



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, DC 20301-1200

HEALTH AFFAIRS

OCT 29 2007

MEMORANDUM FOR SURGEON GENERAL OF THE ARMY  
SURGEON GENERAL OF THE NAVY  
SURGEON GENERAL OF THE AIR FORCE  
MEDICAL OFFICER OF THE MARINE CORPS

SUBJECT: Clinical Guidance for Mild Traumatic Brain Injury (mTBI) in Non-Deployed Medical Activities

Mild Traumatic Brain Injury (mTBI) remains a serious health concern for all Service members. To mitigate the consequences of mTBI, we must ensure the best clinical practices are employed, maintain our focus on the injured Service member, and employ consensus-based guidance for medical management.

This memorandum extends guidance for non-deployed medical activities in the treatment of mTBI. Implementation is to start immediately. The enclosed clinical guidance is a decision support tool for application to Service members who screen positive for mTBI or who present with a possible mTBI. This tool is applicable regardless of the mechanism of injury.

This guidance provides a common starting point in the care of mTBI until formal Clinical Practice Guidelines are published. As always, astute clinical judgment must be used in conjunction with this guidance.

A handwritten signature in cursive script, appearing to read "Ellen P. Embrey".

Ellen P. Embrey  
Deputy Assistant Secretary of Defense  
Force Health Protection and Readiness

Enclosure:  
As stated

cc:  
Joint Staff Surgeon

# Clinical Management Guidance for Mild Traumatic Brain Injury – Acute

## Non-Deployed Care

**TRAUMATIC EVENT**  
~Concussion Suspected~

1. Perform MACE
2. Confirm mTBI:
  - a. **Injury Event** (*blast, fall, motor vehicle collision (MVC), head impact*)  
*AND*
  - b. **Alteration of Consciousness** (*dazed, confused or loss of consciousness even momentarily*)

Evaluate for Red Flags<sup>a</sup>  
Perform Neuro Exam  
CT Scan  
Neurocognitive Assessment (NCA)<sup>b</sup>

Are Red Flags<sup>a</sup> present or is CT Scan positive?

**Urgent referral to Neurology, Neurosurgery, or Emergency Room as appropriate**

**<sup>b</sup> Neurocognitive Assessment (NCA)**  
(*e.g. ANAM*): If injury is over 24 hours old and if available.

Positive findings on Neuro Exam, NCA<sup>b</sup>, or MACE Score <25 or symptoms from Item VIII?

- Primary Care Management**
1. Manage symptoms<sup>c</sup>
  2. Provide Education
  3. Profile/Light Duty – 7 days
  4. Re-evaluate symptoms (Item VIII) and re-administer NCA<sup>b</sup> within 7 days
  5. Consider Neurology referral if clinically indicated

Continued symptoms or abnormal NCA on re-evaluation?

**1. 30 day profile**  
**2. Go to Sub-Acute CMG**

Perform Exertional Testing<sup>d</sup>

Positive symptoms with exertional exercise testing<sup>d</sup>?

1. Provide Education
2. Profile – 7 days
3. Repeat exertional testing<sup>d</sup> in 24 hours

Positive symptoms on exertional testing<sup>d</sup>?

Repeat exertional testing<sup>d</sup> & re-evaluate symptoms in 7 days

Any new or persistent Symptoms with exertion?

Provide Education  
Instruct to seek f/u if symptoms develop in 1-2 days  
Return to Duty

Reinforce Education  
Return to Duty

Reinforce Education  
Return to Duty

- <sup>a</sup> Red Flags:**
1. Progressively declining level of consciousness
  2. Progressively declining neurological exam
  3. Pupillary asymmetry
  4. Seizures
  5. Repeated vomiting
  6. Double vision
  7. Worsening headache
  8. Cannot recognize people or disoriented to place
  9. Behaves unusually or seems confused and irritable
  10. Slurred speech
  11. Unsteady on feet
  12. Weakness or numbness in arms / legs

- <sup>c</sup> Treatment:**
1. Give educational sheet to all mTBI patients.
  2. Headache management - use Acetaminophen.
  3. Avoid tramadol, narcotics, NSAID's, ASA, or other platelet inhibitors until CT confirmed negative.

