

ATTACHMENT 2 (CONCUSSION MANAGEMENT IN THE GARRISON SETTING ALGORITHMS) TO HQDA EXORD DA GUIDANCE FOR MANAGEMENT OF CONCUSSION/MILD TRAUMATIC BRAIN INJURY IN THE GARRISON SETTING

1. **General:** Implementation of *Policy Guidance for Management of Concussion/mTBI in the Garrison Setting* requires Soldiers, leaders, medics, and healthcare providers to understand mandates following a potentially concussive event.
2. **Purpose:** The purpose of this ATTACHMENT 2 is to provide concussion management algorithms for medics and provides in other to identify, treat, and monitor concussion/mTBI as close to the time of injury as possible.
3. **Overview:** The next 8 pages contain the concussion management algorithms guiding garrison medical care at the time of injury to 7 days.
4. **Ordering Information:** medical personnel can request additional hard copies of the algorithms and the Military Acute Concussion Evaluation through the Defense and Veterans Brain Injury Center's website www.dvbic.org or through e-mail info@dvbic.org

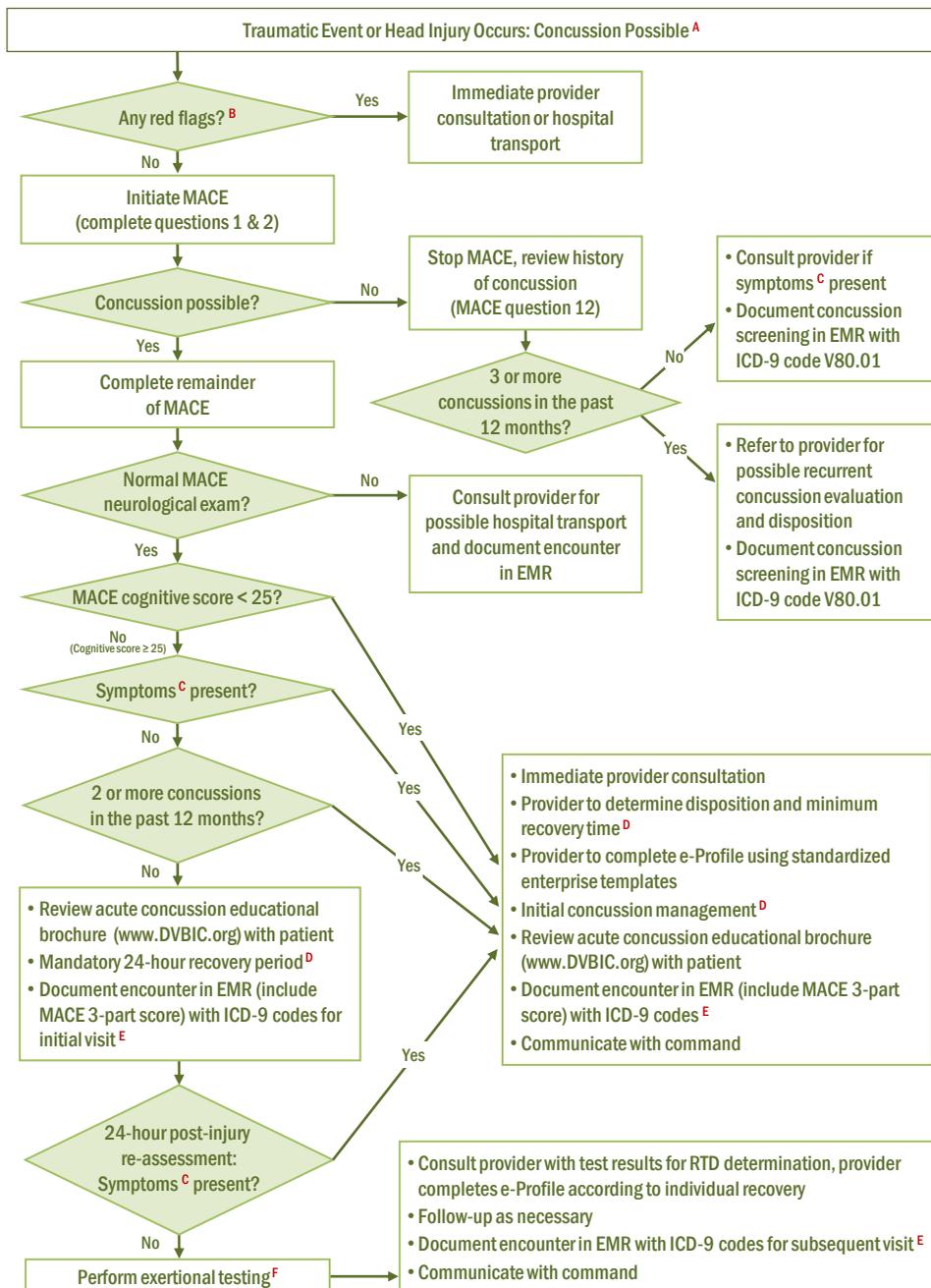
Concussion Management in the Garrison Setting

