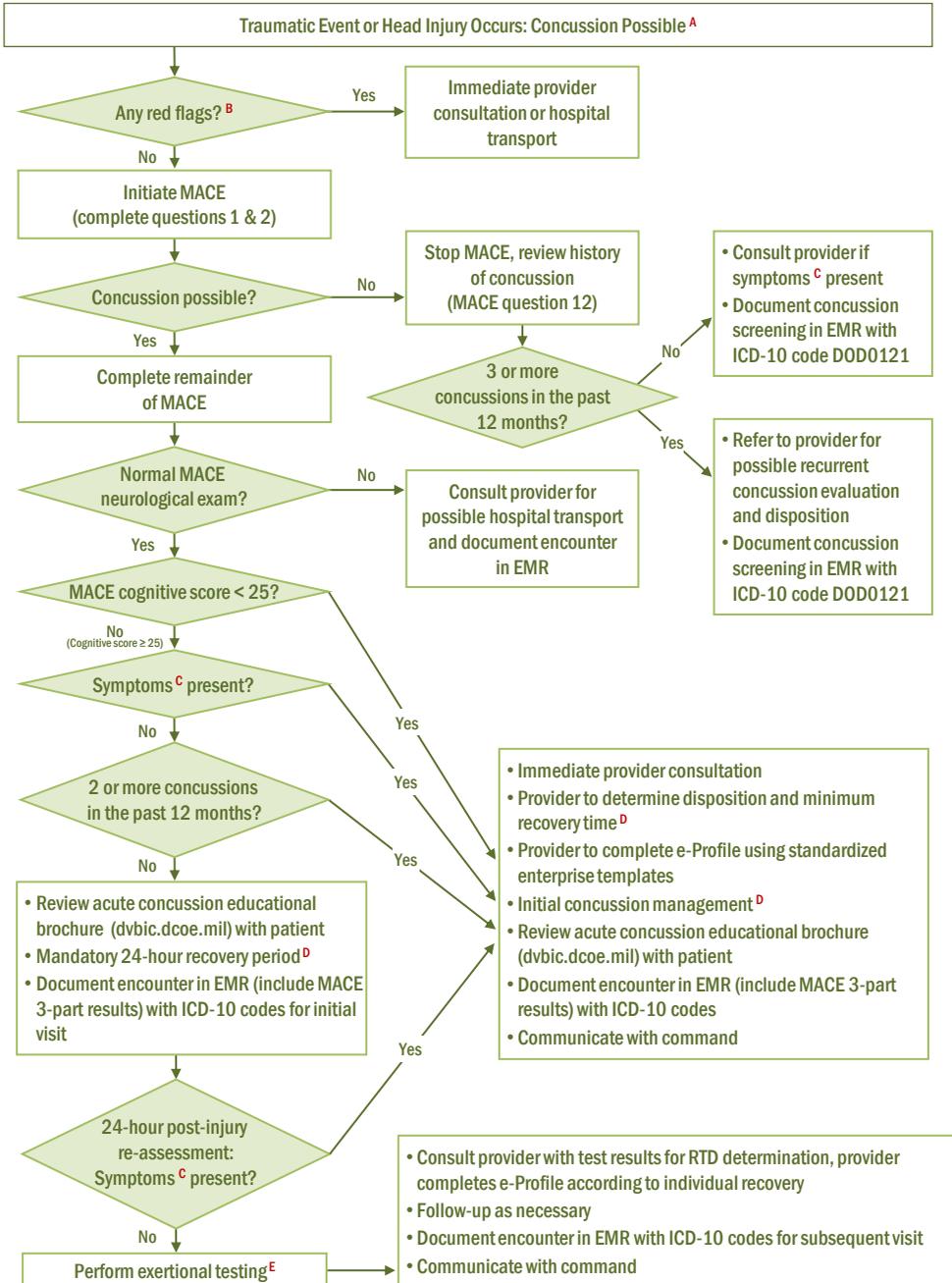


# Concussion Management in the Garrison Setting (time of injury to 7 days)



## MEDIC ALGORITHM

Priority: Quickly assess for red flags





# Concussion Management in the Garrison Setting

(time of injury to 7 days)

## ADDITIONAL INFORMATION

### 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 protocols associated with potentially concussive events

### 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 1<sup>st</sup> 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 [dvbic.dcoe.mil](http://dvbic.dcoe.mil)
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 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

### 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)  $\leq$  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

### Acronyms:

- AOC Alteration of consciousness
- EMR Electronic medical record
- GWOT Global War on Terrorism
- ICD-10 International Classification of Diseases - 10th 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](mailto:info@dvbic.org)





# 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 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 [dvbic.dcoe.mil](http://dvbic.dcoe.mil)

## E Minimum Recovery Period:

- Minimum mandatory 24-hour recovery period for 1<sup>st</sup> concussion within the past 12 months
- Minimum mandatory 7-day recovery period after symptom resolution for 2 or more concussions within last 12 months
- *Recovery periods may be longer for Soldiers who require use of the Progressive Return to Activity Clinical Recommendation (available at [dvbic.dcoe.mil](http://dvbic.dcoe.mil))*

