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# Concussion Management Tool (CMT) Training

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*Instructor's Guide*



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## Lesson Plan

- Please allow 60 minutes to complete entire lesson plan depending on number and skill set of participants.
- Be sure all equipment is set up and working before the training session.
- Count out and prepare workbooks and CMT pocket guides in advance.
- Suggested additional equipment (per **each participant**):
  - Military Acute Concussion Evaluation 2 (MACE 2)
  - Primary Care Manager Progressive Return to Activity (PCM PRA)
  - Rehabilitation Progressive Return to Activity (Rehab PRA)
- Prompt learner to use workbook as we work through the case studies.

**NOTE:** The slides for this curriculum contain sound. You will need speakers.

Time		
10 minutes	Introduction & Orientation to the Tool	PowerPoint Slides, CMT
5 minutes	Key Takeaways & Learner Survey	PowerPoint Slides, Student Workbook

# Initial Management: Clinical Case Scenario

## Directions

The following activities complement the slides and the student workbook.



A twenty-three-year-old male service member (SM) was playing football, when he collided with a teammate and struck his head on the ground.



His last memory is of striking his head. His next clear memory is of others standing around him, asking if he was ok. His teammates stated that he was unconscious for about 30 seconds.

He attempted to get up on his own but stumbled sideways and required assistance off the field. He states he “saw stars” and felt dizzy for about five minutes.

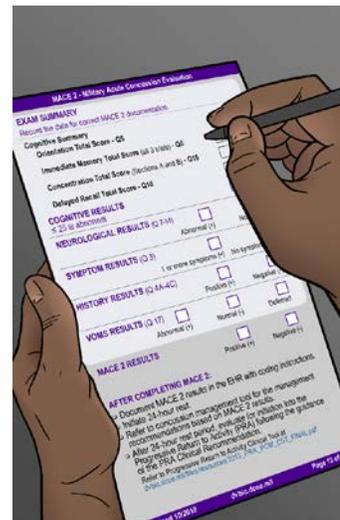
The patient had a headache, felt nauseated, and “out of it,” which prompted him to present to the medic about 30 minutes after the injury.

The medic performed the MACE 2 and instructed the patient to rest for 24 hours, then follow up the next day at sick call.

MACE 2 screening results from time of injury are summarized below:

### Screen Results

- **Red flags:** negative
- **Observable signs:** witnessed loss of consciousness for 30 seconds, SM stumbled and was slow to get up
- **AOC or Memory:** SM reports feeling “dazed” and “out of it” for 5 minutes
- **Symptoms:** headache, dizziness, nausea, fatigue
- **Concussion history:** no prior concussions in the last 12 months
- **Headache history:** none



### Question 1: (page 2 in student workbook)

**What four mandatory events require concussion evaluation?**

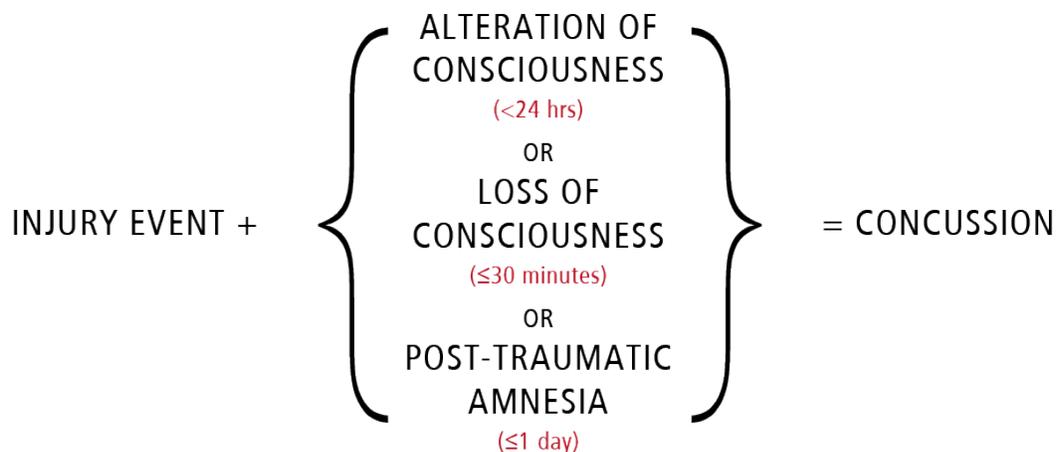
**ENCOURAGE LEARNERS TO USE CMT POCKET CARD THROUGHOUT TRAINING**

- The following mandatory events require a concussion evaluation:

