IMPACT OF TBI AND ITS COMORBIDITIES ON VETS

Jim Messina, PhD, CCMHC, NCC, DSMHS
Assistant Professor, Troy University, Tampa Bay Site
LEARNING OBJECTIVES

After this presentation, participants will be better able to

1. Identify the different conditions which are comorbid with mTBI
2. Identify the brain and neurological functions which lie as the cause of these comorbidities
3. Identify tools to assess for these comorbidities of TBI
4. Identify treatment tools to treat these comorbidities
5. Identify existing free Apps which can be used in treating these conditions
6. Identify why it is impossible to think just treating one condition in isolation from the other comorbidities would have maximal effectiveness for the veterans and active military who are suffering with them
A concussion is caused by a jolt that shakes one’s brain back and forth inside your skull. Any hard hit to the head or body -- whether it’s from a football tackle or a car accident -- can lead to a concussion. Although a concussion is considered a mild brain injury, it can leave lasting damage if one doesn’t rest long enough to let the brain fully heal afterward.
Overlap of PTSD and TBI Symptoms

• Concentration, attention, sleep etc

• Examine onset: target trauma & TBI may not be the same event

• Look at developmental history prior to deployment to see if there is a change in function

• Identify level of severity of symptoms

• If comorbid with PTSD, treat the PTSD and see what symptoms remain
CAUSES OF COGNITIVE DEFICITS RELATED TO TBI

• Brain injury
• Tinnitus-related psychological distress
• Insomnia
• Chronic headaches
• Depression
• PTSD
• Chronic Pain

Impact why problems with thinking, concentration and being able to think clearly
MANY FACTOR MIMIC, MASK OR EXACERBATE TBI OR POST CONCUSSIVE SYMPTOMS (PCS)

- Brain injury
- Vestibular injury
- Tinnitus-Related Psychological Distress
- Chronic Bodily Pain or Headaches
- Insomnia /Sleep Disturbance
- PTSD
- Anxiety/Stress/Somatic Preoccupation
- Life Stress

All cause symptoms similar to Post Concussive Symptoms
TYPICAL RECOVERY TIMES FROM TBI

Athletes: 1-28 days
Civilians: 1 week to 6 months
Service members coming out of combat: can be longer
RISK FACTORS FOR LONG-TERM SYMPTOMS AND PROBLEMS

**Biological**
- Genetics
- Injury severity
- Prior brain injury

**Psychological**
- Past mental health problems
- Resiliency
- Current traumatic stress and/or depression

**Social/Environmental**
- Life stress and problems with employment
- Litigation/Disability/Compensation issues
POST CONCUSSIVE SYMPTOMS

- Headaches
- Fatigue
- Noise Sensitivity
- Problems Concentrating
- Problems with Memory
- Sleep Disturbances
- Depression - has similar symptoms to PCS
TREATMENT RECOMMENDATIONS FOR REHABILITATION OF VETS WITH TBI

Focused, Evidence-Supported Treatment for Specific Symptoms & Problems

• Medications
• Physical Therapy
• Vestibular Rehabilitation
• Exercise
• Psychological treatment
PSYCHOLOGICAL TREATMENTS FOR 1-2 YEAR POST INJURY

• CBT especially if chronic depressed
• Self-management
• Behavioral Activation
• Stress Management
• Acceptance & Commitment Therapy
EXERCISE FOR INDIVIDUALS WHO HAVE LONG TERM TBI SYMPTOMS

Exercise as a component of a treatment Plan for patients with TBI

• Facilitates molecular markers of neuroplasticity & promotes neurogenesis healthy & injured brains

• Associated with changes in neurotransmitter systems associated with depression & anxiety

• Effective treatment or adjunctive treatment for mild forms of anxiety & depression

• Associated with reduced pain and disability in patients with chronic low back pain

• Regular long-term aerobic exercise reduces migraine frequency, severity & duration
GOAL FOR PATIENTS WITH COMPLEX COMORBIDITIES WITH MTBI TO IMPROVE FUNCTIONING

