

# Important Things to Know about PTSD and Mild Traumatic Brain Injury



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## Section I. PTSD and Psychological Health in Veterans

(NB: Source: Institute of Medicine (2014), Preventing Psychological Disorders in Service Members and Their Families: An Assessment of Programs. All of the points 1-20 below are direct quotes from this IOM report, between pages 37 and 50).

1. At the end of 2011 there were nearly 2.4 million total service members in the armed forces (1.5 million in the active component and 856,000 in the reserve component).
2. More than 2.6 million service members have been deployed in support of OEF/OIF since September 11, 2001 (IOM, 2012).
3. The average age of those deployed was 33.4 years. Deployed Marine Corps were the youngest on average (29.5 years) and deployed Air Force were the oldest (35.8 years). Those deployed from the reserves and National Guard were older on average (36 years) than active-component service members (32 years).
4. Nearly 60 percent of those deployed were married, and nearly half had dependent children, 1.97 on average (IOM, 2013a).
5. By the end of 2010, deployed service members had been deployed an average of 1.7 times: 57 percent once, 27 percent twice, 10 percent three times, and 6 percent four or more times. Those in the National Guard and reserves had fewer multiple deployments than those in the active component. The average length of deployments was 7.7 months, with the average length in the various services ranging from 4.5 months in the Air Force to 9.4 months in the Army. The average cumulative length of deployments for those who deployed multiple times was 16.9 months. The average dwell time between deployments was 21 months.
6. Compared with previous conflicts, during OEF and OIF the all-volunteer military has experienced more numerous deployments of individual service members; has seen increased deployments of women, parents of young children, and reserve and National Guard troops; and in some cases has been subject to longer deployments and shorter times at home between deployments. Many of those who have served in OEF and OIF have readjusted with few difficulties, but others have had problems in returning home, reconnecting with family members, finding employment, and returning to school. Lingering health

problems related to combat, including traumatic brain injury (TBI) and posttraumatic stress disorder (PTSD), can make reintegration more difficult.

7. Although the vast majority of OEF and OIF veterans felt proud of their service (96 percent), felt they became more mature as a result of their service (93 percent), and built self-confidence while serving (90 percent), 44 percent have reported readjustment difficulties, 48 percent strains on family life, 47 percent outbursts of anger, 49 percent posttraumatic stress, and 32 percent an occasional loss of interest in daily activities (Pew Research Center, 2011).
8. As early as 2004 it was estimated that over one-fourth of troops returning from OEF and OIF were suffering from psychological health disorders (Hoge et al., 2004). Later estimates suggested that one-fifth of the troops reported symptoms of PTSD or depression, and about the same fraction reported a probable TBI during deployment (Tanielian and Jaycox, 2008).
9. RAND reports that 18.5 percent of a representative sample of returning service members met the diagnostic criteria for PTSD or depression, 19.5 percent reported a probable TBI during deployment, and 7 percent met the criteria for a psychological health problem and TBI (Tanielian and Jaycox, 2008).
10. PTSD is one of the disorders most commonly diagnosed in U.S. combat troops after their deployment to Afghanistan and Iraq. In a review of the literature, the IOM (2013a) reported that PTSD prevalence estimates range from 5 percent to 30 percent among service members deployed in OEF or OIF (Booth-Kewley et al., 2010; Hoge et al., 2004, 2007; MHAT-III, 2006; Smith et al., 2008; Thomas et al., 2010). The estimates depend on when the evaluation was conducted, the diagnostic method used (for example, self-reported symptoms versus diagnosis by a health care professional), and the definition used for PTSD. Among service members with injuries sustained in OEF or OIF combat, reported PTSD prevalences range from 16.2 percent to 43.9 percent, depending on the injury. Among those who saw combat but were not injured, prevalence was 9.1 percent (Hoge et al., 2008).
11. Among those that deployed, the IOM (2013a) found that certain deployment-related stressors (such as troubles at home, lack of privacy, and problems with leadership), combat exposure, prior traumatic exposure, military sexual trauma, a history of psychological health conditions, and severe physical injury were all risk factors for PTSD.
12. The types of combat experiences that are associated with PTSD include killing someone (Maguen et al., 2011), the threat of personal harm (Kolkow et al., 2007; Peterson et al., 2010; Phillips et al., 2010), witnessing someone from one's unit or an ally unit being seriously wounded or killed (Pietrzak et al., 2011), and experiencing "friendly" fire (Pietrzak et al., 2011).
13. Deployment and deployment-related stressors, including concerns back home, issues with leadership, and lack of privacy, have been associated with increased risk of PTSD (Booth-Kewley et al., 2010; Seal et al., 2009). Vasterling et al. (2010) found that deployed soldiers who had high combat exposure (according to the Deployment Risk and Resilience Inventory scale) showed the greatest increase in PTSD symptoms. Moreover, some investigations have indicated that National Guard soldiers suffer disproportionately from deployment (Milliken et al., 2007; Thomas et al., 2010). Deployment-related factors associated with National Guardsmen and PTSD (and depression) include financial hardship, job loss, and lack of employer support (Riviere et al., 2011).
14. Veterans who have had prior traumatic experiences appear to be more likely to develop PTSD than those who do not have such a history. Phillips et al. (2010) found that two or more exposures to violence before entering the military also increased the likelihood of screening positive for PTSD. Multiple studies have found an association between adverse childhood experiences—such as physical, sexual, and psychological abuse or exposure to a person in the home who was mentally ill, alcoholic, or violent—and psychiatric symptoms of PTSD, anxiety, or depression (Cabrera et al., 2007; Dedert et al., 2009; Fritch et al., 2010; Gahm et al., 2007).