1. Any service member in a vehicle associated with a blast event, collision, or rollover
2. Any service member within 50 meters of a blast (inside or outside)
3. Anyone who sustains a direct blow to the head
4. Command directed

**Question 2:** (page 3 in student workbook)

**Does the SM meet the criteria for concussion? What are the criteria for concussion?**



The SM presents to your clinic today with the chief complaint of “concussion.” He complains of a 5/10 headache and dizziness, intermittent nausea, fatigue, and says he feels “slow.”

**Question 3:** (page 3 in student workbook):

**Which clinical tool should you refer to next to guide your management?**

Refer to the Concussion Management Tool (CMT). Specifically, we should refer to CMT Card 1: Initial Management.

**Question 4:** (page 3 in student workbook)

**How should you proceed through initial management for this patient?**

1<sup>st</sup>: Review MACE 2 results (MACE 2 results positive)

2<sup>nd</sup>: Consider an FDA cleared concussion assessment device (considered, but device not available)

3<sup>rd</sup>: Begin initial management → in the initial 24 hours focus on managing symptoms to facilitate rest and sleep

4<sup>th</sup>: Review concussion history (no prior concussions in last 12 months)

5<sup>th</sup>: Initiate rest

*Note superscripts B, C, and A.*

The SM admits that he did not comply with the full 24-hour rest period as instructed yesterday and went back to work after his injury.

His symptoms are unchanged, with a 5/10 headache and dizziness, intermittent nausea (without vomiting), and states he feels tired and “slow.”

**Question 5:** (page 4 in student workbook)

**What could you consider doing next?**

Consider repeating the MACE 2 to re-evaluate patient. MACE 2 can be repeated 24 hours after initial assessment for comparison. Use your clinical judgement.

Even though it has been >24 hours since the injury event, recommend 24-hour mandatory rest because patient was non-compliant with rest yesterday.

Review current medications and sleep hygiene.

Provide concussion re-education. Per the primary care manager PRA, ensure that the patient received the “What You Should Know About Concussions” educational brochure yesterday and set expectations for recovery with the patient.



The patient demonstrates understanding and appreciation of your initial recommendations. However, he asks, “what do you mean exactly by rest?”

**Question 6:** (page 4 in student workbook)

**How would you respond?**

**Refer to CMT card 3, superscript A:** Rest includes extremely light cognitive activity as well as limited physical activity such as activities of daily living and extremely light leisure activity. Cocooning— where all forms of exercise and brain activity are halted— is no longer advised!

1. Rest with extremely limited cognitive activity
2. Limit physical activities to those of daily living and extremely light leisure activity
3. Avoid work, exercise, video games, reading or driving
4. Avoid any potentially concussive events (such as a blast, blow to head, collision/rollover, assault)
5. Avoid caffeine, alcohol, and energy drinks

The patient states that his headache is disturbing him and he is not sure how much he can rest. He asks if there is anything he can take to alleviate his headache and promote rest.

**Question 7:** (page 4 in student workbook)

**How will you address his symptoms as part of your initial concussion management?**

**Prompt learners to refer to CMT card 3, superscript B**

The SM may be treated using acetaminophen every 6 hours. NSAIDS, such as Naproxen or Ibuprofen, can be used after 48 hrs. Avoid Tramadol, Fioricet, and narcotics and review SM's current medication list (making adjustments, as needed).

In addition to pharmacologic symptom management, education about non-pharmacologic interventions to treat symptoms is important. Consider the use of DVBIC fact sheets on mTBI symptom management for the patient. Also provide follow-up guidance to the patient to address new or worsening symptoms.

Suggest using DVBIC fact sheet: "Managing Headaches Following Concussion"

In SMs with multiple symptom clusters, focus on treating the most likely primary issue

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A follow-up appointment is scheduled with you the next day.

