

VA



U.S. Department
of Veterans Affairs

TBI and PTSD in the Post 9/11 Era: From Research to Practice

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*HSR&D Cyberseminar
September 30, 2014*



Poll Question #1

How knowledgeable are you about deployment related traumatic brain injury and co-occurring PTSD?

0 -Not at all knowledgeable about TBI or PTSD

1- Somewhat knowledgeable about TBI or PTSD alone, but know less about their co-occurrence

2- Knowledgeable - have a good handle on the research and some familiarity treating patients with both diagnoses

3- Very knowledgeable - it's my main area of research or clinical practice

What You Will Learn

1. Unique features and signature injuries of the conflicts in Iraq and Afghanistan (post 9-11 era)
2. The most common co-occurring conditions associated with TBI among post 9-11 Servicemembers and Veterans
3. Recommended practices when TBI and comorbid conditions, such as PTSD co-occur
4. Related resources for clinical providers, Veterans, Servicemembers and their families



The Post 9-11 Era



**Operation
Enduring
Freedom**

**October 2001-
ongoing**

Afghanistan



**Operation
Iraqi
Freedom**

**March 2003-
August 2010**

Iraq



**Operation
New
Dawn**

**September
2010-
December 2011**

Iraq

Global War on Terror (GWOT)

An aerial photograph of a mountainous region. In the foreground, there are jagged, rocky peaks. A winding road or path cuts through the valley between the mountains, extending towards the background. The terrain is rugged and appears to be in a high-altitude or mountainous area.

Longest sustained US military operation

Afghanistan

Oct 2001-

Iraq

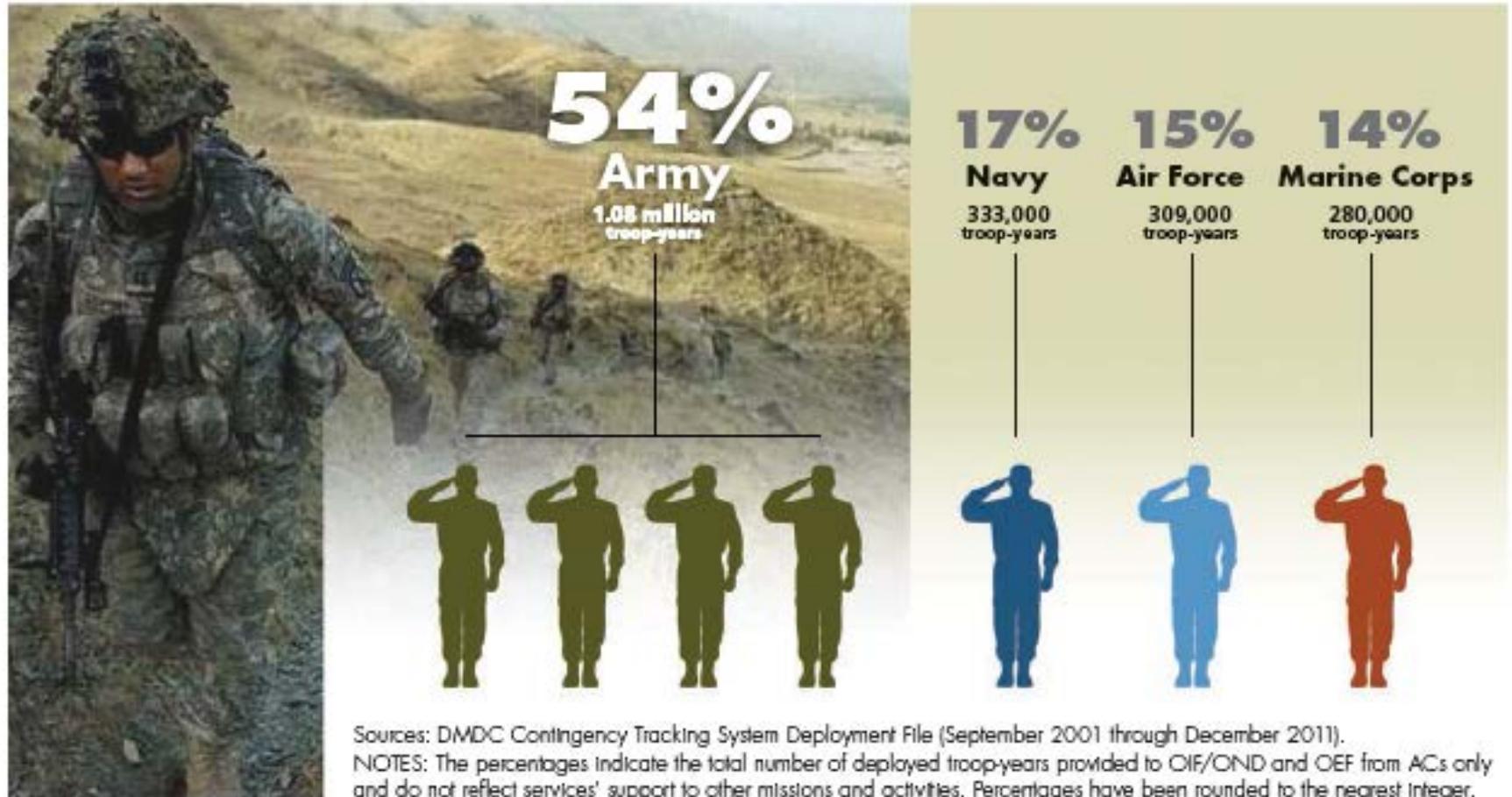
March 2003- December 2011

All Volunteer Force

Downsized US Military = Multiple deployments to meet increased demand

Total deployments for Iraq/Afghanistan wars	4,231,000
Servicemembers who were deployed to Iraq or Afghanistan at least once	→ 2,444,000
Active duty	1,753,000
National Guard and Reserve	691,000
Servicemembers deployed more than once	1,040,000

The Army Has Provided Almost 4 in 7 of the Total Deployments to Operations in Iraq and Afghanistan



Insurgency warfare
and
guerilla attacks

suicide and car bombs, IEDs,
VBIEDs, sniper fire, and
rocket-propelled grenades—



Higher frequency of blast
exposure

Higher Survival Rates

6,837 total deaths

52,242 total WIA

Conflict	Wound to fatality ratio
Iraq/Afghanistan War	8:1
Vietnam War	3:1
World War II	2:1

(OEF/OIF/OND as of September 26, 2014)

Deployment-related Stressors

Injury

Harsh conditions

Sleep deprivation

Temperature/Climate

Blast exposure

Toxic agents

Marital/parenting issues

Financial concerns

Combat trauma

Non-combat trauma

Separation from home

Physical, Psychological and Psychosocial

Unique Concerns by Era

WW II: Cold injury (European); Peptic Ulcer Disease (PUD) and Gastroenterology (GI) complaints