- <sup>d</sup> Exertional Testing Protocol**
1. 65-85% Target Heart Rate (THR = 220-age)  
-using push-up, step aerobic, treadmill, hand crank
  2. Assess for symptoms (headache, vertigo, photophobia, balance, dizziness, nausea, tinnitus, visual changes, response to bright light or loud noise)

**ICD-9 Codes**  
850.0 concussion w/o LOC  
850.11 Concussion w/ LOC <30 min  
850.12 Concussion w/ LOC 31-59 min  
E979.2 Injury from terrorist explosion blast

# Clinical Management Guideline Mild Traumatic Brain Injury – Sub-Acute

**Possible Sub-Acute mTBI (over 7 days post trauma)**

**High Risk Group:**  
 1. Injury caused by explosion  
 2. Injury from fall, MVC, GSW above shoulders

**Evaluation:**  
 1. Administer Symptom and History Questionnaire – **Pg. 3**  
 2. Record history – previous trauma / current exposure  
 3. Perform Neuro Exam  
 4. Administer Neurocognitive Assessment, e.g. ANAM<sup>a</sup>  
 5. Identify Symptom Cluster(s) [Headache, Balance, Sleep, Irritability, Memory] – **Pg. 2**  
 6. Perform additional Symptom Cluster assessments as indicated – **Pg. 2**

mTBI Disposition Decision		
	Symptomatic	Disabling Symptoms
Resolving / Responding	Retain	1. Gather collateral information: ANAM, time in service, unit & family feedback 2. Ensure sufficient trial of OT/PT Rehab 3. Consider MEB – 12 months
No Change		1. Consider MEB – 6 months with collateral information 2. Initiate MEB – NLT 12 months
Worsening		

Are Red Flags<sup>b</sup> Present?  
 Yes → 1. Urgent CT Scan  
 2. Referral (as indicated by symptom cluster)  
 3. Provide Education

Confirmed mTBI?<sup>c</sup>  
 No → 1. Provide Education  
 2. RTD

CT Scan Indicated?<sup>d</sup>  
 Yes → Order CT Scan → Positive CT Scan?  
 Yes → 1. Neurology Referral (24 hr)  
 2. Provide Education

Symptomatic?  
 Yes → 1. Manage symptom cluster – **Pg. 2**  
 2. Provide Education  
 3. Profile/Light duty – up to 3 months  
 3. Periodic re-evaluation (e.g., every 3 months)  
 4. Determine final disposition at 12 months or sooner

1. Provide Education  
 2. RTD

<sup>a</sup> If available

**<sup>b</sup> Red Flags:**  
 1. Progressively declining level of consciousness  
 2. Progressive declining neurological exam  
 3. Pupillary asymmetry  
 4. Seizures  
 5. Repeated vomiting  
 6. Double vision  
 7. Worsening headache  
 8. Cannot recognize people or disoriented to place  
 9. Behaves unusually or seems confused and irritable  
 10. Slurred speech  
 11. Unsteady on feet  
 12. Weakness or numbness in arms / legs

**ICD-9 Codes**  
 850.0 concussion w/o LOC  
 850.11 Concussion w/ LOC <30 min  
 850.12 Concussion w/ LOC 31-59 min  
 E979.2 Injury from terrorist explosion blast

**<sup>c</sup> Confirm mTBI:**  
 1. **Injury Event** (blast, fall, MVC, head impact) **AND**  
 2. **Alteration of Consciousness** (dazed, confused or loss of consciousness even momentarily)

**<sup>d</sup> CT Scan Criteria:** IF not already obtained, CT Scan is indicated in mTBI patients with headache, vomiting, drug or alcohol intoxication, deficits in short term memory, physical evidence of trauma above the clavicle, dizziness, disequilibrium, or age >60.

