



Defense and Veterans Brain Injury Center

Progressive Return to Activity Following Acute Concussion/mTBI

Primary Care Manager Training

Student Workbook



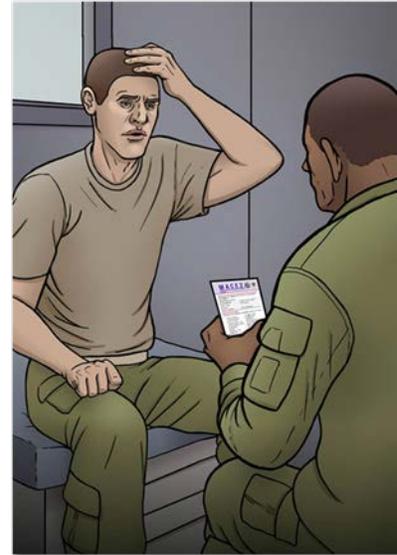
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Scenario #1: No Prior Concussions

You are seeing sick call on a Thursday morning when you notice a walk-in appointment is scheduled for a 23 year-old Staff Sergeant whose chief complaint is “rule-out concussion.” Upon interviewing SSgt Rogers, he states that he was playing touch football that morning with his unit when he hit his head on the ground. He states he felt “dazed” and “saw stars” for approximately 30 seconds and then had a mild headache.

One of his buddies who was playing football with him said he was conscious the entire time, and that he walked off the field with no difficulty. It’s two hours since the injury, and he complains of a mild headache, slight dizziness and very mild nausea.

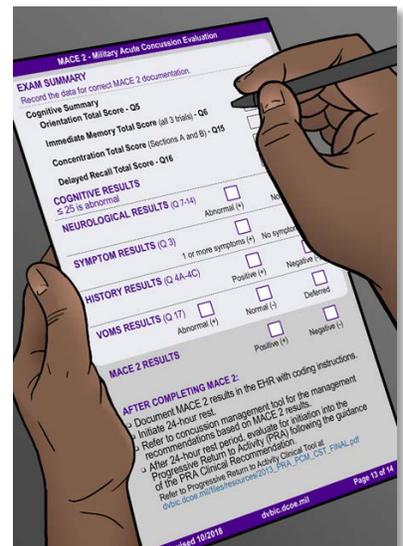


Question 1:

Does SSgt Roger have a concussion? What criteria determine concussion?

You perform a MACE 2 exam and he screens positive for concussion, with a normal neurologic examination. As stated before, he complains of a headache of 2/10, mild nausea and very slight dizziness. He lives close to base and says he’s off from work for the rest of the day. His vital signs are:

blood pressure (BP) = 138/88, pulse = 85 bpm



Question 2:

What two things should you do as part of SSgt Rogers's discharge plan? These two things should be done for EVERY patient who has sustained a concussion.

An appointment is scheduled the following day in sick call.

The next day, you see SSgt Rogers in clinic for a follow-up visit. He says that his headache went away after dinner, and his nausea and dizziness slowly resolved by the time he went to bed. He slept very well and states he is completely asymptomatic right now. His physical exam is completely normal.

Question 3:

Before making any further clinical decisions, what is the *ONE QUESTION* you should ask to determine how to further treat the SM (use algorithm cards for assistance)?

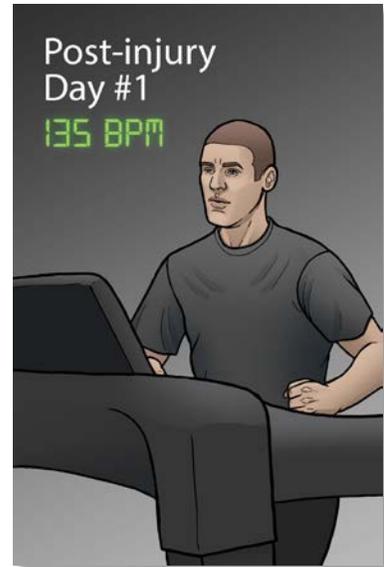


The soldier tells you he is certain he has not had any concussions in the past 12 months, though he had several concussions while playing football in high school many years ago.

At this point, the SM is completely asymptomatic and has had 24 hours of rest. You perform an exertional test by having him run on a treadmill for several minutes. Luckily, they have a heart rate monitor on the treadmill, and he stays between 135 and 140 beats/min for two minutes. After getting off the treadmill, he does not complain of any headache, nausea, dizziness, visual changes or balance issues.

Question 4:

Is the SM able to return to full duty or does he need to continue on light duty for several more days?