- Reduce Sleep Disturbance
- Lessen Stress & Anxiety Symptoms
- Lessen Depressive Symptoms
- Deconditioning from pattern of responses to Triggers
- Reduction of Headaches
- Reduction of Bodily Pain

Treat what you can treat!
WHAT HAS HAPPENED TO OUR VETS?
Let’s look at Corporal Buchanan
Not just mental health - physical injuries

- Orthopedic injuries: chronic pain due to joint and muscular-skeletal injuries in back, knees, shoulders, wrists
- Hearing problems: hearing loss, ringing in ears
- Respiratory illnesses: sand, dust
- Skin conditions: rashes, bacterial infections
- Major trauma injuries: gunshot wounds, shrapnel, traumatic brain injuries
<table>
<thead>
<tr>
<th>READY (Green)</th>
<th>REACTING (Yellow)</th>
<th>INJURED (Orange)</th>
<th>ILL (Red)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEFINITION</strong></td>
<td><strong>DEFINITION</strong></td>
<td><strong>DEFINITION</strong></td>
<td><strong>DEFINITION</strong></td>
</tr>
<tr>
<td>• Optimal functioning</td>
<td>• Mild and transient distress or impairment</td>
<td>• More severe and persistent distress or impairment</td>
<td>• Clinical mental disorder</td>
</tr>
<tr>
<td>• Adaptive growth</td>
<td>• Always goes away</td>
<td>• Leaves a scar</td>
<td>• Unhealed stress injury causing life impairment</td>
</tr>
<tr>
<td>• Wellness</td>
<td>• Low risk</td>
<td>• Higher risk</td>
<td></td>
</tr>
<tr>
<td><strong>FEATURES</strong></td>
<td><strong>CAUSES</strong></td>
<td><strong>FEATURES</strong></td>
<td><strong>TYPES</strong></td>
</tr>
<tr>
<td>• At one’s best</td>
<td>• Any stressor</td>
<td>• Feeling irritable, anxious, or down</td>
<td>• PTSD</td>
</tr>
<tr>
<td>• Well trained and prepared</td>
<td></td>
<td>• Loss of motivation</td>
<td>• Depression</td>
</tr>
<tr>
<td>• In control</td>
<td></td>
<td>• Loss of focus</td>
<td>• Anxiety</td>
</tr>
<tr>
<td>• Physically, mentally, and spiritually fit</td>
<td></td>
<td>• Difficulty sleeping</td>
<td>• Substance abuse</td>
</tr>
<tr>
<td>• Mission focused</td>
<td></td>
<td>• Muscle tension or other physical changes</td>
<td></td>
</tr>
<tr>
<td>• Motivated</td>
<td></td>
<td>• Not having fun</td>
<td>• Symptoms persist and worsen over time</td>
</tr>
<tr>
<td>• Calm and steady</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Having fun</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Behaving ethically</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
WHAT’S KEEPING THE NEW VETERANS FROM SEEKING CARE?

Practical Concerns/Logistical Barrier

• I don’t know where to get help
• I don’t have adequate transportation
• It’s difficult to schedule an appointment
• It’s difficult getting time off work
• Costs too much money
• I don’t trust mental health professionals

(Hoge et al. 2004, NEJM; Ouimette et al., 2011)
IMPACT OF STIGMA IN SEEKING HELP

Stigma (active duty)
• It would harm my career
• Members of my unit might have less confidence in me
• Unit leadership might treat me differently
• Leaders would blame me for the problem

Stigma (veterans & active duty)
• I would be seen as weak; I would see myself as weak
• It would be too embarrassing
• I don’t want other people to know about my problems
• I don’t like to get emotional about things
### Disabilities by Body System & Gender for Veterans Receiving Compensation at End of Fiscal Year 2012

