Progressive Return to Activity Following Acute Concussion/Mild Traumatic Brain Injury

Primary Care Manager Training

Date
Time

Presenters

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Acronyms and Abbreviations

Acronym or Abbreviation	Definition
AHLTA	Armed Forces Health Longitudinal Technology Application
AOC	Alteration of Consciousness
BP	Blood Pressure
CMT	Concussion Management Tool
CPG	Clinical Practice Guidelines
CR	Clinical Recommendation
DoD	Department of Defense
DoDI	Department of Defense Instruction
LOC	Loss of Consciousness
MACE 2	Military Acute Concussion Evaluation 2

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
MHS	Military Health System
mTBI	Mild Traumatic Brain Injury
NSI	Neurobehavioral Symptom Inventory
PCM	Primary Care Manager
PRA	Progressive Return to Activity
PTA	Post Traumatic Amnesia
SM	Service Member
SSgt	Staff Sergeant
TBI	Traumatic Brain Injury
VA	Veterans Affairs

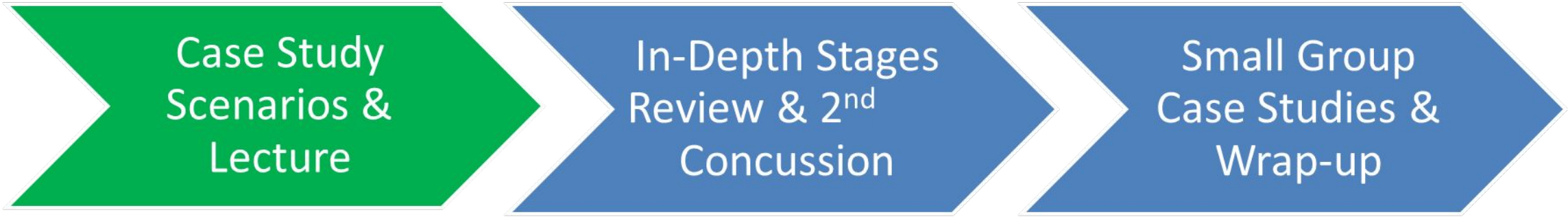
Learning Objectives

- **Explain** the role of this clinical recommendation and overall goal for recovery following concussion/mild traumatic brain injury (mTBI)
- **Identify** the activity goal for each stage and minimum rest requirements
- **Recognize** the criteria for progression through each activity stage
- **Identify** the criteria for referral to a rehabilitation provider for the daily monitored progressive return to activity process
- **Apply** guidance for activity following concussion/mTBI through knowledge checks and case studies

What to Expect Today

- Review training materials
  - Student Workbook with case study exercises
  - Progressive Return to Activity reference card
  - *What You Should Know About Concussions* brochure
  - *Return to Activity Educational Brochure*
  - DVBIC clinical recommendation
  - *Patient Activity Guidance After Concussion*
- Part 1: Case study scenarios and lecture
- Part 2: In-depth stages review and second concussion
- Part 3: Small group case studies and wrap-up

PART 1

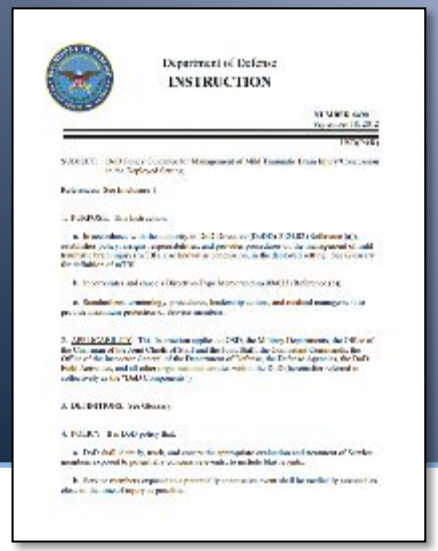

Case Study Scenarios & Lecture
In-Depth Stages Review & 2nd Concussion
Small Group Case Studies & Wrap-up

Purpose of Clinical Recommendation

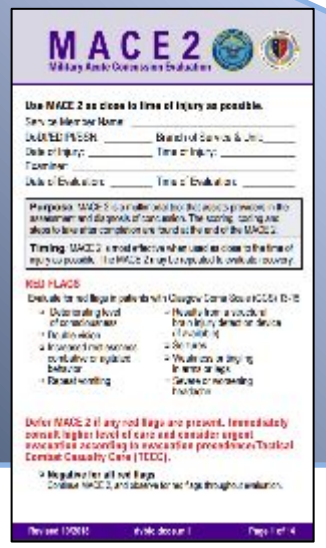
- Provide guidance for primary care managers (PCMs) in the deployed and non-deployed settings for progressive return to activity following a concussion/mTBI
- Offer a standardized approach for service members (SMs) who remain symptomatic after sustaining a concussion/mTBI
- Identify recommended criteria for referral to the rehabilitation provider for the daily monitored return to activity process
- Goals:
  1. To return SMs to pre-injury activity as quickly and safely as possible
  2. To promote standardization of care following mTBI in the Military and Veterans Health Systems