15. Military personnel who have been previously diagnosed with a psychological health condition, particularly PTSD, are at greater risk for a repeat diagnosis in theater (Larson et al., 2011).

## Depression

16. RAND reviewed 12 studies that assessed the prevalence of depression in service members who served in OEF or OIF (Tanielian and Jaycox, 2008). Estimates of prevalence in active-duty service members ranged from 5 percent (Hoge et al., 2006; Kolkow et al., 2007; MHAT-II, 2005) to 37 percent (Lapierre et al., 2007).

17. Gadermann et al. (2012) completed a meta-analysis of 25 epidemiological studies that looked at depression among U.S. military personnel according to the *DSM-IV* definition of major depression. The authors' best estimate for total prevalence of major depression was 12 percent among the currently deployed, 13.1 percent among the previously deployed, and 5.7 percent among the never deployed.

## Alcohol

18. Milliken et al. (2007) found that, based on results from the health assessment conducted after deployment, problem alcohol use (as determined by a positive response to at least one question on a two-item conjoint screen for alcohol use) among service members ranged from 11.8 percent (active duty) to 15.0 percent (National Guard and reserve). Heavy alcohol use (five or more drinks for males and four or more for females per occasion, at least once per week, for the past 30 days) in the active-duty military remained mostly constant between 2002 (18.1 percent) and 2008 (20.0 percent).

19. Compared to civilians, a greater percentage of service members are heavy alcohol users overall (19.7 percent [95% CI 18.2–21.2 percent] versus 13.6 percent [95% CI 13.3–13.9 percent]). The difference varies by age group, however. Older service members (aged 46 to 64) are less likely to be heavy drinkers than civilians of the same age (3.9 percent [95% CI 2.8–4.0 percent] versus 8.5 percent [95% CI 7.4–9.6 percent]). Military personnel aged 18 to 25, however, exhibit significantly higher rates of heavy drinking than their civilian counterparts (Bray et al., 2009).

20. Compared to civilians, military personnel binge drink at a higher rate (45.8 percent versus 40.6 percent), and the difference is slightly more pronounced among those 18 to 25 years old (52.4 percent [95% CI 49.6–55.2 percent] in the military versus 44.9 percent [95% CI 44.2–45.6 percent] among civilians). Civilians aged 46 to 64, however, binge drink at a higher rate than service members of the same age (24.6 percent [95% CI 22.9–26.3 percent] versus 18.0 percent [95% CI 15.9–20.1 percent]) (Bray et al., 2009).

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21. How might a veteran with PTSD feel?

- Anxious
- Super alert, hyper vigilant in every day settings (fight or flight)
- Difficulty concentrating
- Anger, depression, guilt, fear, concern for your safety or for others etc.
- No longer in control of your own feelings
- Becoming distant, numb in your relationships
- Reduced range and intensity of the emotions

22. Evidence Based Treatments for post-traumatic stress (PTS):

- Prolonged Exposure Therapy
- Cognitive Processing Therapy (CPT)
- Cognitive Behavioral Therapy (CBT)
- Couples therapy for PTS – Treats both the relationship and the PTS
- Pharmacological treatments – often used to support other therapies.