<table>
<thead>
<tr>
<th>Body System</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular System</td>
<td>106,722</td>
<td>15,154</td>
<td>122,445</td>
</tr>
<tr>
<td>Dental and Oral Conditions</td>
<td>16,174</td>
<td>5,029</td>
<td>21,323</td>
</tr>
<tr>
<td>Digestive System</td>
<td>153,456</td>
<td>26,571</td>
<td>180,815</td>
</tr>
<tr>
<td>Endocrine System</td>
<td>18,718</td>
<td>6,288</td>
<td>25,162</td>
</tr>
<tr>
<td>Genitourinary System</td>
<td>72,884</td>
<td>7,189</td>
<td>80,421</td>
</tr>
<tr>
<td>Gynecological System</td>
<td>705</td>
<td>18,107</td>
<td>19,002</td>
</tr>
<tr>
<td>Hemic and Lymphatic Systems</td>
<td>4,086</td>
<td>2,791</td>
<td>6,913</td>
</tr>
<tr>
<td>Impairment of Auditory Acuity</td>
<td>344,160</td>
<td>25,575</td>
<td>370,945</td>
</tr>
<tr>
<td>Infectious Diseases, Immune Disorders and Nutritional Deficiencies</td>
<td>2,558</td>
<td>803</td>
<td>3,374</td>
</tr>
<tr>
<td>Mental Disorders</td>
<td>215,039</td>
<td>36,541</td>
<td>252,184</td>
</tr>
<tr>
<td>Musculoskeletal System</td>
<td>1,463,379</td>
<td>232,887</td>
<td>1,703,422</td>
</tr>
<tr>
<td>Neurological Conditions and Convulsive Disorders</td>
<td>244,652</td>
<td>51,855</td>
<td>297,611</td>
</tr>
<tr>
<td>Organs of Special Sense</td>
<td>36,746</td>
<td>6,705</td>
<td>43,674</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>186,764</td>
<td>32,283</td>
<td>220,018</td>
</tr>
<tr>
<td>Skin</td>
<td>374,138</td>
<td>66,735</td>
<td>442,938</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,240,181</strong></td>
<td><strong>534,513</strong></td>
<td><strong>3,790,247</strong></td>
</tr>
</tbody>
</table>
WHAT IS TBI?

- Effects of a typical IED in Afghanistan on Military ATV
- Weapon of choice by the enemy
- IEDs are a daily threat to all ground forces.
- If someone has been involved in a blast (within 100 meters) and has not been assessed there is a possibility of mTBI
- Majority of mTBI sustained by service members occur during daily life or military training, not during deployment and while deployed ie: playing sports
### DoD Numbers for Traumatic Brain Injury Worldwide – Totals

<table>
<thead>
<tr>
<th>Period</th>
<th>Penetrating</th>
<th>Severe</th>
<th>Moderate</th>
<th>Mild</th>
<th>Not Classifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2014 Q1</td>
<td>4,477</td>
<td>3,041</td>
<td>24,777</td>
<td>247,904</td>
<td>20,508</td>
</tr>
</tbody>
</table>

Total - All Severities 300,707

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)

2000-2014 Q1, as of May 7, 2014

Percentages may not add up to 100% due to rounding.
THE BRAIN IS THE ORGAN OF COPING

Coping: “the person’s constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person’s resources.” (Lazarus & Folkman, 1984)

Coping (whether adaptive or maladaptive) depends on intact higher cortical functioning

- Cognitive appraisal (thinking)
- Enacting a coping strategy (doing)

The performance limits of the brain, therefore, define the limits of adaptive coping
LET'S LOOK AT REASON FOR COMORBIDITIES WITH TBI

The structure and functioning of the CNS set limits on capacities for coping and all other behavior

- TBI
- Mental disorders are the result of losses of integrity in the CNS rather than maladaptive coping choices
- PTSD
- Major depressive disorder
- Generalized anxiety disorder
- Psychotic disorders