Question 5:

What are the three conditions that would bring the SM back to your clinic for re-evaluation?

SSgt Rogers is completely recovered from his concussion and is put back to full duty. He is able to deploy to Afghanistan two months later and has no further issues prior to his deployment.

Congratulations!

Scenario #2: First Concussion → Symptomatic

Let's return to SSgt Rogers. Instead of performing his exertional test without symptoms, let's assume he actually had worsening headache and dizziness on the treadmill. In this case, he is given 24 hours of rest and handed the *Return to Activity Educational Brochure*.

He follows up the next day to complete the NSI in your office. He scores 0 for all symptoms except for 1 for nausea, 2 for dizziness and 3 for headache. His physical examination is normal with the exception of a positive Tandem Gait test. His vital signs are:

BP = 130/82, pulse = 70

He is told to remain at Stage 1 (Rest), given acetaminophen for headache, given more detail about progressing through Stages 2 – 5 of the *Return to Activity Educational Brochure*, including progression criteria, and what to do if symptoms increase in number or severity.

HOW DO I FEEL TODAY?					
RATE ON A SCALE OF 0-4					
	0	1	2	3	4
Feeling dizzy			X		
Loss of balance	X				
Poor coordination, clumsy	X				
Headaches				X	
Nausea		X			
Vision problems, blurring, trouble seeing	X				
Sensitivity to light	X				
Hearing difficulty	X				
Sensitivity to noise	X				
Numbness or tingling on parts of my body	X				
Change in taste and/or smell	X				
Loss of appetite	X				

BP=130/82 PULSE=70

Three days after the patient leaves your office, he calls to ask a question. He says he completed Stage 3 yesterday without significant problems, but today he completed the NSI and noted his headache and dizziness were at a level of 2 (moderate). His roommate called him a “wimp” and “dared” him to go to the gym and do the “Jane” cross-fit workout with him. Of course, he did.

During the workout, he noticed his headache, nausea and dizziness increased. He wants to know what he should do.

Question 6:

What advice do you give SSgt Rogers?



Despite feeling significantly better after getting approximately 10 hours of sleep last night, he decides to make appointment with you, just to make sure everything is OK. You review the NSI and on headache and dizziness, he scores 1 (mild). All other symptoms are 0 (none). His physical exam is normal and his vital signs are:

BP = 126/78, pulse = 62

Question 7:

At this point, what is your advice for SSgt Rogers?

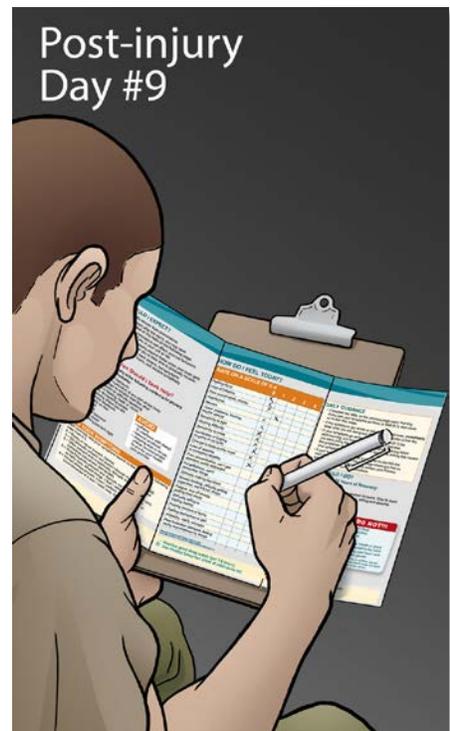
The patient decides to go back to work and feels comfortable advancing on his own.

Four days later, you see he is scheduled for follow-up.

When he presents, he states he completed Stage 5 yesterday, had no worsening of symptoms and “feels great.” You have him complete the NSI and he scores all 0 (none) with the exception of headache, which is at a 1 (mild).

Question 8:

What is the next step?



Question 9:

When you are ready to perform exertional testing on SSgt Rogers, what formula would you use to calculate his maximum target heart rate?

- a) 250 – age
- b) 180 – age
- c) 220 – age
- d) $\text{Age} \times 5 + 100$

Question 10:

When you are ready to perform exertional testing on SSgt Rogers, what is the correct target heart rate range (as a percentage) and duration?

- a) 40 – 60% for 5 minutes
- b) 65 – 85% for 5 minutes
- c) 40 – 60% for 2 minutes
- d) 65 – 85% for 2 minutes

The patient performs the exertion test, has no increase in symptoms and says he is ready to “Get back into the fight!”

You’ve successfully taken SSgt Rogers through the Progressive Return to Activity algorithm.