(time of injury to 7 days)



MEDIC ALGORITHM

Priority: Quickly assess for red flags





Concussion Management in the Garrison Setting

(time of injury to 7 days)

A Potentially Concussive Events Requiring Concussion Evaluation:

1. Involvement in a vehicle collision or rollover
2. A blow to the head during activities such as training, sporting/recreational activities, or combatives
3. Within 50 meters of a blast (inside or outside)
4. Command-directed: such as, but not limited to, repeated exposures to the events listed above, and in accordance with environmental sensor (i.e. helmet sensor, blast gauge, etc.) protocols

B Medic Algorithm Red Flags:

- | | |
|--|---|
| 1. Witnessed loss of consciousness (LOC) | 7. Double vision/loss of vision |
| 2. Two or more potentially concussive events within 72 hours | 8. Worsening headache |
| 3. Unusual behavior/combative | 9. Weakness on one side of the body |
| 4. Unequal pupils | 10. Cannot recognize people or disoriented to place |
| 5. Seizures | 11. Abnormal speech |
| 6. Repeated vomiting | |

C Medic Algorithm Symptoms:

- | | |
|---------------------|-----------------------------|
| 1. Headache | 6. Difficulty concentrating |
| 2. Dizziness | 7. Irritability |
| 3. Memory problems | 8. Visual disturbances |
| 4. Balance problems | 9. Ringing in the ears |
| 5. Nausea/vomiting | 10. Other_____ |

D Medic Initial Management of Concussion:

1. Mandatory 24-hour recovery period for 1st concussion within the past 12 months
2. Mandatory 7-day recovery period after symptom resolution for 2 or more concussions within the last 12 months
3. Review acute concussion educational brochure with all concussion patients, available at www.DVBIC.org
4. Reduce environmental stimuli
5. Consult with provider regarding duty restrictions using standardized enterprise templates (e-Profile)
6. Aggressive headache management
 - Use acetaminophen q 6 hrs x 48 hrs. After 48 hours, may use naproxen prn
7. Avoid tramadol, Fioricet, excessive triptans (prescribed for migraines) and narcotics

E Concussion Coding Tips: (these coding tips only apply to garrison concussions and do NOT apply to moderate, severe, or penetrating TBI or TBIs that occur in the deployed setting)

Initial Encounter

1. Primary code (medics require provider co-signature)
 - 850.0 – Concussion without LOC
 - 850.11 – Concussion with LOC ≤ 30 min
2. Personal history of TBI unrelated to GWOT
 - V15.52_7 – Injury unrelated to GWOT, mild TBI
3. Symptom codes (as appropriate)
4. Screening code for TBI (V80.01)
5. External cause of injury code (appropriate E-code)

F Concussion Coding Tips (continued):

Subsequent Encounter

1. Symptom codes (as appropriate)
2. Personal history of TBI unrelated to GWOT
 - V15.52_7 – Injury unrelated to GWOT, mild TBI
3. Late effect code
 - 905.0 – Late effect of intracranial injury with skull or facial fracture
 - 907.0 – Late effect of intracranial injury without skull or facial fracture
4. Other ICD-9 codes as appropriate

F Exertional Testing:

1. Exert to 65-85% of target heart rate (THR=220-age) using push-ups, sit-ups, running in place, step aerobics, stationary bike, treadmill and/or hand crank
2. Maintain this level of exertion for approximately 2 minutes
3. Assess for symptoms (headache, vertigo, photophobia, dizziness, nausea, visual changes, etc.)
4. If symptoms/red flags exist with exertional testing, stop testing and consult with provider

ADDITIONAL INFORMATION

Definition of Concussion:

Results from a direct blow or jolt to the head, blast exposure, or other head injury followed by at least one of the following (even momentarily):