To think and teach otherwise is to blame our patients for their own suffering
REGIONS OF CORTEX INVOLVED IN SELF REGULATION

Medial PFC
• Volitional control of emotion

Orbitofrontal PFC
• Decision making

Dorsolateral PFC
• Volitional control of attention

Insula (not visible)
• Volitional control of arousal

Together, these regions of prefrontal and insular cortex make possible inhibition and control of emotions, thoughts, behaviors, and physiological arousal.
Hippocampus:
Gray-Matter Partner to Prefrontal Cortex (PFC)

FUNCTIONS

• Declarative memory: laying down and consolidation of recallable memory
• Inhibition (along with PFC)
• Fear extinction
• Spatial mapping (GPS)
• May also be crucial for constructing a coherent mental image, whether from current perception or memory
Amygdala:

Important Target for Control by PFC and Hippocampus

FUNCTIONS

- Puts “emotional stamp” on memories
- Fear, anger, (etc.?)
- Threat detector
- Social recognition
- Fear conditioning
- Appetite conditioning?
Nucleus Accumbens:
Another Important Target for Control
By PFC and Hippocampus

FUNCTIONS

- Reward, pleasure
- Well-being
- Motivation
- Focus, attention
- Goal-directed behavior
- Addiction, craving
A FEW MOLECULAR MODULATORS OF STRESS

• Corticotropin-releasing factor (CRF)
• Cortisol
• Brain-derived neurotrophic factor (BDNF) and other neurotropins
• Glutamate (Glu) acting at N-methyl-d-aspartate (NMDA) receptors
CORTICOTROPINE-RELEASING FACTOR (CRF), CORTISOL, AND BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF)

CRF is the master stress modulator ("on" switch for stress)

CRF is both:

- A hormone released in the hypothalamus triggering release of corticosteroids like cortisol from adrenal cortex
- A neurotransmitter used by a diffuse network of neurons in the brain

Both CRF and cortisol have biphasic activity in the brain:

- At low to moderate levels, they improve performance, learning, and well-being
- At high or sustained levels, they degrade performance, learning, and well-being

Cortisol interacts with BDNF to stimulate growth of new dendrites, synapses, and entire neurons, but in different brain systems depending on stress level
<table>
<thead>
<tr>
<th>Brain systems</th>
<th>Low–Moderate Stress</th>
<th>Extreme Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC &amp; Hippocampus</td>
<td>• ↑ in density of dendrites and synapses</td>
<td>• ↓ in density of dendrites and synapses</td>
</tr>
<tr>
<td></td>
<td>• ↑ in numbers of neurons</td>
<td>• ↓ in numbers of neurons</td>
</tr>
<tr>
<td>Amygdala</td>
<td>• ↓ in density of dendrites and synapses</td>
<td>• ↑ in density of dendrites and synapses</td>
</tr>
<tr>
<td></td>
<td>• ↓ in numbers of neurons</td>
<td>• ↑ in numbers of neurons</td>
</tr>
<tr>
<td>Nucleus accumbens</td>
<td>• ↑ in dopamine release</td>
<td>• ↓ in dopamine release</td>
</tr>
<tr>
<td></td>
<td>• ↑ in well-being</td>
<td>• ↓ in well-being</td>
</tr>
<tr>
<td></td>
<td>• ↑ in motivation, problem-solving (active coping)</td>
<td>• ↓ in motivation, problem-solving (avoidant coping)</td>
</tr>
</tbody>
</table>
PTSD CRITERIA

Traumatic experience(s)
  • Intrusion
  • Avoidance
  • Alterations in cognition & mood
  • Alterations in arousal
  • Functional interference
CHECKLIST FOR PTSD

Re-experience the event over and over again
• You can’t put it out of your mind no matter how hard you try
• You have repeated nightmares about the event
• You have vivid memories, almost like it was happening all over again
• You have a strong reaction when you encounter reminders, such as a car backfiring