Make sure you document appropriately in AHLTA/MHS Genesis, and instruct the patient to return to clinic if he has worsening of symptoms.

Congratulations!

Case Study #1: 2nd Concussion in 12 Months

Directions:

- Your group has 15 minutes to complete the following case study.
- Assign a note-taker to recap the case study and a presenter to report your group's findings.
- After reading the case study, answer the questions that follow. Feel free to mark up your supplemental materials or take notes as you discuss issues. Please use the provided documents from the PRA CR suite to facilitate your discussion.
- We will start presenting at _____.

Seaman First Class (SFC) James Smith, 35-year-old male, arrives at the base clinic for a follow-up visit. The previous night, while walking home, SFC Smith was assaulted by several men. He was jumped from behind and struck over the head with a blunt object. He recalls waking up on the ground and being kicked in the head multiple times.

After the incident he was evaluated at the ER and diagnosed with a concussion. His CT was negative for a bleed/fracture. His physical exam was normal except for a superficial laceration to his scalp. His primary symptoms included headache and dizziness. He reported that this was his second concussion in six months.

After treating his symptoms and providing education using the *What You Should Know About Concussion* brochure, the ER provider discharged him to mandatory recovery for 24 hours, and instructed him to follow up with PCM the next day.

After the mandatory 24-hour recovery period, SFC Smith arrives at the clinic. He continues to complain of a headache and dizziness, and reports difficulty sleeping the previous evening.

The PCM reviews the NSI. SFC Smith rates all symptoms as:

- 1 (mild) except for
- headache, which was rated as 2 (moderate),
- difficulty falling asleep as 2 (moderate), and
- loss of balance as a 2 (moderate)

The PCM provides the SFC Smith with symptom management. He is ordered an additional 24 hours at Stage 1 (Rest), provided a detailed review of allowable activities for each stage using the *Return to Activity Educational Brochure*, and scheduled to follow-up the next day.

The following day he returns to the clinic. His updated NSI shows improvement, with all symptoms now rated as 1 (mild).

Question 1:

Discuss with your group what would be the appropriate course of treatment for SFC Smith when he leaves the clinic. Be specific with your recommendations, as if the SFC is in your office.

Question 2:

In addition to giving guidance on Stage 2 in the Return to Activity Educational Brochure, what else does SFC Smith need to complete on a daily basis?

SFC Smith tells you his job entails making budget spreadsheets all day, along with extensive writing of instructions for his section. In addition, he confesses that he usually plays his PS4 approximately 3 hours per day with his roommate.

Question 3:

Is intense computer work and playing PS4 appropriate at Stage 2? What other activities are appropriate and inappropriate at Stage 2 of return to activity?

SFC Smith returns after five days and tells you that despite taking daily medication, he continues to rate all symptoms as 1 (mild), except for headache and difficulty falling asleep, which he rated as 2 (moderate).

Question 4:

Discuss the most appropriate action to take in SFC Smith's case, according to the PRA CR?

Case Study #2: 2nd Concussion → Symptomatic

Directions:

- Your group has 15 minutes to complete the following case study.
- Assign a note-taker to recap the case study and a presenter to report your group's findings.
- After reading the case study, answer the questions that follow. Feel free to mark up your supplemental materials or take notes as you discuss issues. Please use the provided documents from the PRA CR suite to facilitate your discussion.
- We will start presenting at _____.

Lance Corporal (LCPL) Julie Jones, 22-year-old female, arrives at the battalion aid station (BAS) for concussion evaluation. While doing a training exercise the previous day, she jumped from a Humvee and hit her head on the ceiling. She had several minutes of alteration of consciousness. Since the BAS was closed, she was taken to the ER and diagnosed with a concussion. After treating her symptoms and providing education, the ER provider discharged LCPL Julie Jones, instructing her to observe the mandatory recovery for 24 hours and to follow up with her PCM the next day.

Overnight, she had a moderate headache, some dizziness and had difficulty sleeping due to headache. Upon questioning, LCPL Julie Jones admits to having **another concussion approximately 7 months ago** while snowboarding. Her recovery took approximately two weeks.

In the clinic, she is given an NSI and rates:

- all symptoms at 1 (mild) except for
- headache, which was rated at 2 (moderate) and
- difficulty falling asleep as 2 (moderate)

The General Medical Officer provides LCPL Jones with symptom management. She is given an additional 24 hours at Stage 1 (Rest) as directed in the *Return to Activity Educational Brochure*, and is scheduled for a follow-up visit the next day.