## **Section II. Traumatic Brain Injury**

(All of the material below was written by Grant Iverson, Ph.D)

### **Moderate-Severe Traumatic Brain Injury**

23. Traumatic brain injuries occur on a broad continuum of severity, from very mild transient injuries to catastrophic injuries resulting in death or severe disability.
24. Approximately 90% of all TBI injuries are classified as mild.
25. Most parts of the brain are vulnerable to traumatic injury.
26. The anterior portion of the brain is most likely to be affected (i.e., frontal and temporal regions).
27. Moderate and severe traumatic brain injuries can result in temporary, prolonged, or permanent neurological or neuropsychiatric problems.
28. Person with a moderate-severe traumatic brain injury may exhibit some of the following physical problems: balance problems and dizziness, cranial nerve impairments, fatigue and sleep disturbance, headaches, movement disorders (e.g., bradykinesia, tremor, dystonias), motor impairments (e.g., hemiparesis, ataxia, apraxia), sexual dysfunction, and visual impairments (blurred vision, double vision).
29. Psychological problems that may result from a moderate-severe traumatic brain injury are: depression and anxiety disorders, psychotic disorders, diminished awareness (e.g. anosognosia), personality changes, apathy, and decreased motivation, and cognitive impairment.
30. It is common for people who sustain moderate-severe TBIs to require inpatient and/or outpatient rehabilitation services.
31. Many with moderate-severe TBIs will have permanent cognitive and behavioral deficits, and be unable to return to work.

### **Mild Traumatic Brain Injury (MTBI)**

32. Mild traumatic brain injuries (MTBI) are common. For example, a sport-related concussion is, by definition, an MTBI.
33. MTBIs are not created equally.
34. The spectrum of MTBI: extremely mild (transient) to structural damage (permanent).
35. There is a continuum of pathophysiology for an MTBI, from minor neurometabolic changes to major neurometabolic and pathoanatomical changes (e.g., contusion).
36. Fortunately, the brain appears to undergo dynamic restoration following milder forms of this injury.
37. Common Criteria for diagnosing Mild TBIs: feeling dazed, confused, or disoriented, Loss of Consciousness less than 30 minutes, Glasgow Coma Scale is between 13-15 within the first 30 minutes, and Post-Traumatic Amnesia less than 24 hours.
38. Some issues and challenges regarding accurately diagnosing mild TBIs are:
  - Extremely broad range of injury severity
  - Loss of consciousness (LOC) can only be reliably determined if witnessed
  - Post-traumatic amnesia is often mistaken for LOC (i.e., “I woke up in the hospital”)
  - Traumatic stress can cause confusion and disorientation
  - Physical injuries can cause confusion and disorientation
39. When considering all MTBIs, it is very uncommon to have visible bleeding, bruising, or swelling on day-of-injury brain computed tomography (CT).

40. However, a substantial minority of people seen in the emergency department with an MTBI have abnormal day-of-injury brain CT-scans.
41. Most common initial symptoms of an MTBI are: headaches, fatigue, feeling slowed down, drowsiness, difficulty concentrating, feeling mentally foggy, and dizziness (first 1-3 days post injury).
42. Least common initial symptoms of an MTBI are: nervousness, feeling more emotional, sadness, numbness or tingling, and vomiting.
43. Symptoms in the first week following a concussion can be worsened by other factors, such as a neck injury, psychological distress, and life stress.

## **Recovery**

44. Athletes and military service members recover faster than civilians from a mild TBI. Most athletes and service members recover in 3 weeks or less.
45. Most civilians recover functionally within 3 months following an MTBI.
46. Some factors that can affect recovery time from an MTBI are:
  - General health
  - Previous concussions / neurological problems
  - Pre-injury mental health problems
  - Mechanism of Injury: MVA vs. Sports
  - Acute Psychological distress in the first few days
  - Severity of concussion symptoms in the first week
  - Co-occurring conditions (depression, PTSD, chronic pain)
  - Personality Characteristics
  - Motivation
  - Litigation
47. Individuals who are symptomatic at 3-6 months are at considerable risk for being symptomatic at 1-2 years post injury.
48. Most people return to work within 3 months after an MTBI.
49. Return to work rates after an MTBI are highly variable across studies and are likely influenced by many factors separate from the injury to the brain.
50. Many factors are associated with persistent symptoms, including pre-injury mental health factors, acute psychological distress, and severity of concussion symptoms in the first week.
51. Some civilians who sustain an MTBI develop depression in the first year following injury.
52. The etiology of depression is likely individualized and multifactorial.
53. Post-concussion-like symptoms can be mimicked or magnified by traumatic stress, anxiety, pain, depression, sleep disturbance, and social psychological factors at any point in the recovery trajectory.
54. There is no simple, reasonably explanatory model for good or poor outcome from an MTBI. A biopsychosocial perspective is best when considering outcome from this injury.