Korea: Cold injury

Vietnam: Agent Orange

Post Gulf War (PGW) I: Unexplained Medical Symptoms

OEF/OIF/OND: Traumatic Brain Injury (TBI)/Polytrauma

TBI in OEF/OIF/OND



DoD Numbers for Traumatic Brain Injury Worldwide – Totals

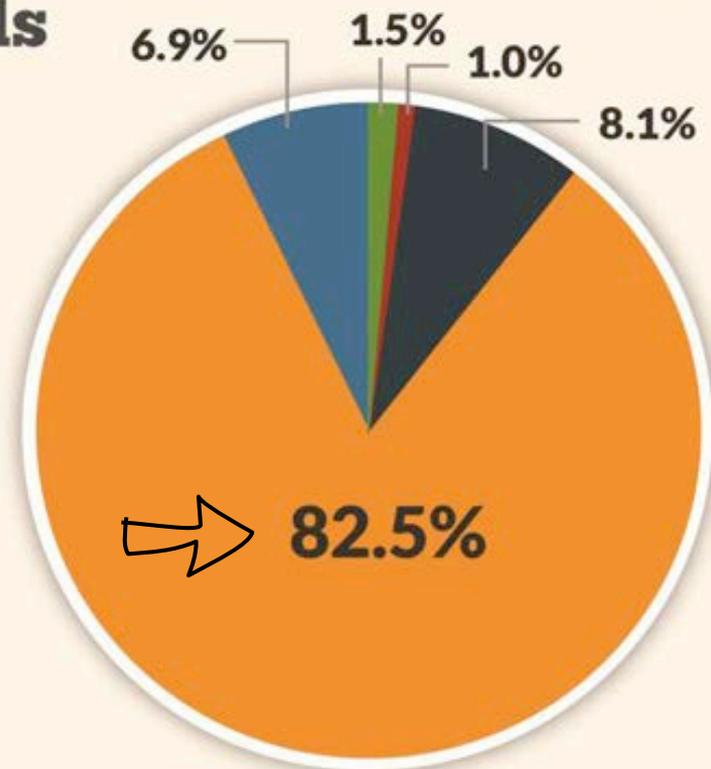
2000-2013

Penetrating	4,389
Severe	2,920
Moderate	23,754
Mild	242,676
Not Classifiable	20,433

Total - All Severities 294,172

Source: Defense Medical Surveillance System (DMSS), Theater Medical Data Store (TMDS) provided by the Armed Forces Health Surveillance Center (AFHSC)

Prepared by the Defense and Veterans Brain Injury Center (DVBIC)



2000-2013, as of Feb. 26, 2014

Mild Traumatic Brain Injury

External physical force or rapid acceleration/ deceleration forces that disrupts brain function as manifested 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 accident;
3. any alteration in mental state at the time of the accident (feeling dazed, disoriented, or confused);
4. focal neurological deficits that may or may not be transient; but where the severity of the injury does not exceed the following:
 - ✓ loss of consciousness is 30 minutes or less,
 - ✓ GCS score at 30 minutes after injury is 13–15,
 - ✓ duration of PTA is no longer than 24 hours

mTBI prevalence

Blasts are most common mechanism of injury

Reported rates in deployed OEF/OIF service members have ranged from 15.2% to 22.8%

Mild Traumatic Brain Injury vs Postconcussive Symptoms

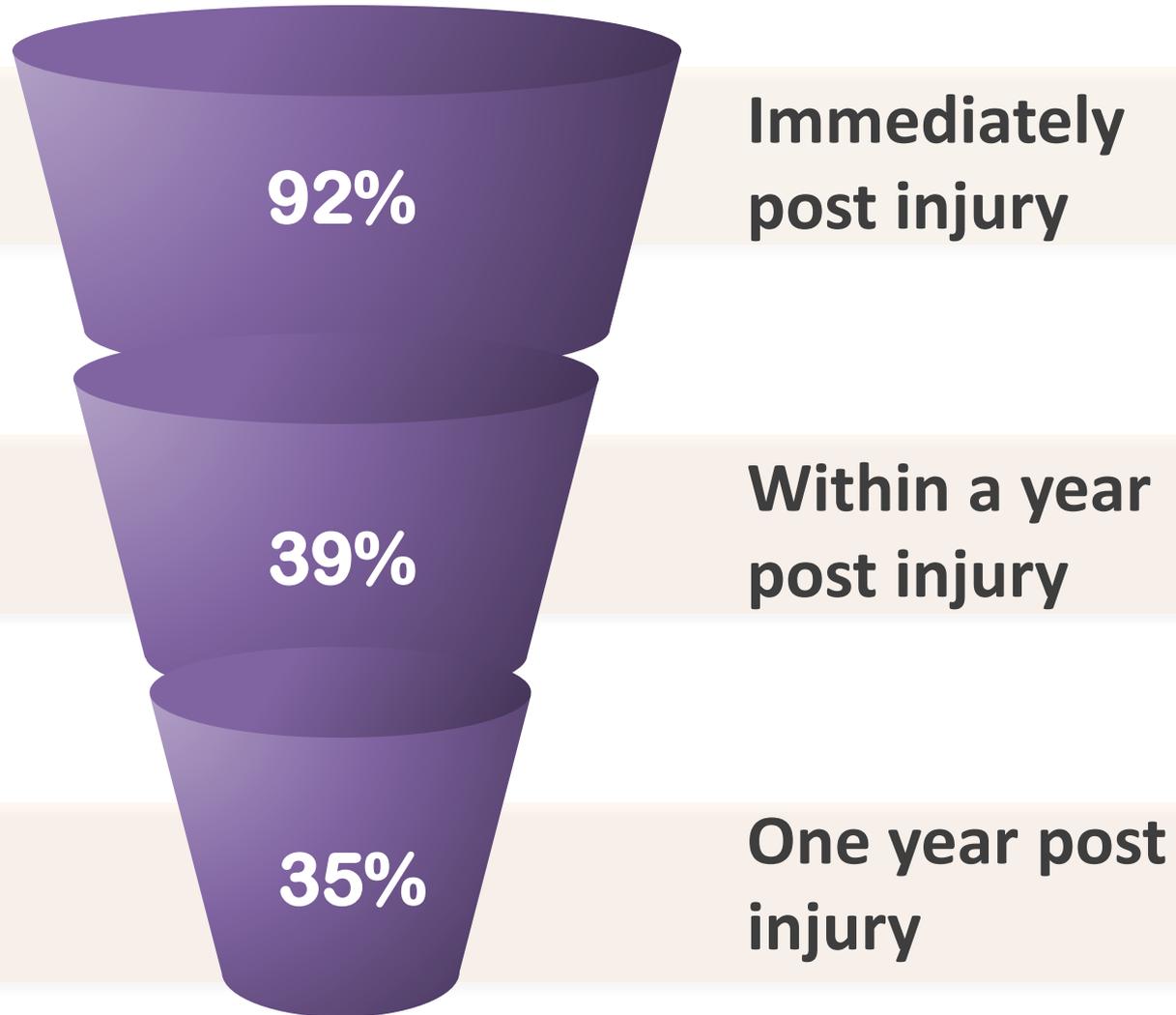
Mild TBI describes a type of injury

Postconcussive symptoms describe a set of problems resulting from mild TBI

Postconcussive Symptoms (PCS)

Somatic	Cognitive	Affective
<ul style="list-style-type: none">• Sleep disturbance• Headache• Dizziness• Balance problems• Nausea• Fatigue• Oversensitivity to light/noise	<ul style="list-style-type: none">• Difficulty concentrating• Memory problems	<ul style="list-style-type: none">• Irritability• Anxiety• Depression• Emotional lability

PCS Over Time



Servicemembers and Veterans returning from these wars with TBI often also have other deployment-related problems

Poll Question #2

What is the most common medical or psychiatric comorbidity among returning Service members with mild TBI?