- Alteration of Consciousness (AOC) ≤ 24 hours
 - Having one's "bell rung," being dazed/confused, or "seeing stars"
- Loss of Consciousness (LOC) 0-30 minutes
 - Temporarily blacked out
- Post-Traumatic Amnesia (PTA) ≤ 24 hours
 - Memory loss

Acronyms:

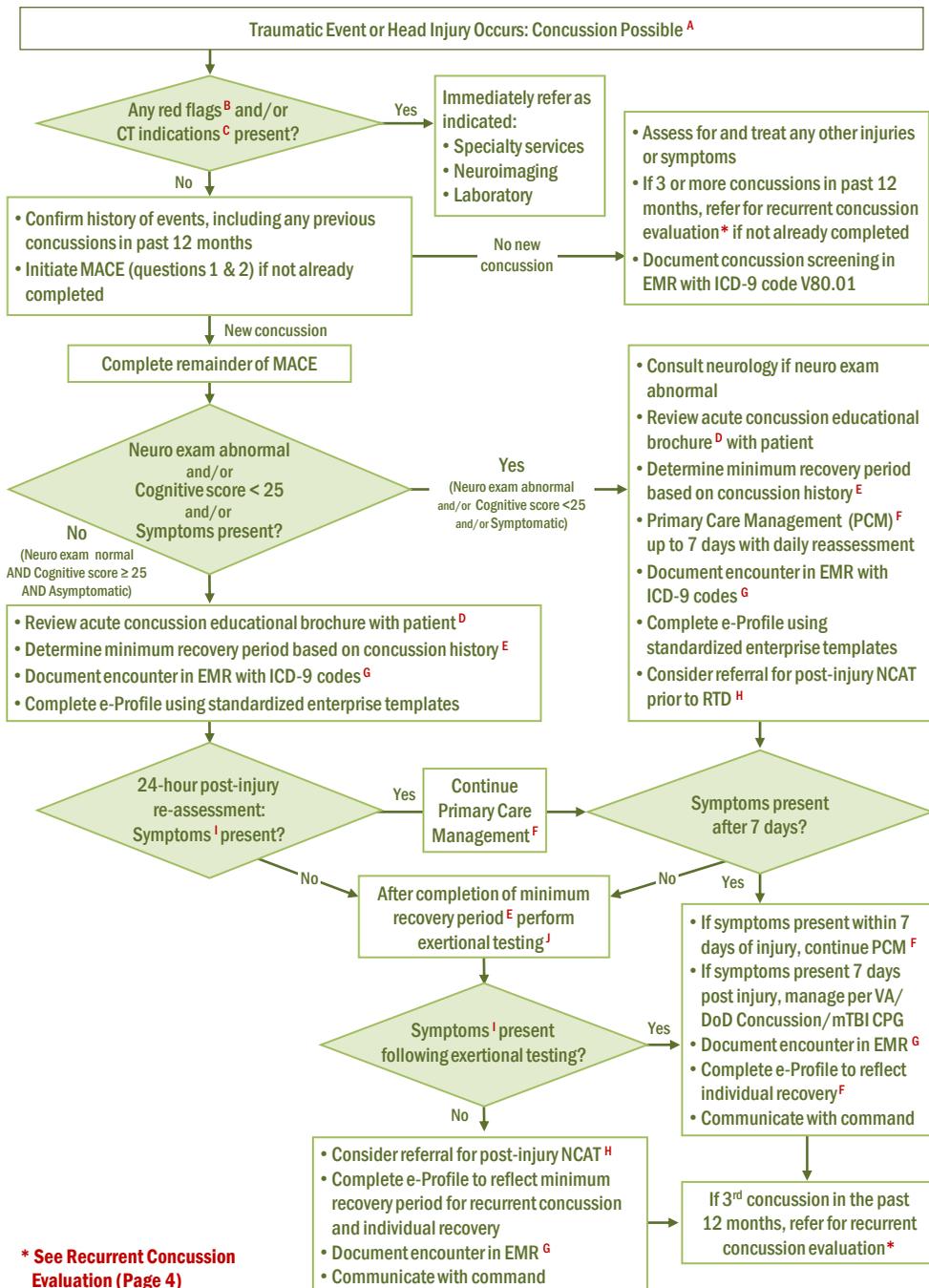
- AOC Alteration of consciousness
- EMR Electronic medical record
- GWOT Global War on Terrorism
- ICD-9 International Classification of Diseases – 9th revision
- LOC Loss of consciousness
- MACE Military Acute Concussion Evaluation
- mTBI Mild traumatic brain injury
- PTA Post-traumatic amnesia
- RTD Return to duty
- THR Target heart rate
- TBI Traumatic brain injury