The patient states that this time he was compliant with the 24-hour rest period, and his headache and dizziness have decreased to a 2/10.

His nausea slowly resolved by the time he went to bed last night, but he had difficulty sleeping. He still feels "slow."

You repeat his MACE 2 exam, and it is still positive.



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You are accompanied by a medical student, who asks you to elaborate on the reason for continuing the MACE 2 even after the concussion diagnosis has been established as positive.

**Question 8:** (page 5 in student workbook)

**How will you respond to the medical student's question?**

The medical student asked an important question.

MACE 2 is a tool for concussion assessment and diagnosis. The information gathered after the initial screening, during the remainder of the MACE 2 assessment, provides insight into the patient's deficits can be effectively used in concussion management to guide treatment and monitor patient progress.

**Question 9:** (page 5 in student workbook)

**Considering the MACE 2 is still positive, what is the next step?**

**Prompt learners to reference CMT card 1.**

Since the patient is symptomatic at rest on his first follow-up visit with you, entry into the Primary Care Manager Progressive Return to Activity process is advised. Refer to the PCM PRA clinical recommendations (CR) and/or CMT card 6 superscript E for details.

The PRA stages 1 through 6 guide the SM's activity progression from rest to unrestricted activity based on their symptoms. The SM has to remain in each stage for a minimum of 24 hours.

If the progression criteria are met, advance to the next stage. If the progression criteria are not met, return to prior stage for 24 hours. At this visit, provide the SM with the "Return to Activity" educational brochure. As the PRA process is followed, prioritize symptom management based on the Neurobehavioral Symptom Inventory (NSI). Our SM's complaints of headache and dizziness are still a 2/10. The symptom clusters corresponding to his complaints include headaches/migraine and vestibular.

**Prompt learners to reference CMT card 5.**

In SMs with multiple symptom clusters, focus on treating the most likely primary issue. For this SM we could focus on the headache symptom cluster.

He currently has a mild headache that is improving, but IF his symptoms persist and/or worsen what actions should we take?

Looking at the top row "Headaches/Migraine" symptom cluster, the provider should identify the type of headache and consider an oculomotor assessment. The provider could review DVBC's CR for Management of Headache Following Concussion/Mild Traumatic Brain Injury: Guidance for Primary Care Management in Deployed and Non-Deployed Settings and the referral considerations.

Suggest providing DVBC fact sheet: "Managing Headaches Following Concussion"



**Question 10:** (page 6 in student workbook)

**How often should the patient follow up with the PCM?**

According to the CMT, the patient should follow up with the PCM every 24-48 hours (for up to seven days) as he progresses through the PRA.

You may note a difference between CMT and PRA follow-up recommendations. Please use your clinical judgement to determine appropriate follow-up guidance for the SM.

**Question 11:** (page 6 in student workbook)

**Since this is the patient's 1<sup>st</sup> concussion, when should the provider consider moving from the PCM to Rehab PRA?**

Per provider judgment, recovery not progressing as anticipated, no progression in 7 days, symptoms are worsening, or symptomatic after exertional testing following stage 5. Even though "no progression in 7 days" is listed here as criteria for referral of the SM from the PCM to the Rehab PRA, please use your clinical judgement to make that decision.

Criteria for progression through PRA stages include:

- Minimum of 1 day in each stage (24 hours)
- No new symptoms
- Daily NSI symptoms reported as 0-1 (mild)
- If all criteria are not met, return to the previous stage for 24 hours..

The patient follows up with you on day 8 and has progressed through the PCM PRA process. He is asymptomatic at stage 6 after completing exertional testing and the Vestibular/Ocular-Motor Screening (VOMS) and feels ready to return to duty.

**Question 12:** (page 6 in student workbook)

**What should the PCM do at this time?**

The PCM will confirm that the SM has completed the minimum mandatory recovery time. Refer to CMT card 7 superscript H for details.

Next, prior to clearing the patient to regular duty, the PCM will communicate these findings to the SM, line leadership and accurately document and code findings in the health record.



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CONGRATULATIONS! You have successfully treated the SM using the Concussion Management Tool.