Symptom Cluster	Presenting Symptoms or Complaints – Assess frequency, severity, aggravating factors	Special Assessments by Symptom Cluster	Assessment Red Flags	Treatments by Symptom Cluster <i>(NOTE: Treat headache, irritability, and sleep first followed by memory. A majority of patients improve on memory with treatment of headache, irritability, and sleep alone).</i>
Headache	Headache, sensitivity to bright light or loud noise, nausea, tinnitus, vision problems	<p><b>Examine:</b> fundoscopic, pupils, visual acuity, extraocular, cerebellar/ coordination (e.g., finger to nose, rapid alternating movements), deep tendon reflexes (DTRs), gait, motor/sensory, trigger points (neck, greater occipital nerve)</p> <p><b>REFER:</b> Any abnormality – 24 hours referral to Neurology</p> <p>•<b>ALL dosing and medications listed in this table are suggestions.</b>  •<b>Inclusion in this guidance does NOT imply an FDA approved indication.</b>  •<b>See full prescribing information for details of medication indications, contra-indications, dosing, side-effects, and cautions.</b></p>	<p>Worse/ worsening / uncontrolled headache, fever, stiff neck, blackout, seizures</p> <p><b>REFER:</b> Urgent referral to Neurology</p>	<p><b>Symptomatic Treatment</b> (prn at HA onset, up to 3 days/week): Motrin 600-800 mg.; Naprosyn; Fiorinal/Fioricet; Triptans</p> <p><b>Avoid:</b> Narcotics, Tylenol, Excedrin, Fioricet in patients with daily headache due to the risk of rebound headache.</p> <p><b>Preventive Treatment*:</b> (guided by comorbid conditions):  <b>Insomnia:</b> tri-cyclic anti-depressants, e.g., Amitriptyline (Elavil) or Nortriptyline (Pamelor) – 10-25 mg QHS starting and increasing every 1-2 weeks prn up to 50-75 mg. <b>~OR~</b>  <b>Hypertension:</b> consider Propanolol (Inderal) - 50 mg q day up to 180 mg q day or other beta blocker. <b>~OR~</b>  <b>Neuropathic Pain:</b> consider Gabapentin (Neurontin): 300 mg BID up to 900 mg TID.  <i>*Regardless of selection of preventive therapy, should have trial of treatment of 4-6 weeks before considered ineffective.</i>  <b>REFER</b> to Neurology if patient fails trial of two preventive treatments.</p>
Balance	Balance, dizziness, coordination problems, ringing in the ears	<p><b>Examine:</b> <b>Dix-Hallpike Maneuver, Romberg,</b> nystagmus, positional / postural balance, cerebellar/ coordination (e.g., finger to nose, rapid alternating movements), ENT – otoscopic exam, bedside hearing test, review audiogram if available.</p> <p><b>REFER:</b> Any abnormality – 24 hours referral to Neurology</p>	<p>Lateral abnormality, nystagmus</p> <p><b>REFER:</b> Urgent referral to Neurology</p>	<p><b>REFER</b> to Physical Therapy</p>
Sleep	Fatigue (physical and/or mental), sleeplessness, sleep disturbances, nightmares, sleep walking	<p><b>Administer:</b> <b>Epworth Sleepiness Scale</b></p> <p><b>History / Symptom questions:</b> difficulty falling asleep, difficulty staying asleep, acting out in sleep (sleep walking), nightmares, falling out of bed, confusion, frightened arousal, non-restorative sleep, alcohol or other substance abuse.</p> <p><b>Examine:</b> neck size, airway</p>	<p>Apnea</p> <p><b>REFER:</b> Urgent referral to Neurology, Pulmonary Medicine, or other Sleep Lab.</p>	<p><b>First Choice</b> – without other associated symptoms: 7-14 day trial of Trazodone (Desyrel) 25 - 100 mg qHS (response should be seen within 1-14 days); Ambien 5-10mg QHS prn - <b>LIMIT</b> therapy to 2 weeks.</p> <p><b>Comorbid Conditions: Nightmares or other PTSD-related symptoms:</b> trial of Quetiapine (Seroquel) – dosage starting at 25 mg q hs tapered up to 100 mg over a period of one week (increase every 2 days if no improvement seen up to 100 mg; stabilize at 100 mg for one week before considering ineffective);</p> <p><b>Headaches:</b> trial of Amitriptyline (Elavil) starting at 10 mg q hs and titrated up to doses of 75 – 100 mg if needed, complete trial of 6-8 weeks before considering ineffective.</p> <p><b>REFER</b> to psychiatry if medication trials are ineffective.</p>
Irritability	Anger, depression, anxiety, mood swings	<p><b>Administer:</b> <b>PCL-M Screening questionnaire</b></p> <p><b>Specific history / symptom questions:</b> physical fighting, alcohol intake, relationship problems, suicidal, homicidal</p> <p><b>REFER:</b> Any abnormality – 24 hours referral to Psychiatry, Psychology, Social Work</p>	<p>Outward violence (not just arguing), physical fighting, alcohol intake, relationship problems, suicidal ideation, homicidal ideation, significant decline in function.</p> <p><b>REFER:</b> Urgent referral to Psychiatry, Psychology, Social Work</p>	<p>6 week trial of SSRI / SNRI:</p> <p><b>SSRI considerations:</b> Sertraline (Zoloft) 25 - 150 mg po q day; Citalopram (Celexa) 10-40 mg po q day; or Escitalopram (Lexapro) 10-40 mg po q day.</p> <p><b>SNRI considerations:</b> Venlafaxine (Effexor XR) – start 37.5 mg q day and titrate by 37.5 mg/week up to 150 mg q day.</p> <p><b>REFER</b> to Psychiatry if does not respond after 6 week trial.</p>
Memory	Memory loss or lapses, decreased concentration, forgetting.	<p><b>Administer:</b> Neurocognitive assessment, e.g. <b>ANAM</b></p> <p><b>Gather: Info</b> from other sources (collateral information) – including family members and supervisor feedback.</p>		<p><b>Normalize:</b> Sleep and Diet/Nutrition</p> <p><b>REFER</b> to Occupational Therapy and Speech/Language Therapy (if available) for cognitive therapy</p> <p><b>REFER</b> to Neuropsychology if there are no other symptoms or after initial treatment of symptom clusters above.</p>