For additional copies or information call
1.866.966.1020 or email info@DVBIC.org

Concussion Management in the Garrison Setting (time of injury to 7 days)



PROVIDER ALGORITHM



* See Recurrent Concussion Evaluation (Page 4)



Concussion Management in the Garrison Setting

(time of injury to 7 days)

A Potentially Concussive Events Requiring Concussion Evaluation:

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2. A blow to the head during activities such as training, sporting/recreational activities, or combatives
3. Within 50 meters of a blast (inside or outside)
4. Command-directed: such as, but not limited to, repeated exposures to the events listed above, and in accordance with environmental sensor (i.e. helmet sensor, blast gauge, etc.) protocols

B Provider Algorithm Red Flags:

1. Progressively declining level of consciousness
2. Progressively declining neurological status
3. Pupillary asymmetry
4. Seizures
5. Repeated vomiting
6. Clinically verified GCS < 15
7. Neurological deficit: motor or sensory
8. LOC > 5 minutes
9. Double vision
10. Worsening headache
11. Cannot recognize people or disoriented to place
12. Slurred speech
13. Unusual behavior

C CT Indications:*

1. Physical evidence of trauma above the clavicles
2. Seizures
3. Vomiting
4. Headache
5. Age > 60
6. Drug or alcohol intoxication
7. Coagulopathy
8. Focal neurologic deficits

* Haydel MJ, Preston CA, Mills TJ, Luber S, Blaudeau E, DeBlieux PM. Indications for computed tomography in patients with minor head injury. *N Engl J Med.* 2000 Jul 13;343(2):100-5.

D Acute Concussion Educational Brochure:

Available at www.DVBIC.org

E Minimum Recovery Period:

- Mandatory 24-hour recovery period for 1st concussion within the past 12 months
- Mandatory 7-day recovery period after symptom resolution for 2 or more concussions within last 12 months

F Primary Care Management (PCM): (up to 7 days)

1. Review acute concussion educational brochure with all concussion patients, available at www.DVBIC.org
2. Reduce environmental stimuli
3. Mandatory 24-hour recovery period
4. Aggressive headache management
 - Use acetaminophen q 6 hrs x 48 hrs
 - After 48 hours may use naproxen pm
5. Avoid tramadol, Fioricet, excessive triptans and narcotics
6. Pain management if applicable
7. Consider referral for post-injury NCAT
8. Address any sleep issues. Ambien 10mg po QHS may be considered for short-term (2 weeks) sleep regulation.
9. Consult with specialist if needed
10. Utilize Progressive Return to Activity Clinical Recommendation (available at www.dcoe.health.mil or www.DVBIC.org)
11. Implement duty restrictions. Complete e-Profile using standardized enterprise templates and update as needed according to individual recovery.
12. Document encounter in EMR with ICD-9 codes

Concussion Management in the Garrison Setting

(time of injury to 7 days)



G Concussion Coding Tips: (these coding tips only apply to garrison concussions and do NOT apply to moderate, severe, or penetrating TBI or TBIs that occur in the deployed setting)

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4. Other ICD-9 codes as appropriate

H NeuroCognitive Assessment Tool (NCAT) Recommendation:

- The initial study should be administered between 24-72 hours after injury whenever possible
- It can also be repeated serially following post-injury symptom resolution to document neurocognitive recovery to baseline and to further inform the RTD assessment
- For Soldiers who remain symptomatic, serial NCAT testing (every 3-4 days) can be used to monitor cognitive recovery; however, cognitive recovery alone should not be the sole basis of RTD decision making
- ANAM is currently the primary NCAT used by the Army
- For ANAM baseline results, send requests to: Toll-free 1-855-630-7849 or e-mail usarmy.jbsa.medcom.mbx.otsg-anam-baselines@mail.mil
- ANAM help desk is staffed from 0800-1700 EST Monday - Friday

I Provider Algorithm Symptoms:

- | | | |
|-------------------------|----------------------|-----------------|
| 1. Confusion (24 hours) | 4. Vertigo/dizziness | 7. Phonophobia |
| 2. Irritability | 5. Headache | 8. Sleep issues |
| 3. Unsteady on feet | 6. Photophobia | |

J Exertional Testing:

1. Exert to 65-85% of target heart rate (THR=220-age) using push-ups, sit-ups, running in place, step aerobics, stationary bike, treadmill and/or hand crank
2. Maintain this level of exertion for approximately 2 minutes
3. Assess for symptoms (headache, vertigo, photophobia, dizziness, nausea, visual changes, etc.)
4. If symptoms exist with exertional testing, stop testing and continue PCM. Document in EMR.