- 0 –Depression
- 1 –PTSD
- 2 –Pain
- 3 –Substance Abuse

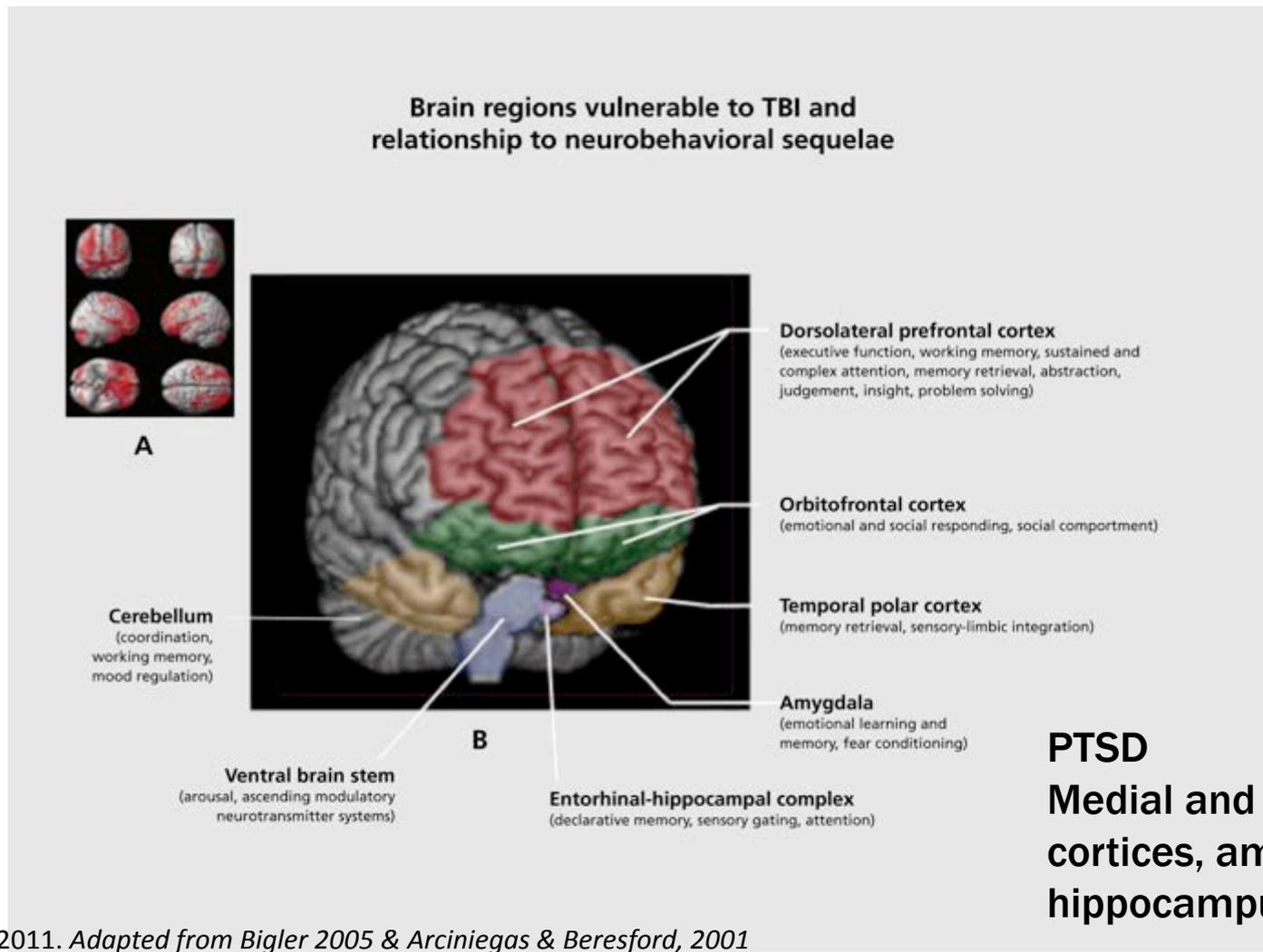
Posttraumatic Stress Disorder

- Those with mTBI at increased risk for developing PTSD
- Estimated that up to 39% of returning veterans with mTBI also have PTSD

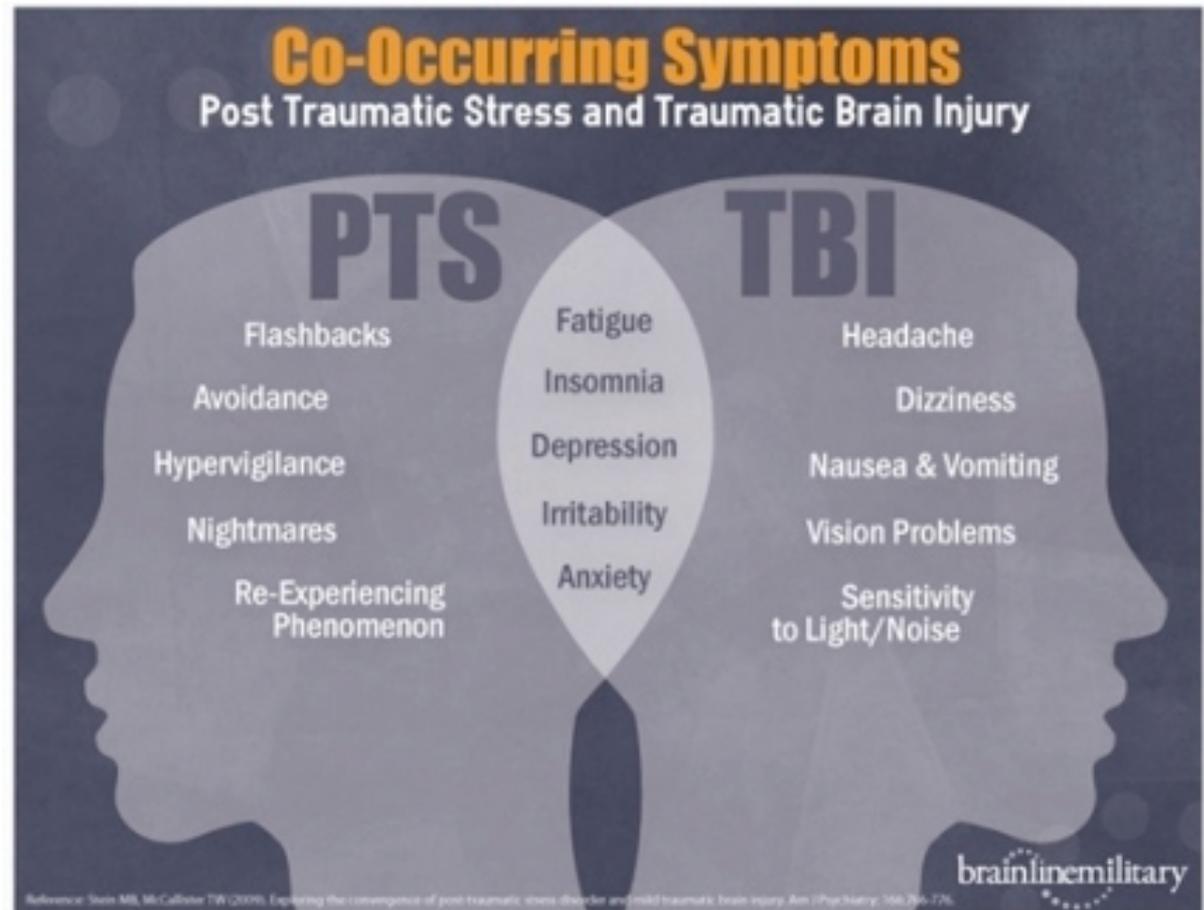


Posttraumatic stress consists of a spectrum of traumatic stress disorders, including but not limited to PTSD

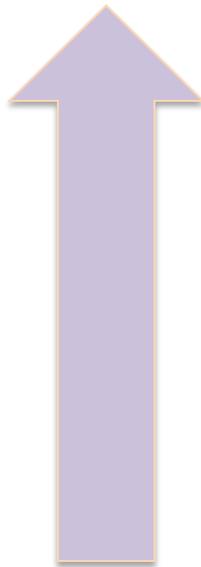
Is this incidental or instrumental?