# Initial History and Symptoms Questionnaire

**1. During the past four years, have you had any injuries from any of the following:**

*(Mark all that apply)*

- Blast or Explosion
- Bullet wound (above shoulders)
- Fragment wound (above shoulders)
- Vehicle accident
- Sports accident
- Fall
- Fight
- Other blow to the head

**2. Did you experience any of the following?**

*(Mark all that apply)*

- Being dazed, confused, saw stars
- Knocked out – less than 1 minute
- Knocked out – 1 - 20 minutes
- Knocked out – more than 20 minutes
- Did not remember the injury
- Bleeding from the ears
- Head injury
- Concussion symptoms
- None of the above

**3. Do you have or have you had any of the following symptoms from the injuries?**

*(Mark all that apply)*

- |                           |                       |                          |  |
|---------------------------|-----------------------|--------------------------|--|
| <i>Right after injury</i> | <i>Now at rest</i>    | <i>Now with exertion</i> |  |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Headaches                            |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Nausea / Vomiting                    |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Sensitivity to bright light or noise |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Balance problems / dizziness         |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Ringing in the ears                  |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Sleep problems                       |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Irritability (short temper)          |
| <input type="radio"/>     | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/> Memory problems / lapses             |

Please rate the following symptoms with regard to how much they have disturbed you IN THE LAST 2 Weeks.

0 = None – Rarely if ever present; not a problem at all

1 = Mild – Occasionally present, but it does not disrupt my activities; I can usually continue what I'm doing; doesn't really concern me .

2 = Moderate – Often present, occasionally disrupts my activities; I can usually continue what I'm doing with some effort; I feel somewhat concerned.

3 = Severe – Frequently present and disrupts activities; I can only do things that are fairly simple or take little effort; I feel I need help.

4 = Very Severe – Almost always present and I have been unable to perform at work, school or home due to this problem; I probably cannot function without help.

