. The DMSS was searched for all service members that had at least one of the ICD-9 codes of interest. Since an individual could have a series of TBI visits, the first visit on record was considered the date that someone had their first healthcare encounter for a TBI and each individual could be counted only once (incident visits). The number of personnel that had their first visit in the years of interest was provided. Also, it was possible to determine if this first visit was before or after a deployment to CENTCOM (US Central Command). This does not mean TBI cases among prior deployers occurred while deployed.

13. Can you explain why these numbers do not tell us if a TBI was sustained as a result of combat?

ANSWER: The identification of individuals with a medical diagnosis of TBI is done by searching electronic medical records. There is no coding in the medical record that identifies the cause of the head injury or the location that it occurred. Complete medical records would have to be reviewed individually to be able to extract that sort of information.

14. Is there any historical data on TBI from previous conflicts (Gulf War I, Vietnam, Korea, etc) and how does it compare with these numbers?

ANSWER: There is no comparable information on TBI from other conflicts or wars. The medical information from those eras was not collected electronically is one major difference. Another is that in prior conflicts, there was not the extensive use of body armor by American forces and Improvised Explosive Devices (IEDs or roadside bombs) were not significant events.

15. Most Americans are quite familiar with the term “concussion”. Is a TBI a concussion, or a more “severe” form of concussion? How does the military define?

ANSWER: The term "Traumatic Brain Injury" became used regularly in the literature in the 1990’s which was designated the “Decade of the Brain” with increased funding in this area of research. TBI refers to any degree of alteration of consciousness, so it includes everything from a mild concussion (getting your "bell rung") to an injury that penetrates the skull and destroys brain tissue. The Department of Defense is using the terminology that the rest of the medical world is using for these sorts of injuries.

16. Is it possible to fully recover from a TBI, or are there lasting effects? Does it depend upon certain factors, including not only severity, but how quickly one reports a head injury?

ANSWER: Data has shown that upwards of 95 percent of patients who have sustained a mild TBI (concussion) will fully recover with no long-term effects. Evaluation at or near the time of injury is important to be able to identify if there are symptoms that do not go away and may indicate either more severe injury or permanent injury to the brain. Repeated TBI (multiple concussions in a relatively short time frame) may increase the chances of long-term effects. In cases of severe TBI, full recovery can occur, although this is a process which can last years.

17. What advice does the Military Health System have for a Service member who hits their head, even if it does not seem immediately serious?

ANSWER: It is important to have an evaluation conducted by a physician as soon as possible if one hits their head and has any alteration of consciousness or a loss of consciousness. The Military Acute Concussion Evaluation, or MACE, is designed to help medical personnel establish the status of the individual and then evaluate progress over time.

18. Is the military researching any measures (redesigned helmets for instance) that might mitigate incidents of TBI among active duty service members?

ANSWER: The U.S. military is constantly evaluating personal protection equipment, such as combat helmets, to ensure that warfighters have the best protection available. Over the past several years, research has led to the redesign of padding within helmets to maximize non-ballistic protection (helping prevent head injuries). The Army is undertaking a helmet sensor project that will provide data to support the development of the next generation combat helmet.

19. What sorts of experiences, in general, can cause a TBI? Must it be a blow to the head? Can it result from exposure to a shock wave, etc?

ANSWER: The key factor for TBI is that there must be an event that results in a change in brain function. That event could be a blow to the head from something like a car accident, a fall with the head hitting the ground, or a shock wave from an explosion. The change in brain function would be anything from being dazed, dizzy or confused momentarily to being unconscious for days or months.

20. Why are your statistics different from those reported by the Department of Veterans Affairs (VA)?

ANSWER: The VA has been doing screening for TBI on all OEF/OIF veterans coming to the VA for care since April 2007. A positive screen is an individual answering positively to all four questions, which means an event occurred, there was alteration of brain function, there were symptoms consistent with a blow to the head, and the symptoms were present when the individual was screened. The VA conducts a medical diagnostic work up on individuals who screen positive, and those who then diagnosed with a TBI are the numbers comparable to the numbers DoD is now providing.

These numbers will never be the same because VA is only providing them on OEF/OIF veterans coming for care. DoD is providing them on all service members being diagnosed in the military health system.

21. Have you changed the way TBIs are counted in an effort to downplay the problem?

ANSWER: DoD cares about the health of its service men and women and has aggressively been modifying its programs to identify individuals who may have experienced a TBI so that early evaluation and treatment when necessary is provided. Identifying individuals who have been diagnosed with TBI by a standard, consistent process will also enable DoD to recognize and respond to any long-term problems which are not recognized by the medical community at this time.

22. By changing the way you count TBIs, won't you undermine efforts to get more funding in the DoD and VA budgets to treat service members and veterans who received TBIs? Won't they suffer as a result?

ANSWER: To the contrary, this accuracy of determining the number of individuals diagnosed with TBI will lead to better early evaluation and diagnosis and provide the process for follow-up to assure that there is recognition of any long-term consequences that are not medically recognized today. DoD is bringing the best that science has to offer for identifying possible TBI on the battlefield, on the sports field and in the emergency room.