Avoid people, places, or feelings that remind you of the event
• You work hard at putting it out of your mind
• You feel numb and detached so you don’t have to feel anything
• You avoid people or places that remind you of the event

Feel “keyed up” or on-edge all the time
• You may startle easily
• You may be irritable or angry all the time for no apparent reason
• You are always looking around, hyper-vigilant of your surroundings
• You may have trouble relaxing or getting to sleep
Many DSM-5 PTSD Symptoms Reflect Losses of Higher Cortical Functioning

(B) Cluster: Intrusion Symptoms
- Involuntary distressing memories
- Dissociative reactions (flashbacks)

(C) Cluster: Trauma-Related Avoidance
- Avoiding external reminders

(D) Cluster: Alterations in cognitions and mood
- Dissociative amnesia
- Persistent negative emotional states
- Inability to feel positive emotions

(E) Cluster: Alterations in arousal and reactivity
- Angry outbursts
- Reckless behavior
- Exaggerated startle responses
- Difficulty relaxing or falling asleep

Loss of Authority Over MEMORY

Loss of Authority Over COGNITIONS

Loss of Authority Over EMOTIONS

Loss of Authority Over BEHAVIOR
mTBI

- Speech and language deficits
- Extreme mood lability / disinhibition
- Impulsivity
- Poor balance
- Dizziness
- Changes in perception and increased sensitivity (vision, hearing, touch)

PTSD

- Intrusive memories
- Nightmares
- Reliving the trauma
- Psychological/physiological distress with exposure to cues
- Avoidance of trauma-related thoughts, feelings, reminders, conversations
- Hypervigilance
- Exaggerated startle

- Impaired concentration and decision making
- Learning difficulties
- Memory impairment and confusion
- Inability to recall trauma
- Slower processing speed
- Being “overwhelmed”
- Impulsivity
- Reduced insight
- Rigid thinking
- Amotivation
- Interpersonal conflict
- Social withdrawal / isolation / agoraphobia
- Reduced intimacy / feeling less compassionate or warm towards others
- Impaired work and school performance

- Depressed mood
- Irritability / aggression
- Sleep disturbance
- Anxiety symptoms
- Substance misuse/abuse/dependence
- Guilt
- Lowered frustration tolerance
- Being socially ‘inappropriate”
- Fatigue
- Insomnia
- Headaches**
- Cardiovascular, gastrointestinal, musculoskeletal disorders
- Sexual problems
- Noise sensitivity
Cognitive Problems
- Memory
- Concentration, attention and focusing
- Learning and understanding new things
- Processing & understanding information including following complicated directions
- Language problems
- Problem-solving, organization, decision-making
- Impulse control
- Slowed or cloudy thinking
- Negative beliefs about self, world & future

Affective/Behavioral Problems
- Frustration or irritability
- Depression/sad
- Anxiety
- Reduced tolerance for stress
- Sleep problems
- Numbing out or flipping out
- Inflexibility
- Feeling less compassionate or warm towards others
- Feeling guilty
- Feeling helpless/hopeless
- Denial of problems
- Social appropriateness

Somatic Complaints
- Headache
- Fatigue
- Poor balance
- Dizziness
- Changes in vision, hearing, or touch
- Sexual problems
Shown here are PET scans of the brain showing different activity levels in a person with depression, compared to a person without depression.
SLEEP DISORDERS ARE COMMON AFTER CONCUSSION

- Service Persons with physical, cognitive or behavioral/emotional symptoms following concussion should be screened.
- Insomnia is the most common sleep disturbance following concussion.
- Primary care diagnosis and management is facilitated by a focused sleep assessment.
- Non-pharmacological measures are the foundation for care, to include stimulus control and sleep hygiene.
- Referral to a sleep medicine specialist may be necessary or likely.
  - Especially for chronic insomnia (after initial management).
  - Sleep disturbances can significantly exacerbate or impact other concussion symptom.
# Sleep Disorders Assessment