Symptoms	0	1	2	3	4
Feeling Dizzy	<input type="radio"/>				
Loss of balance	<input type="radio"/>				
Poor coordination, clumsy	<input type="radio"/>				
Headaches	<input type="radio"/>				
Nausea	<input type="radio"/>				
Vision problems, blurring, trouble seeing	<input type="radio"/>				
Sensitivity to light	<input type="radio"/>				
Hearing difficulty	<input type="radio"/>				
Sensitivity to noise	<input type="radio"/>				
Numbness or tingling on parts of my body	<input type="radio"/>				
Change in taste and/or smell	<input type="radio"/>				

Symptoms	0	1	2	3	4
Loss of appetite or increased appetite	<input type="radio"/>				
Poor concentration, can't pay attention, easily distracted	<input type="radio"/>				
Forgetfulness, can't remember things	<input type="radio"/>				
Difficulty making decisions	<input type="radio"/>				
Slowed thinking, difficulty getting organized, can't finish things	<input type="radio"/>				
Fatigue, loss of energy, getting tired easily	<input type="radio"/>				
Difficulty falling or staying asleep	<input type="radio"/>				
Feeling anxious or tense	<input type="radio"/>				
Feeling depressed or sad	<input type="radio"/>				
Irritability, easily annoyed	<input type="radio"/>				
Poor frustration tolerance, feeling easily overwhelmed by things	<input type="radio"/>				

# Epworth Sleepiness Scale

How likely are you to doze off or fall asleep in the situations described below, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you haven't done some of these things recently try to work out how they would have affected you.

**Score the chance that you would doze off in the following situations based on the scale:**

**0 = would never doze**

**1 = Slight chance of dozing**

**2 = Moderate chance of dozing**

**3 = High chance of dozing**

Situation	Chance of dozing
Sitting and reading	
Watching TV	
Sitting, inactive in a public place (e.g. a theatre or a meeting)	
As a passenger in a car for an hour without a break	
Lying down to rest in the afternoon when circumstances permit	
Sitting and talking to someone	
Sitting quietly after a lunch without alcohol	
In a car, while stopped for a few minutes in the traffic	

**Scoring:**

0-10 Normal range

10-12 Borderline

12-24 Abnormal

## PCL-M – Military Version

**Instructions:** Below is a list of problems and complaints that veterans sometimes have in response to stressful military experiences. Please read each one carefully, fill in the circle to indicate how much you have been bothered by that problem in the last month.

**1 = Not at all**

**2 = A little bit**

**3 = Moderately**

**4 = Quite a bit**

**5 = Extremely**

No.	Response:	1	2	3	4	5
1.	Repeated, disturbing memories, thoughts, or images of a stressful military experience?	<input type="radio"/>				
2.	Repeated, disturbing dreams of a stressful military experience?	<input type="radio"/>				
3.	Suddenly acting or feeling as if a stressful military experience were happening again (as if you were reliving it)?	<input type="radio"/>				
4.	Feeling very upset when something reminded you of a stressful military experience?	<input type="radio"/>				
5.	Having physical reactions (e.g., heart pounding, trouble berating, or sweating) when something reminded you of a stressful military experience?	<input type="radio"/>				
6.	Avoid thinking about or talking about a stressful military experience or avoid having feelings related to it?	<input type="radio"/>				
7.	Avoid activities or situations because they remind you of a stressful military experience?	<input type="radio"/>				
8.	Trouble remembering important parts of a stressful military experience?	<input type="radio"/>				
9.	Loss of interest in things that you used to enjoy?	<input type="radio"/>				
10.	Feeling distant or cut off from other people?	<input type="radio"/>				
11.	Feeling emotionally numb or being unable to have loving feelings for those close to you?	<input type="radio"/>				
12.	Feeling as if your future will somehow be cut short?	<input type="radio"/>				
13.	Trouble falling or staying asleep?	<input type="radio"/>				
14.	Feeling irritable or having angry outbursts?	<input type="radio"/>				
15.	Having difficulty concentrating?	<input type="radio"/>				
16.	Being “super alert” or watchful on guard?	<input type="radio"/>				
17.	Feeling jumpy or easily startled?	<input type="radio"/>				