Overlap of Non-Specific Symptoms



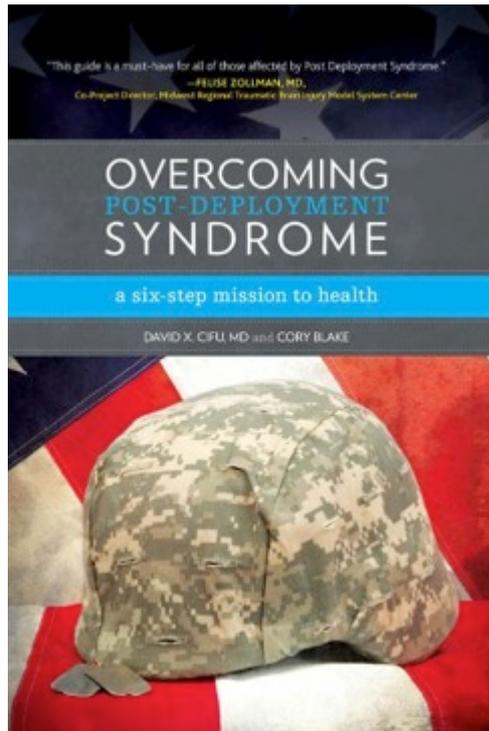
When PTSD and TBI Coexist



Severity of PCS symptoms than either condition alone

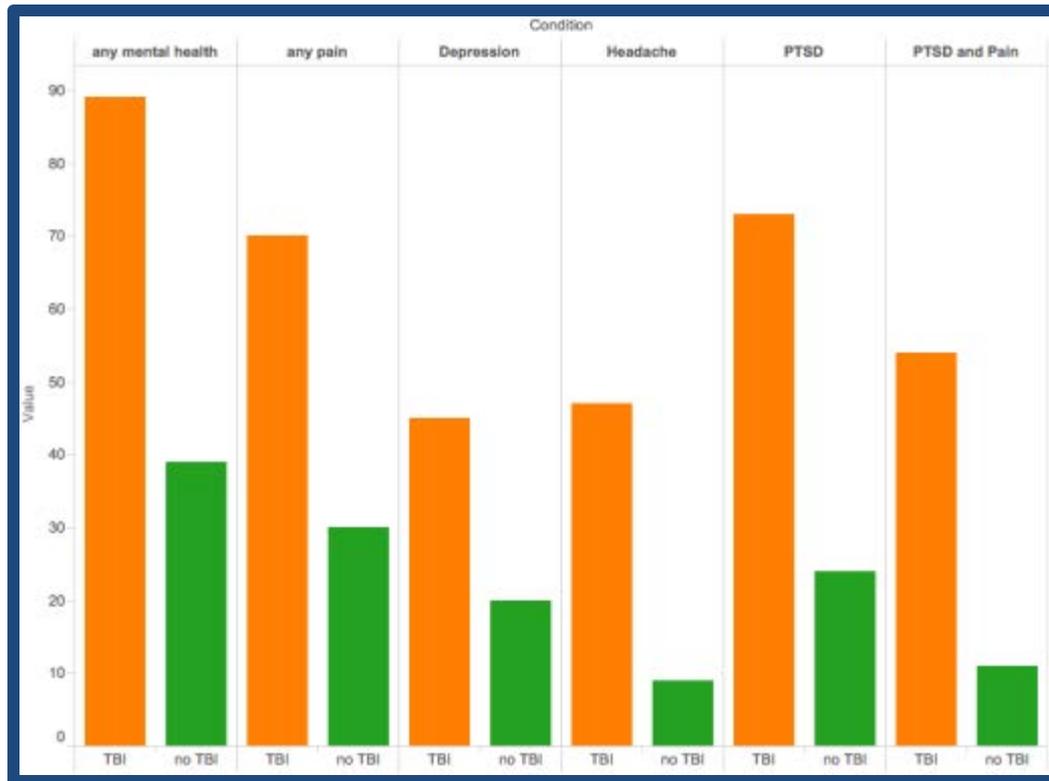
Severity of PTSD symptoms than those with PTSD alone

PTSD and mTBI almost never occur without other comorbidities



“polytrauma clinical triad” of chronic pain, PTSD, and persistent postconcussive symptoms (PPCS)

Comorbidities of OIF/OEF/OND Veterans with traumatic brain injury (TBI)



Condition		
any mental health	TBI	89.00
	no TBI	39.00
any pain	TBI	70.00
	no TBI	30.00
Depression	TBI	45.00
	no TBI	20.00
Headache	TBI	47.00
	no TBI	9.00
PTSD	TBI	73.00
	no TBI	24.00
PTSD and Pain	TBI	54.00
	no TBI	11.00



Considerations for Providers Working with Veterans and Service Members

Screening & Evaluation

1

Screening is the first step in gathering information regarding probable diagnosis

1. Have you ever been hospitalized or treated in an emergency room following a head or neck injury? (Yes/No)

2. Have you ever been knocked out or unconscious following an accident or injury? (Yes/No)

3. Have you ever injured your head or neck in a car accident or from some other moving vehicle accident? (Yes/No)

4. Have you ever injured your head or neck in a fight or fall? (Yes/No)

TBI-4

PTSD-PC

In your life, have you ever had any experience that was so frightening, horrible, or upsetting that **in the past month**, you:

1. Have had nightmares about it or thought about it when you did not want to?
Yes No
2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?
Yes No
3. Were constantly on guard, watchful, or easily startled?
Yes No
4. Felt numb or detached from others, activities, or your surroundings?
Yes No

Current research suggests that the results of the PC-PTSD should be considered "positive" if a patient answers "yes" to any three items.

