

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
Camp Lejeune, NC 28542-0042

FMSO 208

Evaluate Traumatic Brain Injury

TERMINAL LEARNING OBJECTIVE

1. Given a casualty with a suspected TBI and in any environment, report the symptoms of Traumatic Brain Injuries (TBI) to reduce the risk of further injury or death, in accordance with attachment 2 of Directive- Type Memorandum (DTM) 09-33. (FMSO-MED-2001)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and in writing, identify the mandatory events requiring TBI evaluation, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and DTM 09-033. (FMSO-MED-2001a)

2. Without the aid of reference and in writing, identify the signs and symptoms of TBI, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and DTM 09-033 (FMSO-MED-2001b)

3. Without the aid of reference and in writing, identify the components of the Military Acute Concussion Evaluation (MACE), within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and DMT 09-033 (FMSO-MED-2001c)

4. Without the aid of reference and in writing, identify the required data for the significant activity (SIGACT) report, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and DTM 09-033 (FMSO-MED-2001d)

OVERVIEW

It is DoD policy that:

- a. DoD shall identify, track, and ensure the appropriate evaluation and treatment of Service members exposed to potentially concussive events, to include blast events.
- b. Service members exposed to a potentially concussive event shall be medically assessed as close to the time of injury as possible.
- c. Medically documented mTBI/concussion in Service members shall be clinically evaluated, treated, and managed according to the most current DoD clinical practice guidance for the deployed environment found at the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injuries (DCoE) website.
- d. Recurrent concussion shall be managed according to the most current DoD clinical practice guidance for the deployed setting.
- e. Potentially concussive events, results of concussion screening, and diagnosed concussions shall be appropriately documented, to the maximum extent possible in the Service member's electronic health record.

1. MANDATORY EVENTS REQUIRING TBI EVALUATION

Events requiring mandatory rest periods and medical evaluations and reporting of exposure of all involved personnel include, but are not limited to:

- a. Involvement in a vehicle blast event, collision, or rollover.
- b. Presence within 50 meters of a blast (inside or outside).
- c. A direct blow to the head or witnessed loss of consciousness.
- d. Exposure to more than one blast event (the Service member's commander shall direct a medical evaluation).

2. SIGNS & SYMPTOMS

TBI can be divided into 2 categories:

- a. Primary Brain Injury
- b. Secondary Brain Injury

Primary Brain Injury

- Direct trauma to the brain and associated structures (Contusions, hemorrhages, lacerations)

Secondary Brain Injury

- The ongoing injury process from primary injury
- Management of TBI is focused to limit or stop these secondary mechanisms (ICP, hypoxia, hypotension and inadequate cerebral blood flow)

Mild TBI

- Loss of consciousness is brief, usually a few seconds/minutes
 - o Loss of consciousness does not have to occur
- Testing and scans of the brain may appear normal
- Most common: 75%-85% of all brain injuries are mild
- 90% of individuals recover within 6-8 weeks

Moderate TBI

- Loss of consciousness lasts from a few minutes to a few hours
- Confusion lasts from days to weeks
- Physical, cognitive, and/or behavioral impairments last for months or are permanent
- EEG/CAT/MRI are positive for brain injury

Severe TBI

- Prolonged unconscious state or coma lasts days, weeks or months
- Categories include:
 - o Coma
 - o Vegetative State
 - o Persistent
 - o Minimally Responsive State
 - o Locked-in Syndrome

Commanders or their representatives are required to assess all Service members involved in potentially concussive events, including those without apparent injuries, as soon as possible using the Injury/Evaluation/Distance (I.E.D.) checklist (see Figure 1).

Injury	Physical damage to the body or body part of a Service member?	(Yes/No)
Evaluation	H – Headaches and/or vomiting?	(Yes/No)
	E – Ear ringing?	(Yes/No)
	A – Amnesia, altered consciousness, and/or loss of consciousness?	(Yes/No)
	D – Double vision and/or dizziness?	(Yes/No)
	S – Something feels wrong or is not right?	(Yes/No)
Distance	Was the Service member within 50 meters of the blast? Record the distance from the blast.	(Yes/No) Not Applicable

Figure 1 IED Checklist

3. **MILITARY ACUTE CONCUSSION EVALUATION**

Patient Name: _____

SS#: _____ - _____ - _____ Unit: _____

Date of Injury: ____ / ____ / ____ Time of Injury: _____

Examiner: _____

Date of Evaluation: ____ / ____ / ____ Time of Evaluation: _____

History: (I – VIII)

I. Description of Incident

Ask:

- a) What happened?
- b) Tell me what you remember.
- c) Were you dazed, confused, "saw stars"? ☐ Yes ☐ No
- d) Did you hit your head? ☐ Yes ☐ No