## **Education and Reassurance (initial days to 3 months following injury)**

55. Education and reassurance are an important component in helping patients manage symptoms better and can also facilitate positive expectations for recovery.
56. General recommendations for managing symptoms of an MTBI:
  - Regular monitoring to identify potential treatable symptoms.

- Monitor tolerance for physical activity and regulate activities that worsen symptoms.
  - Identify and acknowledge psychological and physical factors that can influence persistence of symptoms: Emotional distress, Fatigue, Pain, and Pre and Post-injury coping.
57. When providing education and reassurance it is important to advise the patient that symptoms following a mild injury may persist for a short period of time and that this represents a normal course of recovery.
58. It is also important to advise the patient that a full recovery of symptoms is seen in the majority of cases.
59. Clinicians working with patients who sustained and MTBI can provide education regarding:
- Symptoms and expected outcomes.
  - Reassurance about expected positive recovery.
  - Gradual return to activities and life roles.
  - Techniques to manage stress.
60. If a person develops chronic symptoms from an MTBI consider referral to multi-disciplinary team clinic capable of managing multiple health-related or contextual factors.

### **Post-Concussion Syndrome**

61. ICD-10 Criteria for Posconcussional Syndrome: Must endorse symptoms in at least 3 domains:
- Physical
  - Emotional
  - Cognitive
  - Insomnia
  - Excessive worry over symptoms
  - Intolerance for alcohol
62. Post-Concussion Syndrome is more common in women than men.
63. Pre-injury mental health problems are a major risk factor for Post-Concussion Syndrome.
64. Post-Concussion syndrome is associated with or influenced by traumatic stress in service members, veterans, and civilians.
65. Persistent symptoms at 1 or 3 months are a risk factor for persistent symptoms at 1 year.
66. Postconcussion-Like symptoms are common in: university students, mental health outpatients, general medical patients, chronic pain patients, and personal injury litigants.
67. Patients with depression or chronic pain, in the absence of head trauma, report very high levels of post-concussion-like symptoms.
68. Post-Concussion syndrome is easy to misdiagnose in people with depression, anxiety, PTSD, and chronic pain.

### **Treatment & Rehabilitation**

69. Many of the treatment and rehabilitation approaches that are effective for traumatic stress, depression, and chronic pain can be adapted for use with individuals who have symptoms and problems that are believed to be partially or largely related to an MTBI.
70. When treating MTBIs, treatment and rehabilitation that is symptom focused is recommended in the initial weeks and months following injury.
71. Headache is the most common symptom following head trauma and mild TBI and it can greatly interfere with daily functioning.

72. Majority of individuals with post-traumatic headache improve within days to week, however, for some the headaches may persist for months to years. It is often helpful to refer patients with persistent headaches to a specialist for treatment.
73. Many patients suffer from sleep disturbances following mild TBI. Some benefit from sleep hygiene recommendations. Some benefit from relaxation training. Some benefit from cognitive behavior therapy for insomnia.
74. Persistent vertigo, dizziness, imbalance, and vision changes are common complaints following MTBI and are often associated with vestibular system impairments.
75. Vestibular deficits can be peripheral in origin affecting the inner ear, or central, affecting central nervous system integration and output to maintain balance and posture.
76. Some people benefit from vestibular rehabilitation therapy.

### **Mental Health Problems and Treatment**

77. Mental health symptoms in Post-Concussion include: irritability, anxiety, emotional lability, depressed mood, and apathy.
78. Depression and anxiety disorders are the most common mental health problems.
79. Pre-existing difficulties such as substance abuse and poor psychosocial adjustment also place patients at risk for a slowed recovery.
80. Delays in returning to social and vocational roles can in turn produce demoralization and worsened emotional symptoms.
81. Cognitive-behavioral therapy (CBT) is established treatment of choice for mood and anxiety disorders, and as such is appropriate to address mood difficulties in MTBI.
82. Treatments that can be helpful for patients with long-term symptoms (e.g., greater than 18 months) include Self-Management Therapy and Acceptance and Commitment Therapy.