The following day she returns to the clinic. Her updated NSI shows improvement, with all symptoms now rated as 1 (mild). She is advanced to Stage 2 (Light Routine Activity). Patient activity guidance for Stage 2 describes acceptable and prohibited activities, including:

- Activity limited to 30-minute intervals or less followed by four hours of rest
- No video games, resistance training, weight lifting, driving, combatives or collision sports

Because this is her second concussion, LCPL Jones is instructed to remain at Stage 2 for a minimum of five days. She is also advised to complete the NSI daily, and to follow up with PCM immediately if she develops any new symptoms, or if her symptoms increase in severity (>1 on NSI) for more than one day.

LCPL Julie Jones returns to the clinic in five days as directed. A repeat NSI has ratings of all 0 or 1 (mild). Since she has had seven consecutive days at Stages 1 and 2, she is instructed to advance to Stage 3 (Light Occupation-oriented Activity) as outlined in her *Return to Activity Educational Brochure*.

Question 1:

When giving her activity guidance, what are the four things you tell her are the criteria for progression?

LCPL Jones calls your clinic and reports her symptoms were rated as 2 (moderate) or higher after attempting Stage 3 activities (after having symptoms either 0 or 1 previously at Stage 2).

Question 2:

What recommendations would you make to her?

LCPL Jones sustained a concussion in the 12 months prior to this injury.

Question 3:

What protocols should be put in place as a result, according to the PRA?

Question 4:

At what recovery stage would LCPL Jones be permitted to use video games safely?

Question 5:

At what stage of her recovery would LCPL Jones be permitted to start driving again?

Answer Key

First scenario

1. Answer: Yes. He meets DoD definition for mild Traumatic Brain injury, which is the same as a concussion. SSgt Rogers described being “dazed” and “seeing stars” which implies alteration of consciousness. By definition, you need to have either Alteration of Consciousness (AOC) < 24 hours, Loss of Consciousness (LOC) ≤ 30 minutes or memory loss associated with the event (Post Traumatic Amnesia (PTA)) ≤ 24 hours or Retrograde Amnesia (RGA).
2. Answer:
 1. Review the *What You Should Know About Concussion* brochure with the service member
 2. Mandatory 24 hours of restLook at the first block of the PRA Reference Card Algorithm. Superscript B references a table defining what is meant by “rest” in Stage 1. This includes the following:
 - Extremely light basic activities of daily living
 - Wear comfortable clothing
 - Quiet environment with low lighting
 - Healthy sleep – naps as needed
 - Slow and limited range of motion
 - Walk on level surface at easy paceThings to avoid:
 - Caffeine and tobacco
 - Exercise
 - Alcohol
 - Video games
 - Studying
 - Driving
3. Answer: How many concussions have you had in the previous 12 months?
4. Answer: Because he successfully completed the full exertional test without any symptoms, he is able to return to pre-activity levels (full duty). Note because it is his first concussion in the past 12 months, he is able to perform the exertional test after 24 hours. If this were his second concussion, he would have to wait a minimum of seven days in Stages 1 & 2 before progressing through higher stages.
5. Answer:
 - 1) Symptoms return
 - 2) Symptoms increase in number and/or severity

3) Not able to progress for two consecutive days for first concussion

Second scenario

6. Answer:

- 1) Tell him to stop any further activity for the day and return to Stage 3 (where he previously had little or no symptoms).
- 2) Have him complete the NSI the following morning, and if he scores 0 or 1 on NSI he may stay at Stage 3.
- 3) If NSI the following morning has any level 2 scores or higher, or if he must follow-up with you in clinic.

7. Answer:

You have 2 options:

- 1) Since he improved and he is either 0 or 1 on his NSI, you can discharge him with instructions to stay at Stage 3 today and continue to advance as usual to the next stages every 24 hours. Make sure you tell him to contact you if symptoms worsen and remind him to call you and schedule follow-up after he completes Stage 5.
- 2) Refer him to rehab provider for further progression (depending on your comfort level).

8. Answer: Exertion Test

At this point, he has completed Stage 5 and meets criteria (no symptoms > 1 on NSI) for exertional testing. **Review the process for performing the Exertion Test from PRA CR. Remember to have the patient put on any gear that may be part of his normal work routine, if possible.

9. Answer: c) 220 – age

10. Answer: d) 65 – 85% for 2 minutes

Case Study 1

1. Answer: The first thing that must be done is provide follow-up guidance. This entails instructing the patient to follow up with you if: 1) the symptoms return or 2) the symptoms increase in number and/or severity. Since this is his second concussion in the past 12 months, the recommendation to return if there is no progress for two consecutive days does not apply, as this is recommended only for the first concussion in the past 12 months. Since his symptoms have been at 0 – 1 (mild) the day of this visit, you can tell him to advance to Stage 2 tomorrow, assuming his NSI continues to be at 0 – 1 (mild) for all symptoms and he does not have any new symptoms (this is criteria for progression). Because this is his second concussion in the past 12 months, he needs to stay at Stage 2 for five consecutive days.