<table>
<thead>
<tr>
<th>Area of Assessment</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>Difficulty initiating and/or maintaining sleep, non-restorative sleep, nightmares, snoring, awakening with gasping and choking, fatigue, tiredness or drowsiness during the daytime</td>
</tr>
<tr>
<td>Consequences</td>
<td>Cognitive impairment, mood disturbances, irritability, decrease in functional ability, role interference (family, social, academic, occupational)</td>
</tr>
<tr>
<td>Predisposing factors</td>
<td>Pre-concussion sleep pattern, prior history of a sleep disturbance, excessive weight, increasing neck circumference, narrow upper airway, older age, genetic factors, mood disturbances, anxiety or preoccupation concerning sleep quality, medications, other co-morbid behavioral health or medical conditions</td>
</tr>
<tr>
<td>Precipitating factors</td>
<td>Concussion, deployment, acute stress</td>
</tr>
<tr>
<td>Perpetuating behavioral factors</td>
<td>Napping, excessive caffeine/stimulant use, irregular sleep schedule, Watching TV, reading, working on a computer, or playing video games while in bed</td>
</tr>
<tr>
<td>Perpetuating environmental factors</td>
<td>Light, noise, travel and time zone changes</td>
</tr>
<tr>
<td>Perpetuating psychosocial factors</td>
<td>Familial stress, inadequate social support system, financial stress, safety concerns or other worries</td>
</tr>
<tr>
<td>Perpetuating occupational factors</td>
<td>Shift work, standing watch, duty schedule incompatible with preferred sleep schedule, work stressors</td>
</tr>
<tr>
<td>Perpetuating physical factors</td>
<td>Pain, discomfort, tinnitus</td>
</tr>
<tr>
<td>Perpetuating lifestyle factors</td>
<td>Alcohol use, diet, smoking, limited physical activity, family and community obligations</td>
</tr>
</tbody>
</table>
**COGNITIVE BEHAVIORAL THERAPY FOR INSOMNIA (CBT-I) IS MOST EFFECTIVE TREATMENT FOR INSOMNIA**

<table>
<thead>
<tr>
<th><strong>Stimulus Control</strong></th>
<th><strong>Sleep Hygiene</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove TV, radio, smartphone, electronic tablet, computer and other electronic devices from bedroom</td>
<td>Avoid caffeine/stimulant intake within six hours of bedtime</td>
</tr>
<tr>
<td>Relax before bedtime; avoid going to bed worried or angry; use the bedroom only for sleep and intimacy</td>
<td>Engage in exercise daily during the morning or afternoon; avoid exercise close to bedtime</td>
</tr>
<tr>
<td>Go to bed only when tired and sleepy</td>
<td>Avoid alcohol and nicotine use, large/heavy meals and excessive fluid close to bedtime</td>
</tr>
<tr>
<td>If unable to fall asleep within 15-20 minutes, get up, go to another room with the lights dim and do something relaxing while avoiding electronic use (TV, computers, phone); return to bed when sleepy</td>
<td>Promote a sleep friendly environment, minimize noise and light, maintain a cool but comfortable temperature</td>
</tr>
<tr>
<td>-Repeat above, as needed throughout the night, even after awakenings</td>
<td>Get up at the same time every morning (regardless of the amount of sleep obtained), even on the weekends; avoid daytime naps</td>
</tr>
<tr>
<td></td>
<td>Get exposure to natural light every morning</td>
</tr>
</tbody>
</table>
Chronic Pain is a common issue of OEF and OIF Returning Veterans which can hide or exacerbate TBI or PTSD Symptoms and Needs to be Treated
1. **Assessment:** What are the best approaches to assess PTSD, history of mTBI and pain in Veterans presenting for treatment? Use diagnostic tools to screen for all three. Determine comorbidities and if the symptoms are current or historical. Rule out possibility of depression and substance abuse.