2

Careful assessment of both conditions using valid and reliable instruments

- Take a thorough clinical and psychosocial history
- Structured clinical interviews are the gold standard in TBI and PTSD diagnostic assessment
- Augment clinical interviews with measures of symptom severity
- Evaluate impact on functioning

Take a thorough clinical and psychosocial history

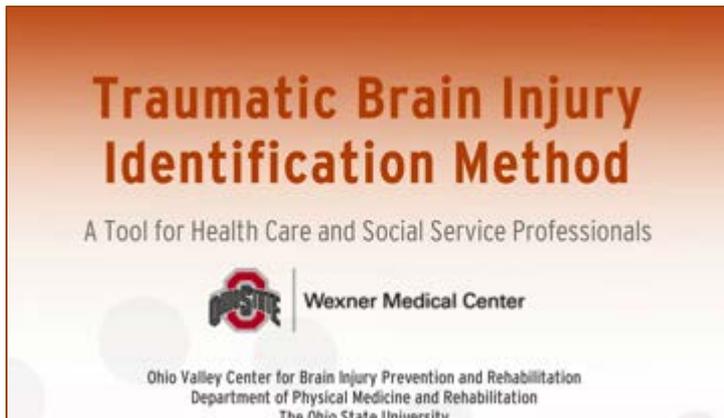
- Medical history to include injury history
- History of substance abuse or psychological issues including prior treatment for mental health and substance use disorder, past psychiatric hospitalizations
- Recent life stressors

Clinical Interview is the gold standard in TBI and PTSD assessment

TBI and PTSD are discrete conditions, with unique diagnostic criteria

Assessment of each condition individually can be enhanced by using psychometrically sound structured clinical interview measures

The Ohio State University TBI- ID



A standardized, short, structured interview designed to elicit a lifetime TBI history

Online training helps professionals learn how to effectively utilize the OSU TBI-ID

<https://tbi.osu.edu/modules/>

Step 1	Step 2	Step 3																																																																															
<p>Step 1 Ask questions 1-5 below. Record the cause of each reported injury and any dates provided spontaneously in the chart at the bottom of this page. You do not need to ask further about lines of amnesia or other injury details during this step.</p> <p>I am going to ask you about injuries to your head or neck that you may have had anytime in your life.</p> <p>1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about. <input type="checkbox"/> No <input type="checkbox"/> Yes—Record cause in chart</p> <p>2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle or ATV? <input type="checkbox"/> No <input type="checkbox"/> Yes—Record cause in chart</p> <p>3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground? <input type="checkbox"/> No <input type="checkbox"/> Yes—Record cause in chart</p> <p>4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head? <input type="checkbox"/> No <input type="checkbox"/> Yes—Record cause in chart</p> <p>5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents. <input type="checkbox"/> No <input type="checkbox"/> Yes—Record cause in chart</p> <p>Interviewer instruction: If the answers to any of the above questions are "yes," go to Step 2. If the answers to all of the above questions are "no," then proceed to Step 3.</p>	<p>Step 2 Interviewer instruction: If the answer is "yes" to any of the questions in Step 1 ask the following additional questions about each reported injury and add details to the chart below.</p> <p>Were you knocked out or did you lose consciousness (LOC)? If yes, how long? If no, were you dazed or did you have a gap in your memory from the injury? How old were you?</p>	<p>Step 3 Interviewer instruction: Ask the following questions to help identify a history that may include multiple mild TBIs and complete the chart below.</p> <p>Have you ever had a period of time in which you experienced multiple, repeated impacts to your head (e.g. history of abuse, contact sports, military duty)? If yes, what was the typical or usual effect—were you knocked out (Loss of Consciousness - LOC)? If no, were you dazed or did you have a gap in your memory from the injury? What was the most severe effect from one of the times you had an impact to the head? How old were you when these repeated injuries began? Ended?</p>																																																																															
	<table border="1"> <thead> <tr> <th rowspan="2">Cause</th> <th colspan="3">Loss of consciousness (LOC)/knocked out</th> <th colspan="2">Dazed/Short Gap</th> <th rowspan="2">Age</th> </tr> <tr> <th>No LOC</th> <th>< 30 min</th> <th>30 min-24 hrs</th> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>If more injuries with LOC: How many? _____ Longest knocked out? _____ How many > 30 mins? _____ Youngest age? _____</p>	Cause	Loss of consciousness (LOC)/knocked out			Dazed/Short Gap		Age	No LOC	< 30 min	30 min-24 hrs	Yes	No																													<table border="1"> <thead> <tr> <th rowspan="2">Cause of reported injury</th> <th colspan="2">Typical Effect</th> <th colspan="3">Most Severe Effect</th> <th colspan="2">Age</th> </tr> <tr> <th>Dazed/ memory gap, no LOC</th> <th>LOC</th> <th>Dazed/ memory gap, no LOC</th> <th>LOC < 30 min - 24 hrs</th> <th>LOC > 24 hrs</th> <th>Began</th> <th>Ended</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Cause of reported injury	Typical Effect		Most Severe Effect			Age		Dazed/ memory gap, no LOC	LOC	Dazed/ memory gap, no LOC	LOC < 30 min - 24 hrs	LOC > 24 hrs	Began	Ended																								
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Augment clinical interviews with measures of symptom severity

The addition of reliable/valid self-report measures can...

- Provide a baseline measure of symptoms
- Help identify potential areas for intervention
- Allow assessment of treatment response and patient progress
 - PTSD Checklist for DSM-5 (PCL-5)
 - Neurobehavioral Symptom Inventory (NSI)

Keep in mind the role of symptoms in differential diagnosis

Table 1
Key diagnostic features of TBI and PTSD

Criterion	TBI	PTSD^a
Injury event/traumatic stressor	External force	Exposure to actual or threatened death, injury, or sexual violence to self or others (A)
Immediate response	Alteration of brain function	Not required
Symptoms	Not required	Intrusion, avoidance, negative alterations in cognition and mood, and hyperarousal (B–E)
Duration of symptoms	Not required	>30 d (F)
Functioning	Not required	Clinically significant impairment in key areas of functioning (G)

Assess functional status

Domains of functional assessment and questions to guide evaluation

Work	<ul style="list-style-type: none"> • Have there been any changes in productivity? • Have co-workers or supervisors commented on any recent changes in appearance, quality of work, or relationships? • Is there an increase in tardiness, loss of motivation, or loss of interest? • Has the patient been more forgetful, easily distracted?
School	<ul style="list-style-type: none"> • Have there been changes in grades? • Have there been changes in relationships with friends? • Has there been a recent onset or increase in acting-out behaviors? • Has there been a recent increase in disciplinary actions? • Has there been increased social withdrawal? • Has there been a change in effort required to complete assignments?
Family Relationships	<ul style="list-style-type: none"> • Have there been negative changes in relationship with significant others? • Is the patient irritable or easily angered by family members? • Has there been a withdrawal of interest in or time spent with family? • Has there been any violence within the family?
Housing	<ul style="list-style-type: none"> • Does the patient have adequate housing? • Are there appropriate utilities and services? • Is the housing situation stable?
Legal	<ul style="list-style-type: none"> • Are there outstanding warrants, restraining orders, or disciplinary actions? • Is the person regularly engaging in, or at risk to be involved in, illegal activity? • Is the patient on probation or parole? • Is the patient seeking litigation for compensation? • Is there family advocacy/Department of Social Services (DSS) involvement?
Financial	<ul style="list-style-type: none"> • Does the patient have the funds for current necessities including food, clothing, and shelter? • Is there a stable source of income? • Are there significant outstanding or past-due debts, alimony, child support? • Has the patient filed for bankruptcy? • Does the patient have access to healthcare and/or insurance?
Unit/Community Involvement	<ul style="list-style-type: none"> • Does the patient need to be put on profile, MEB, or limited duty? • Is the patient functional and contributing in the unit environment? • Is there active/satisfying involvement in a community group or organization?