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

1. Review acute concussion educational brochure with all concussion patients, available at [dvbic.dcoe.mil](http://dvbic.dcoe.mil)
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 prn
5. **Avoid tramadol, Fioricet, excessive triptans and narcotics**
6. Pain management if applicable
7. Consider referral for post-injury NCAT
8. Review current medications and sleep hygiene (Healthy Sleep fact sheet available at [dvbic.dcoe.mil](http://dvbic.dcoe.mil)) and consider short-term low-dose non-benzodiazepine hypnotic (e.g., zolpidem 5mg or eszopiclone 1mg)
9. Consult with specialist if needed
10. Utilize Progressive Return to Activity Clinical Recommendation (available at [dvbic.dcoe.mil](http://dvbic.dcoe.mil))
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-10 codes

# Concussion Management in the Garrison Setting

(time of injury to 7 days)



## **G 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](mailto:usarmy.jbsa.medcom.mbx.otsg-anam-baselines@mail.mil)
- ANAM help desk is staffed 24 hours a day, 7 days a week

## **H 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       |                 |

## **I 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.



# Concussion Management in the Garrison Setting

(time of injury to 7 days)

## 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<sup>K</sup>

### 2. Neuroimaging per provider judgment<sup>L</sup>

### 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<sup>M</sup> completed by an occupational or physical therapist

### 5. Balance assessment completed by a qualified provider

- BESS – Modified<sup>N</sup>
- 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 [dvbic.dcoe.mil](http://dvbic.dcoe.mil)

## **L Neuroimaging per Provider Judgment:**

Imaging after Mild TBI Clinical Recommendation available at [dvbic.dcoe.mil](http://dvbic.dcoe.mil)

## **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.



# Concussion Management in the Garrison Setting

(time of injury to 7 days)

## Definition of Concussion:

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

- 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 [dvbic.dcoe.mil](http://dvbic.dcoe.mil)
- 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-10	International Classification of Diseases - 10th revision		
• LOC	Loss of consciousness		
• MACE	Military Acute Concussion Evaluation		

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# Concussion Management in the Garrison Setting

(time of injury to 7 days)

## ICD-10 CONCUSSION CODING TIPS

### Initial Visit

1. TBI screening code, if applicable
2. Diagnostic code
3. Symptom code, if applicable
4. Deployment status code, if applicable
5. External cause of morbidity code
6. Place of occurrence code
7. Activity code
8. Personal history code

### Subsequent Visit

1. Symptom code, if applicable
2. Diagnostic code
3. Deployment status code, if applicable
4. External cause of morbidity code
5. Personal history code

ICD-10	Description
<b>TBI Screening Code</b>	
D0D0121	Screen, TBI, Negative
D0D0122	Screen, TBI, Positive
D0D0123	Screen, TBI, Declined
D0D0124	Screen, TBI Not performed due to current TBI diagnosis
D0D0125	Screen, TBI, not performed due to reason other than existing TBI diagnosis
<b>Diagnostic Code</b>	
S06.0X0A	Concussion, no Loss of Consciousness (LOC), initial encounter
S06.0X0D	Concussion, no LOC, subsequent encounter
S06.0X0S	Concussion, no LOC, sequela
S06.0X1A	Concussion, LOC ≤ 30 minutes, initial encounter
S06.0X1D	Concussion, LOC ≤ 30 minutes, subsequent encounter
S06.0X1S	Concussion, LOC ≤ 30 minutes, sequela
S06.0X9A	Concussion LOC of unspecified duration, initial encounter
S06.0X9D	Concussion LOC of unspecified duration, subsequent encounter
S06.0X9S	Concussion LOC of unspecified duration, sequela

# Concussion Management in the Garrison Setting

(time of injury to 7 days)

## ICD-10 CONCUSSION CODING TIPS (CONTINUED)

### Initial Visit

1. TBI screening code, if applicable
2. Diagnostic code
3. Symptom code, if applicable
4. Deployment status code, if applicable
5. External cause of morbidity code
6. Place of occurrence code
7. Activity code
8. Personal history code

### Subsequent Visit

1. Symptom code, if applicable
2. Diagnostic code
3. Deployment status code, if applicable
4. External cause of morbidity code
5. Personal history code

ICD-10	Description
<b>Symptom Code (examples)</b>	
G44.311	Acute post-traumatic headache, intractable
H93.13	Tinnitus, bilateral
<b>Deployment Status Code</b>	
Z91.82	History of deployment
<b>External Cause of Morbidity Code (example)</b>	
V43.51A	Car driver injured in collision with sport utility vehicle in traffic accident, initial encounter
<b>Place or Occurrence Code (example)</b>	
Y92.007	Garden or yard of unspecified non-institutional (private) residence as the place of occurrence of the external cause
<b>Activity Code (example)</b>	
Y93.02	Activity, running
<b>Personal History Code</b>	
D0D0101	Personal history of TBI, highest level of severity unknown
D0D0102	Personal history of TBI, mild

ICD-10 Coding Concussion Cheat Sheet available at [dvbic.dcoe.mil](http://dvbic.dcoe.mil)