2. **Treatment Planning:** What are the challenges of treatment planning with a Veteran comorbid PTSD, pain & history of mTBI? Make sure patient has an understanding of what treatments will be used for which symptoms.

3. **Treatment:** What do practice guidelines tell us about the most effective PTSD, pain & a history of mTBI treatment strategies? Use guideline for all 3 specific conditions. Deliver a consistent message which is encouraging for recovery.
EVIDENCED BASED PRACTICES FOR PTSD, TBI & PAIN

• PTSD: Prolonged Exposure or Cognitive Processing Therapy
• TBI: Rehabilitation interventions
• Pain: Rehabilitation interventions
  • Use psychoeducation to help them to recognize that pain has a role as trigger for PTSD & increased anxiety
  • After treat PTSD, consider CBT for Chronic Pain
Overall Symptom Assessment

- Neurobehavioral Symptom Inventory (NSI)

TBI

- DVBIC 3 Question TBI Screening Tool
- Military Acute Concussion Evaluation (MACE)

PTSD

- PCL (PTSD Checklist)
- CAPS
- Combat Exposure Scale (CES)

Sleep Disorder

- Berlin Questionnaire
- Insomnia Severity Index
- Morningness-Eveningness Questionnaire
- STOP-BANG Questionnaire
- Epworth Sleepiness Scale

PAIN

- Initial Pain Assessment
- Initial Pain Assessment Tool
- Patient Comfort Assessment Guide
- Visual Analog Scale
- Wong-Baker Faces Pain Rating Scale
APPS FOR TBI RELATED COMORBIDITIES

**MTBI**
- mTBI Pocket Guide

**PTSD**
- PE Coach
- PTSD Coach
- CPT Coach

**Sleep**
- CBT-I Coach
- White Noise

**Addictions**
- Quitter

**Depression & Anxiety**
- T2Mood Tracker
- Tactical Breather
- Breathe2Relax
- LifeArmor
- Goal Setting

**Suicide Prevention**
- Moving Forward
- Safe Helpline
- ASK
TREATMENT MANUALS FOR TBI RELATED COMORBIDITIES

PTSD:


Pain Related:
Sleep Related:


**Substance Use Disorders:**


TOP 10 TIPS TO PROMOTE SUCCESSFUL COPING WITH COMORBIDITIES OF TBI

1. Stay physically active: Exercise daily. Avoid impairment and disability due to becoming physically inactive (“If you don’t use it, you will lose it”)

2. Stay mentally active: Learn something new every day. Exercise your brain with daily “brain jogging,” such as reading books, newspapers, and magazines. Again: “Use it or lose it.”

3. Stay connected to other people: Treasure and nurture the relationships you have with your spouse/partner, your family, friends, and neighbors. Reach out to others—including younger people. Stay involved in your community.


5. Set yourself goals and take control: It is important to have meaningful goals in life and to take control in achieving them. Being in control of things gives us a sense of mastery and usually leads to positive accomplishments.

6. Create positive feelings for yourself: Experiencing positive feelings is good for our body, our mental health, and for how we relate to the world around us. Feeling good about our own age is part of this.

7. Minimize life stress: Many illnesses are related to life stress, especially chronic life stress. Stress has a tendency to “get under our skin,” if we notice it or not. Try to minimize stress and learn to unwind and “smell the roses.”


9. Have regular medical check-ups: Take advantage of health screenings and engage in preventive health behavior. Many symptoms and illnesses can be successfully managed if you take charge and if you partner with your health care providers.

10. It is never too late to start working on Tips 1 through 9: It is never too late to make changes.
GOAL FOR PATIENTS WITH COMPLEX COMORBIDITIES TO IMPROVE FUNCTIONING

• Reduce Sleep Disturbance
• Lessen Stress & Anxiety Symptoms
• Lessen Depressive Symptoms
• Deconditioning from pattern of responses to Triggers
• Reduction of Headaches
• Reduction of Bodily Pain

Treat what you can treat!