Treatment Implications

Key Principles

Objective: Improve management of PTSD and PC symptoms when they co-occur

Approach: Consider concurrent or stepped treatment of PCS and PTSD

Components: Combination of psychoeducation, symptom management, and evidence-based treatments for PTSD

Current Best Practices

PCS- There is no one treatment for the different clusters of symptoms; symptoms are treated individually

PTSD- Evidence based interventions are designed to treat the disorder (i.e., different symptom clusters)

PCS and PTSD- No studies of psychosocial or pharmacological therapies designed to simultaneously and collectively treat PC and PTSD symptoms

1 Educate patients and their families

Psychoeducation is an important component of treatment for PTSD and TBI

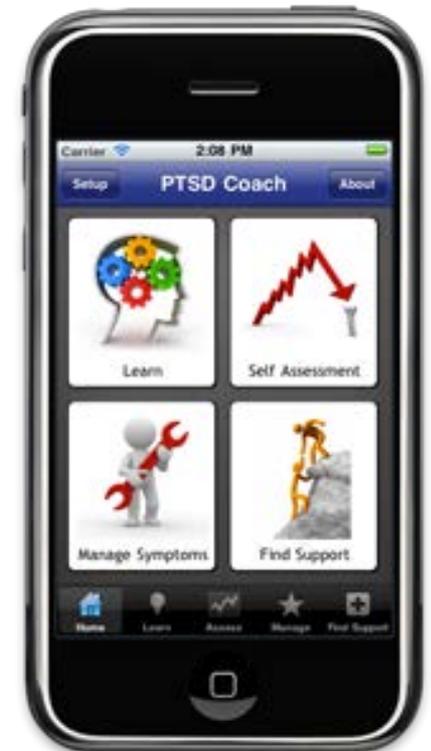
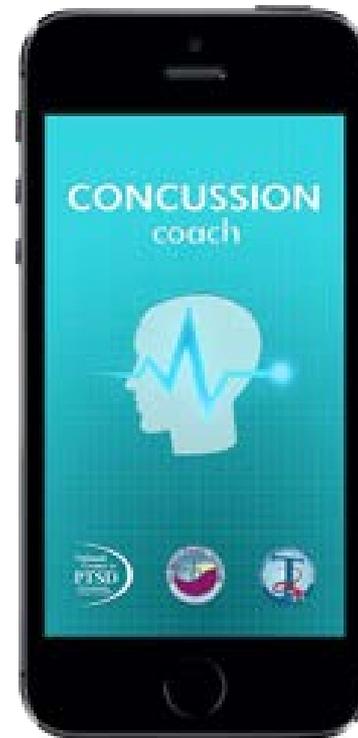
- Provide information and education on symptoms, recovery, and treatment options
- Educate about prevention of further injuries and risk reduction (substance use)
- Reassure on positive recovery expectation
- Dispel myths and reduce stigma

2 Empower patient for self management

There's An App for That

Portable tools designed for patients that facilitate education, symptom tracking, goal setting and self- monitoring

<http://www.myvaapps.com/>



Poll Question #3

Have you ever used the concussion or PTSD coach with your patients or in clinical research?

0 –No to either

1- Yes to concussion coach, no to PTSD coach

2- Yes to PTSD coach, no to concussion coach

3- Yes to both

Concussion Coach

Education about concussion symptoms and treatment options

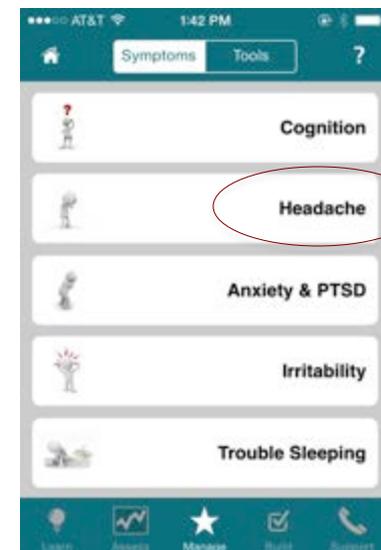
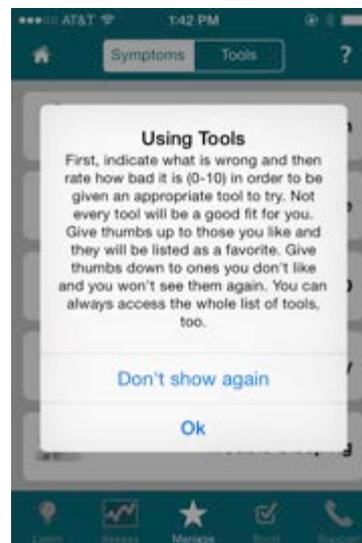
Tools for screening and tracking symptoms

Relaxation exercises and tools for managing symptoms

Direct links for community-based resources and support



Managing Symptoms in the Moment



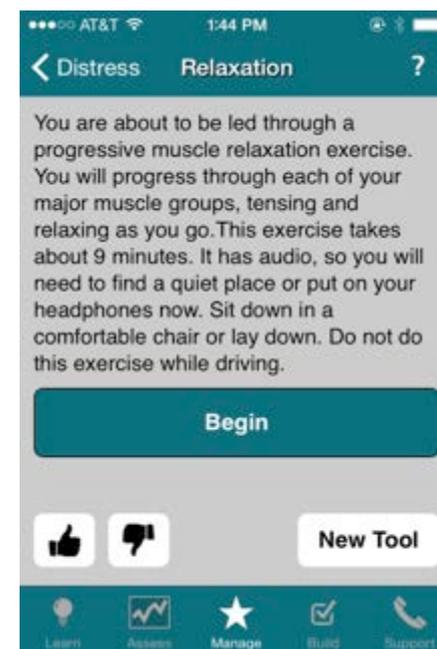
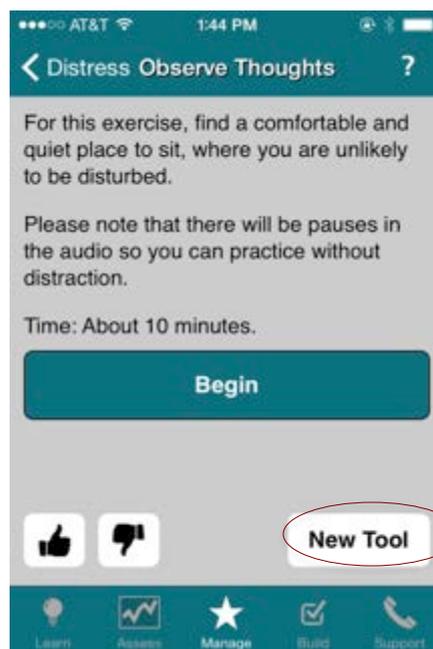
Pick a symptom or problem area