Since he has already been given the *What You Should Know About Concussion* brochure the day before, you should review it with the patient again, and emphasize the “do’s and don’ts” for both Stages 1 and 2. In addition, it would be appropriate to review the “What Should I Expect” section of the brochure along with the “Daily Guidance” section that specifically outlines what to do if any symptoms get worse or he develops new ones. Emphasis should be placed on the need to rest for the remainder of the day if symptoms worsen, and if the symptoms are rated at 2 or higher after rest, that he should contact you for further instructions.

2. Answer: SFC Smith will need guidance on completing the Neurobehavioral Symptom Inventory (NSI) on a daily basis and the need to stay at Stage 2 as defined in the *Return to Activity Educational Brochure*. Share with your group how you would instruct SFC Smith to be comprehensive in using these tools, so that he is thoroughly prepared for his next visit to the clinic.
3. Answer: Both intense computer work and playing video games are **not** allowed at Stage 2. The patient is permitted to browse the web, but should not be doing extensive cognitive activities on the computer. You will often be asked about playing video games. Since this involves significant concentration and problem solving, patients should not play video games until they reach Stage 4.

Activities you are allowed to do include:

- Walk and stretch
- Ride a stationary bike at a slow pace with low resistance
- Do light housework
- Use the computer (as above)
- Play simple games such as cards
- All activities should be done for no longer than 30 minutes

He should be instructed to **not**:

- Drink alcohol
 - Drive
 - Play video games (as above)
 - Do resistance training or repetitive lifting
 - Do sit-ups, push-ups or pull-ups
 - Go to crowded areas where you may be bumped or jostled
4. Answer: Since SFC Smith has symptoms on his NSI that are > 1, recommend he goes back to Stage 1 (Rest), provide symptom management and give follow-up guidance. This includes following up with you if the symptoms return, or the symptoms increase in number and/or severity (reference table E in PRA CR).

Because his symptoms have not resolved after five days, it is recommended that you refer SFC Smith to a rehabilitation provider for a daily monitored progressive return to activity process.

Case Study 2

1. Answer:
 - 1) Minimum of one day in each stage (24 hours)
 - 2) No new symptoms
 - 3) Daily NSI symptoms reported as 0 – 1 (mild)
 - 4) If all criteria for progression are not met, return to previous stage for 24 hours
2. Answer: Because she has worsening symptoms at Stage 3, the first thing you should do would be to have her rest for the remainder of the day. Then, you should recommend she returns to Stage 2 the next day, as this was the previous stage at which her NSI rated either 0 or 1. Instruct her that if she goes back to Stage 2 tomorrow and her symptoms continue to be 2 or higher on the NSI, she should at a minimum follow-up with you in clinic. Because it is her second concussion in the past 12 months, it may be appropriate to refer her to a higher level of care (such as rehabilitation provider).
3. Answer: Because it is her second concussion in 12 months, the patient must enter the protocol specific for a second concussion, which is more conservative than the protocol used for a patient who has had only one concussion in the past year. A service member must have seven consecutive days of symptom resolution at Stage 1 and Stage 2 before finishing the remainder of the progressive return to activity stages. This aligns with Department of Defense Instruction 6490.11 that has the same recommendation.
4. Answer: LCPL Jones may engage in cognitive activities such as video games and driving simulation for a maximum of 40 min during Stage 4. In Stage 4, the SM should be advised to maintain a 1:2 cognitive activity to rest interval ratio. For example, 40 min of video gaming would be followed by 80 min of rest.
5. Answer: Stage 5 (Intensive Activity). This will likely surprise most patients and may cause the most difficulty with them getting to and from work. Patients need to be advised of this in the beginning of their treatment course, so they can make appropriate arrangements. Practically speaking, most patients will not be coming back to work until they are at Stage 4 (Moderate Activity) as it is at this stage that moderate job-related tasks are allowed. This means the care provider must place the SM on sick-in-quarters, light duty or profile to make sure they get both physical and cognitive rest.

Exit Card

We hope this training will positively impact your mTBI practice. Please take a minute to fill out the exit card as a way to reflect on key ideas from today's training.

<i>What are 3 to 4 key ideas from today's training that are immediately applicable in your practice?</i>
1.
2.
3.
4.