II. Cause of Injury (Circle all that apply):

- 1) Explosion/Blast 4) Fragment
- 2) Blunt object 5) Fall
- 3) Motor Vehicle Crash 6) Gunshot wound
- 7) Other _____

III. Was a helmet worn? ☐ Yes ☐ No Type _____

IV. Amnesia Before: Are there any events just BEFORE the injury that are not remembered? (Assess for continuous memory prior to injury)

☐ Yes ☐ No If yes, how long _____

V. Amnesia After: Are there any events just AFTER the injuries that are not remembered? (Assess time until continuous memory after the injury)

☐ Yes ☐ No If yes, how long _____

VI. Does the individual report loss of consciousness or "blacking out"? ☐ Yes ☐ No If yes, how long _____

VII. Did anyone observe a period of loss of consciousness or unresponsiveness? ☐ Yes ☐ No If yes, how long _____

VIII. Symptoms (circle all that apply)

- 1) Headache 2) Dizziness
- 3) Memory Problems 4) Balance problems
- 5) Nausea/Vomiting 6) Difficulty Concentrating
- 7) Irritability 8) Visual Disturbances
- 9) Ringing in the ears 10) Other _____

Examination: (IX – XIII)

Evaluate each domain. Total possible score is 30.

IX. Orientation: (1 point each)

Month:	0	1
Date:	0	1
Day of Week:	0	1
Year:	0	1
Time:	0	1

Orientation Total Score ____/5

X. Immediate Memory:

Read all 5 words and ask the patient to recall them in any order.
Repeat two more times for a total of three trials. (1 point for each correct, total over 3 trials)

List	Trial 1	Trial 2	Trial 3
Elbow	0 1	0 1	0 1
Apple	0 1	0 1	0 1
Carpet	0 1	0 1	0 1
Saddle	0 1	0 1	0 1
Bubble	0 1	0 1	0 1
Trial Score			

Immediate Memory Total Score ____/15

XI. Neurological Screening

As the clinical condition permits, check

Eyes: pupillary response and tracking

Verbal: speech fluency and word finding

Motor: pronator drift, gait/coordination

Record any abnormalities. **No points are given for this.**

XII. Concentration

Reverse Digits: (go to next string length if correct on first trial.
Stop if incorrect on both trials.) 1 pt. for each string length.

4-9-3	6-2-9	0	1
3-8-1-4	3-2-7-9	0	1
6-2-9-7-1	1-5-2-8-5	0	1
7-1-8-4-6-2	5-3-9-1-4-8	0	1

Months in reverse order: (1 pt. for entire sequence correct)

Dec-Nov-Oct-Sep-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan

0 1

Concentration Total Score ____/5

XIII. Delayed Recall (1 pt. each)

Ask the patient to recall the 5 words from the earlier memory test
(Do NOT reread the word list.)

Elbow	0	1
Apple	0	1
Carpet	0	1
Saddle	0	1
Bubble	0	1

Delayed Recall Total Score ____/5

TOTAL SCORE ____/30

Notes: _____

Diagnosis: (circle one or write in diagnoses)

No concussion

850.0 Concussion without Loss of Consciousness (LOC)

850.1 Concussion with Loss of Consciousness (LOC)

Other diagnoses _____

4. REQUIRED DATA FOR THE SIGACT REPORT

After the I.E.D. assessment is complete, record the results for each individual involved in the event and submit as part of the significant activities (SIGACT) report required for blast-related events. The line commander is responsible to ensure all reports are completed as operational conditions permit, preferably within 24 hours. The minimum required data fields for the monthly reports are:

- a. Date of potentially concussive event.
- b. Type of potentially concussive event triggering evaluation.
- c. SIGACT number (if applicable).
- d. Personal identifier (e.g., DoD identification number or Battle Roster Number).
- e. Service member's name.
- f. Unit name, unit identification code, and home duty station.
- g. Combatant Command in which the event occurred.
- h. Service member's distance from the blast when applicable.
- i. The disposition following the medical evaluation (return to duty after 24 hours, commander's justification to return to duty prior to 24 hours, or did not return to duty after 24 hours).

REFERENCES:

DoD Instruction 6490.11 - DoD Policy Guidance for Management of Mild Traumatic Brain Injury/Concussion in the Deployed Setting

Evaluate Traumatic Brain Injury Review Questions

1. What are the mandatory events requiring TBI evaluation?

1)

2)

3)

4)

2. What are the 2 categories of TBI?

1)

2)

3. What are the symptoms of mild TBI?

4. What does “IED” stand for?

I –

E –

D –

5. What is the total score for a MACE exam?

6. What is the final data needed for the SIGACT report?