Tools & Resources

Rate your distress



Guided Exercises



Different options

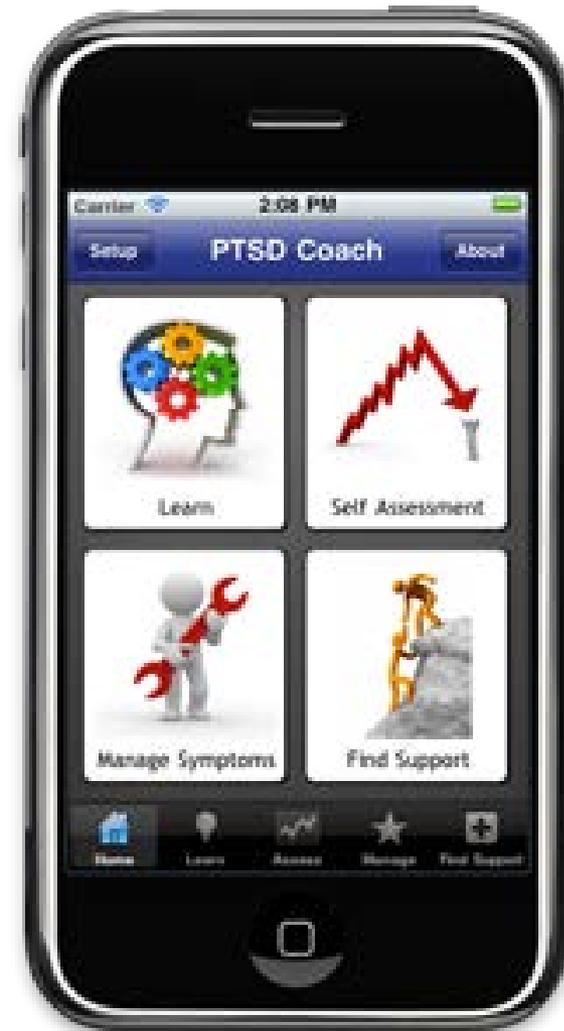
PTSD Coach

Reliable information on PTSD and treatments that work

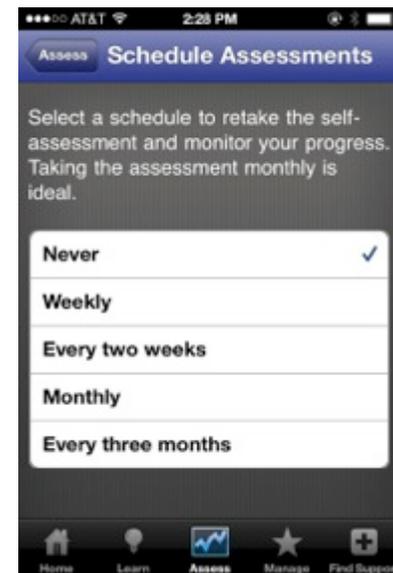
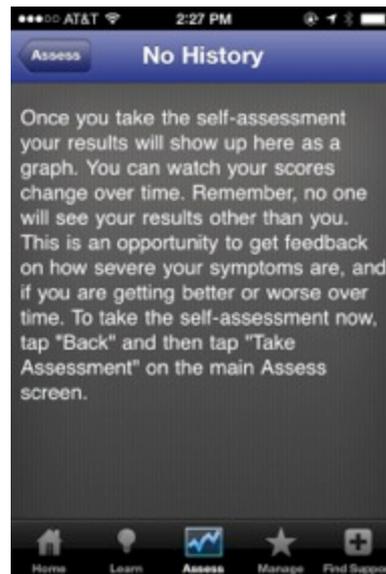
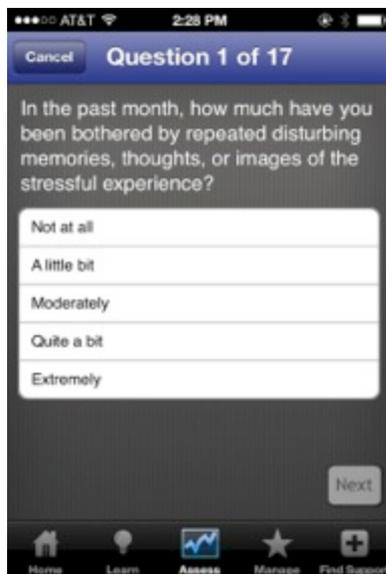
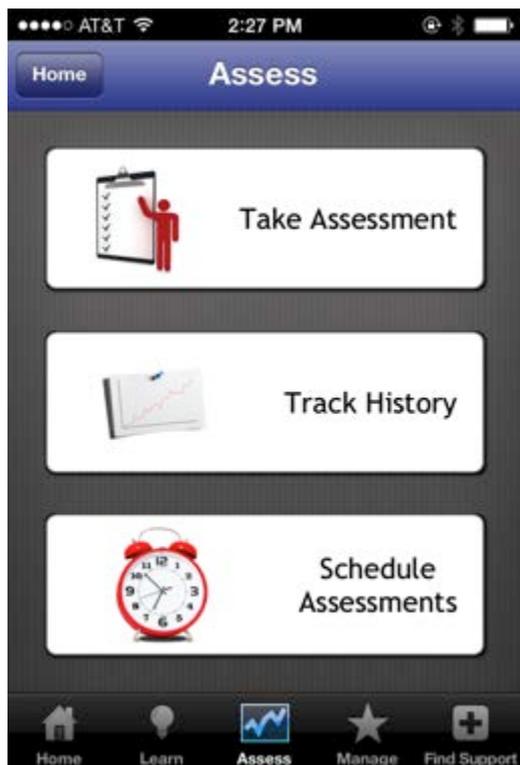
Tools for screening and tracking your symptoms