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RECURRENT CONCUSSION EVALUATION

(Three or more documented concussions within the past 12 months)

1. Comprehensive neurological evaluation by a neurologist or other similarly qualified provider

- Review of prior concussion history with focus on timeline or resolution of symptoms
- Assessment of symptoms (face-to-face interview by provider)
 - Consider Neurobehavioral Symptom Inventory^K

2. Neuroimaging per provider judgment^L

3. Neuropsychological assessment by a psychologist

- Evaluate: attention, memory, processing speed and executive function
- Perform a psychosocial and behavioral assessment
- Include measure of effort
- Consider post-injury NCAT or other neurocognitive test

4. Functional assessment^M completed by an occupational or physical therapist

5. Balance assessment completed by a qualified provider

- BESS – Modified^N
- Other balance tests as appropriate (i.e. computerized tests, etc.)

6. Neurologist or other similarly qualified provider determines RTD status

Concussion Management in the Garrison Setting

(time of injury to 7 days)



K Neurobehavioral Symptom Inventory:

Available at www.DVBIC.org

L Neuroimaging per Provider Judgment:

Imaging after Mild TBI Clinical Recommendation found at www.DVBIC.org

M Functional Assessment:

Assess the Soldier's performance of military-relevant activities that simulate the multi-system demands of duty in a functional context. Selected assessment activities should concurrently challenge specific vulnerabilities associated with concussion including cognitive (such as executive function), sensorimotor (such as balance and gaze stability), and physical endurance. Rehabilitation providers should not only evaluate the Soldier's performance but also monitor symptoms before, during, and after functional assessment.

N The Balance Error Scoring System (BESS - Modified):**

Stand on flat surface, eyes closed, hands on hips in 3 positions:

1. On both feet (20 seconds)
2. On one foot (20 seconds)
3. Heel-to-toe stance (20 seconds)

For each position, score 1 point for any of the following errors:

1. Stepping, stumbling or falling
2. Opening eyes
3. Hands lifted above the iliac crests
4. Forefoot or heel lifted
5. Hip moved > 30 degrees flexion or abduction
6. Out of test position > 5 seconds

Score 10 points if unable to complete. Total Balance Score _____

** Guskiewicz KM, Ross SE, Marshall SW. Postural Stability and Neuropsychological Deficits After Concussion in Collegiate Athletes. *J Athl Train*. 2001 Sep;36(3):263-273.



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- Alteration of Consciousness (AOC) \leq 24 hours
 - Having one's "bell rung," being dazed/confused, or "seeing stars"
- Loss of Consciousness (LOC) 0-30 minutes
 - Temporarily blacked out
- Post-Traumatic Amnesia (PTA) \leq 24 hours
 - Memory loss

Key Algorithm Directives:

- These algorithms guide concussion treatment in the garrison setting from point of injury up to 7 days
- Event-driven protocols for exposure to potentially concussive events
 - Requires a medical evaluation and entry into the EMR
- All sports and activities with risk of concussion are prohibited until after a 24-hour recovery period
- Soldiers diagnosed with concussion will be given the acute concussion educational brochure available at www.DVBIC.org
- Specific requirements for anyone sustaining \geq 2 concussions within the past 12 months
- Document and code all medical encounters in the EMR; complete an e-Profile using standardized enterprise templates

Acronyms:

• AOC	Alteration of consciousness	• mTBI	Mild traumatic brain injury
• BESS	Balance Error Scoring System	• NCAT	NeuroCognitive Assessment Tool
• CPG	Clinical practice guideline	• PCM	Primary care management
• CT	Computed tomography	• PTA	Post-traumatic amnesia
• EMR	Electronic medical record	• RTD	Return to duty
• GCS	Glasgow Coma Scale	• THR	Target heart rate
• GWOT	Global War on Terrorism	• TBI	Traumatic brain injury
• ICD-9	International Classification of Diseases – 9 th revision		
• LOC	Loss of consciousness		
• MACE	Military Acute Concussion Evaluation		

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