**\*STOP, REFER TO LECTURE SLIDES AND CONTINUE PRESENTATION**

# Comprehensive Management: Clinical Case Scenario

*For this scenario we will use the same service member, but with a different progression through the initial management phase.*

A twenty-three-year-old SM presents to your clinic after being diagnosed with a concussion. While playing football, two weeks ago, he collided with a teammate and struck his head on the ground. This was his first concussion in the last 12 months.

Some of his symptoms resolved spontaneously but his headache and dizziness have persisted. As per the CMT, his primary care manager initiated the PCM Progressive return to activity (PRA) process. However, the SM has not progressed on the PRA beyond Stage 4 and has been moving back and forth between Stage 3 (Light Activity) and Stage 4 (Moderate Activity).

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*Question 1: (page 7 in student workbook)*

**What treatment approach should the PCM follow to treat this patient?**

*The SM is not progressing as expected through the PCM PRA. As per guidance in the CMT, referral to higher level of care (for instance, to a TBI/concussion care clinic) will be appropriate at this time.*

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The SM is referred to a rehabilitation provider, who reviews relevant documentation (MACE 2, PCM PRA) with focus on symptom and activity progression, and repeats the MACE 2. The patient's symptoms of headache and dizziness have decreased from 5/10 to 3/10 over time. The SM does not have a history of prior concussions, headache disorders, or behavioral health concerns.

However, he had unsteady balance while performing the single leg stance and tandem gait exams. Also, near point convergence measurement of 8 cm was recorded (on all 3 trials) while administering the Vestibular ocular motor screening (VOMS).



*Question 2: (page 8 in student workbook)*

**What should the rehabilitation provider do next to manage this patient?**

Note: The Rehab PRA always starts at Stage 1.

After conducting a comprehensive evaluation, the rehabilitation provider will initiate the Rehab PRA process (stage 1). Refer to the Rehab PRA clinical recommendations (CR) and CMT card 6F for details.

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The rehabilitation provider gives a brief overview of the Rehab PRA process and explains its importance to the SM. Although hesitant initially, the SM agrees to comply with the physician's recommendations.

*Question 3: (page 8 in student workbook)*

**Now that the Rehab PRA has been initiated, how should the rehabilitation provider manage the patient's symptoms?**

As per the CMT, TBI symptom clusters should guide treatment.

Information obtained from the MACE 2 assessment including: 1) symptoms (headache and dizziness) and 2) abnormal physical exam findings (unsteady balance and abnormal convergence) can be used to identify symptom clusters (headaches, vestibular, and oculomotor). This information can further guide clinician's management of the patient. Refer to the symptom cluster chart (CMT cards 4 & 5) for details.

For the SM we are treating, identification of the type of headache, vestibular dysfunction, and associated co-morbidities is necessary. Our patient's symptom clusters can be addressed by using non-pharmacologic and/or pharmacologic interventions. [Refer to DVBIC Clinical Recommendations (CR) on assessment and management of 1) headache 2) dizziness and 3) visual dysfunction.] In order to monitor the patient's progress in oculo-motor and vestibular domains, VOMS may be repeated at regular intervals and prior to return to duty.

Note: 1) Symptoms should be reevaluated regularly to assess risk of protracted recovery.

2) Medication side effects/polypharmacy should be ruled out. Avoid addition of multiple medications at once and review the medication list regularly to discontinue medications that may not be required.

**Question 4:** (page 8 in student workbook)

**How often should the SM follow-up with the rehabilitation provider?**

According to the CMT Card 2: comprehensive management, the SM should follow up with the rehabilitation provider every 48-72 hours as symptoms dictate.

Note: You may note a discrepancy between CMT and PRA follow-up recommendations. Please use your clinical judgement to determine appropriate follow-up guidance for the SM.

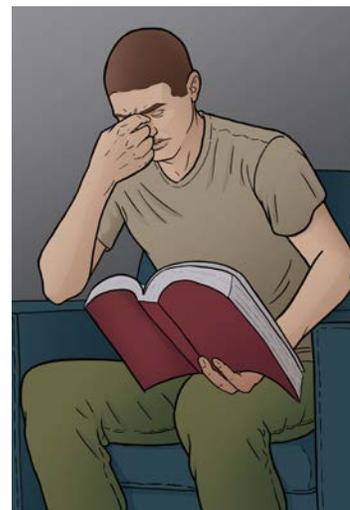
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The SM has been progressing through the rehab PRA slowly but steadily and is now at Stage 3. He is unable to progress to Stage 4. He has noted that reading makes his headache worse. Yesterday, he had to stop reading after 5 minutes.