Convenient, easy-to-use tools to help you handle stress symptoms

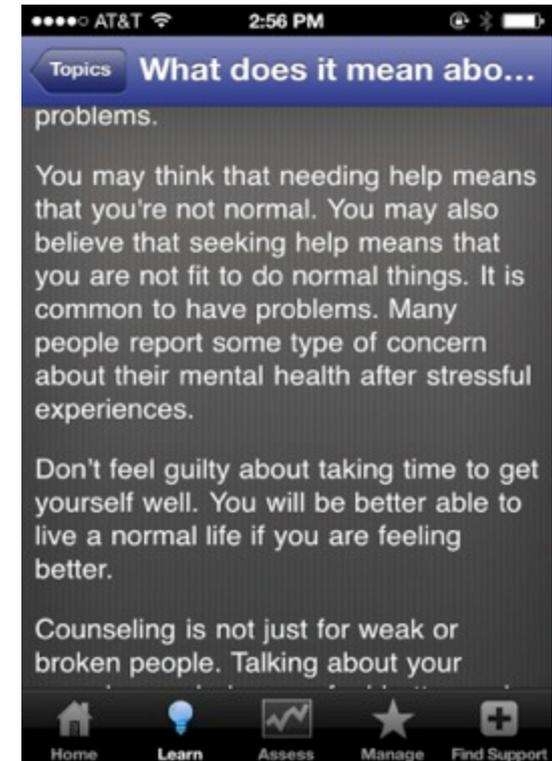
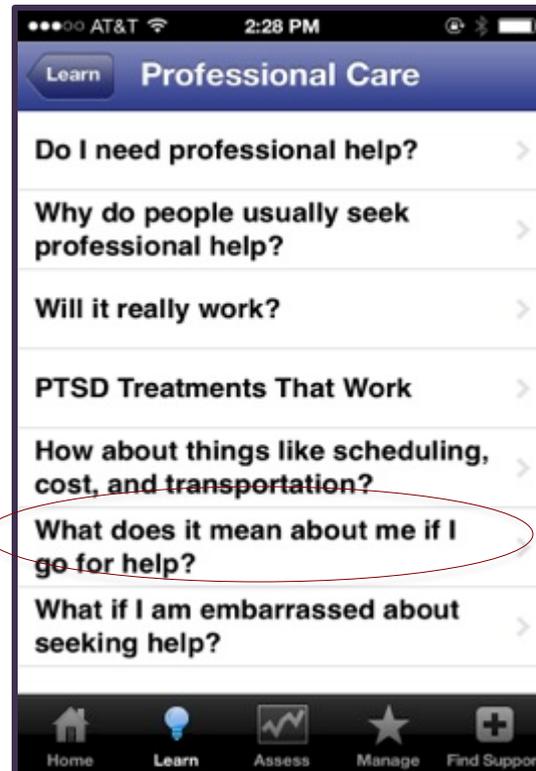
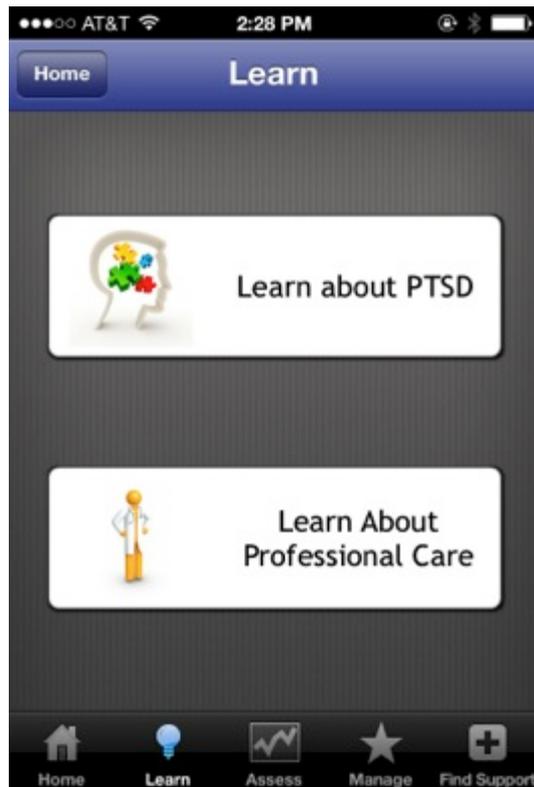
Direct links to support and help



Assess and Track Symptoms



Information



Address Barriers to Help Seeking

Poll Question #4

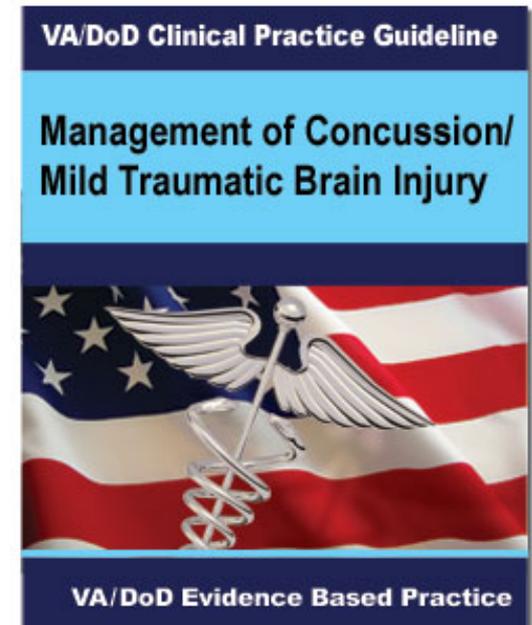
The management of an individual who has sustained a documented mTBI and has persistent symptoms should not differ based on the specific underlying etiology of their symptoms (i.e., concussion vs. pain vs. stress disorder).

- TRUE
- FALSE

2 Treat symptoms regardless of etiology

Target cross-cutting symptoms or most distressing

- ✧ Guideline concordant care for PCS and specific PTSD symptoms (i.e., nightmares)
- ✧ Identify and address symptoms in a stepwise fashion



Sleep Disturbance

1. Educate patients about the importance of sleep hygiene
1. Behavioral/Cognitive Methods
1. Rule out co-existing sleep apnea and other sleep disorders

Basics of Good Sleep Hygiene

ESTABLISH A ROUTINE

- Practice a nightly routine of relaxation and winding down before bedtime



AVOID STIMULANTS LATER IN THE DAY

- Caffeine, nicotine, and alcohol can all disrupt quality sleep



GET PLENTY OF EXERCISE

- Exercise vigorously in the morning or afternoon, and practice yoga or meditation in the evening



WATCH YOUR DIET

- Don't eat large meals right before bedtime, and minimize changes in diet if sleep problems persist



AVOID NAPPING

- Napping may disturb the regular patterns of sleep and wakefulness, making it harder to sleep at night



CREATE A GOOD SLEEP SPACE

- Use your bed just for sleeping—not reading, watching TV, or listening to music
- Your bedroom should be a pleasant temperature and not too bright



Behavioral/Cognitive Methods

Stimulus Control

Break the negative associations of being in bed unable to sleep

Relaxation Techniques

Reduce arousal associated with insomnia

Table 3. Stimulus Control

Create bedtime sleep rituals, such as taking a warm bath, reading, and eating a small snack.
Go to bed only when sleepy.
Avoid sleep-incompatible activities in bed (eg, watching TV).
Avoid falling asleep in places other than own bed (eg, couch).
If unable to fall asleep in a reasonable amount of time (such as 15-20 minutes), get out of bed and pursue relaxing activities (such as reading), and return to bed only when sleepy.

Table 4. Relaxation Techniques

Diaphragmatic breathing
Progressive relaxation
White noise or music
Guided imagery
Stretching
Yoga or tai chi

Sleep disturbance secondary to reexperiencing symptoms

In an open label trial of Veterans with PTSD and TBI, prazosin

- was well tolerated,
- had a low incidence of side effects,
- resulted in improved outcomes of sleep and both frequency and severity of headache pain

Given its recommended use for nightmares in PTSD, and the preliminary results of an open-label trial in those with mTBI, prazosin may be considered in veterans with both PTSD and TBI, but with a low starting dose and a slow upward titration to avoid hypotension.

Depression, irritability, and poor frustration tolerance

- **Sertraline** is a first-line medication choice for PTSD as well as a first line therapy for treating mood and emotional disturbance disorders after TBI
- **Anger management skills** — including self-calming strategies, relaxation techniques, and communication methods
- **Manage sleep problems and pain**, which can exacerbate irritability and mood disturbance

Poll Question #5

In a stepwise fashion, providers should consider addressing this issue first given its potential to exacerbate other symptoms:

- 1 –Irritability
- 2 –Sleep
- 3 –Chronic pain
- 4 –Dizziness

3 Evidence Based Treatments for PTSD

Preliminary Evidence

- ✧ **CPT combined with cognitive rehabilitation and psycho-education** groups contributed to significant reductions in PTSD symptom scores
- ✧ Preliminary study of **Prolonged Exposure** showed significant reductions in PTSD and depressive symptoms

Other Considerations

- Some evidence to suggest that cognitive impairments associated with TBI may reduce response to traditional CBT based treatments for PTSD
- Consider how compensatory strategies may be used to mitigate the impact of cognitive deficits
 - Prospective memory
 - Attention/vigilance
 - Learning/memory
 - Cognitive flexibility and problem solving
- Accommodating the Symptoms of TBI in Treatment
<https://tbi.osu.edu/modules>

Questions?

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