**Question 5:** (page 9 in student workbook)

**As per the CMT, what can the rehabilitation provider do next?**

The patient is unable to progress through the rehab PRA as anticipated. The rehabilitation provider may consider specialty consultation to neurology.



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The patient is seen and follows the treatment plan recommended by the neurologist. He has been following up with the rehabilitation provider every 2-3 days and has completed 24 hours in stage 5. He states that he is feeling much better and is ready to return to his duties.

**Question 6:** (page 9 in student workbook)

**What should the rehabilitation provider ensure, prior to releasing the patient to regular duty?**

Prior to releasing the patient to regular duty, the rehabilitation provider should ensure that: 1) the VOMS has been repeated; 2) the patient is asymptomatic post-exertional testing; and 3) the minimum mandatory recovery time has been met. Refer to CMT card 7 G, H for details.

*Question 7:* (page 9 in student workbook)

**After clearing the SM for return to regular duty, the rehabilitation provider educates him regarding follow-up guidance. What should the rehabilitation provider do next?**

After notifying the SM, the rehabilitation provider should communicate findings to line leadership and to the PCM. Additionally, they should accurately document and code findings in the health record.

**CONGRATULATIONS!** You have successfully treated the service member using the Concussion Management Tool.

**\*STOP, REFER TO LECTURE SLIDES AND CONTINUE PRESENTATION**

## Coding

(page 10 in student workbook)

Emphasize the importance of accurate coding:

1. Ensure SM receive appropriate level of care
2. Pass on accurate information to other medical providers for continuity of care
3. Resource allocation and staffing
4. Surveillance
5. Identify trends
6. Improve patient outcomes

Using the information below, what is the primary TBI diagnostic code for this patient at the initial visit?

**Initial TBI Screening Code: Z13.850**

**TBI Coding Sequence:**

1. Primary TBI diagnostic code: S06. E L S E. Primary symptom code, if applicable: (e.g., H53.2 - diplopia)
3. Deployment status code, if applicable: (e.g., Z56.82 for deployed)
4. TBI external cause of morbidity code: (For example, Y36.290A [A- use for initial visit] for war operations involving other explosions and fragments, military personnel, initial encounter)
5. Place of occurrence code, if applicable
6. Activity code, if applicable
7. Personal history of TBI code: if applicable Z87.820

### **S06. 0 X 1 A**

The S06 code is a 7 character code and letters 4 through 7 are represented by the acronym "ELSE"

ELSE stands for:

E: Etiology of the TBI, which for a concussion will always be 0

L: Location of TBI, will be either an x (placeholder) or 0 (NOS)

S: Severity of TBI will be either a 0 (no LOC) or 1(LOC <30 min)

E: Encounter, or the type of visit. The 3 options here include: A (for initial), D (for subsequent), or S (for sequela).

Let's discuss the 7<sup>th</sup> character of the S06 code in detail.

A is used to identify the first time the patient is seen for the injury

---(by ANY medical professional, regardless of when injury took place)

D is used for encounters when patient is receiving routine care (during healing or recovery phase)

S is used for complications that arise as a direct result of the condition.

## ***Key Takeaways***

- CMT is the critical link for guiding initial and comprehensive management of concussion from assessment to return to duty
- Concussion management is driven by the number of concussions sustained in the last 12 months, progression of symptom clusters, and activity progression through the PRA
- Even if the concussion screen is negative, initiate 24 hour rest (mandatory if deployed)
- Before initiating concussion management, complete TCCC, MACE 2, and FDA cleared structural brain injury device or tool (if available)
- Education is the single most effective intervention, following acute mTBI, showing the greatest decrease in number and duration of symptoms
- Accurate coding is critical for resource allocation and surveillance

***\*STOP, REFER TO LECTURE SLIDES AND CONTINUE PRESENTATION***