Important Documents

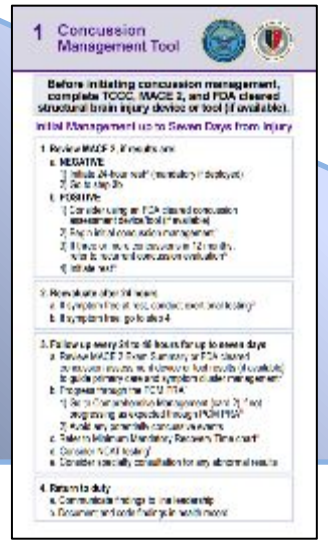
DoDI 6490.11
Policy



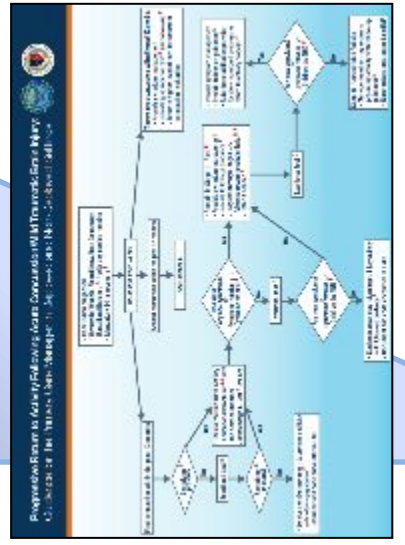
MACE 2
Assessment



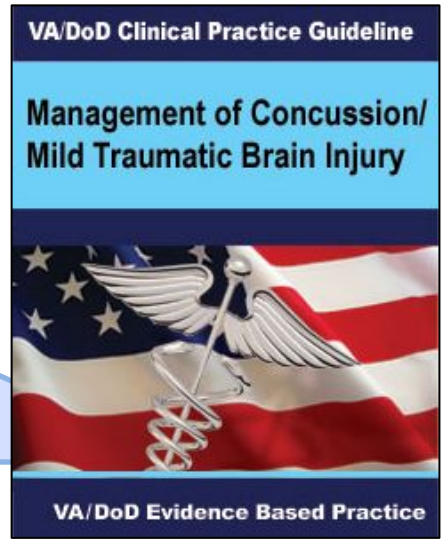
CMT
Abbreviated Management



PRA
Abbreviated Management



DoD/VA CPG
Extensive Management



"Medically Ready Force…Ready Medical Force"

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.

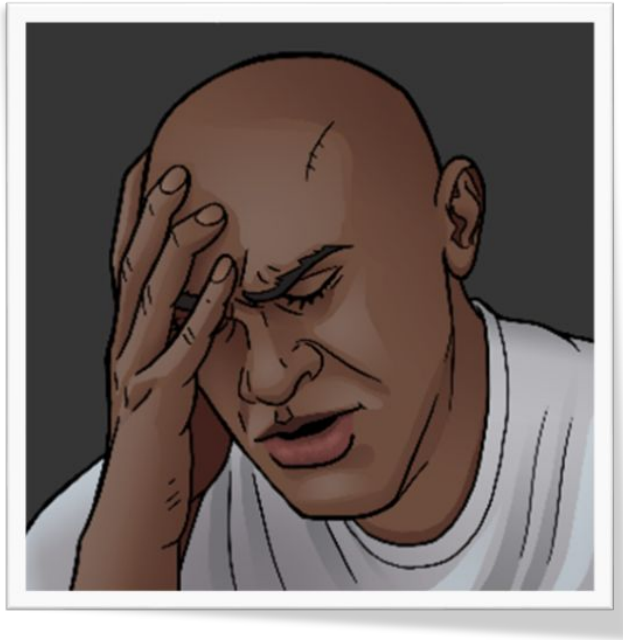
One of his buddies who was playing football with him said he was conscious the entire time, and that he walked off the field with no difficulty. It’s two hours since the injury, and he complains of a mild headache, slight dizziness and very mild nausea.

Question 1:

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

DoD Definition of Traumatic Brain Injury

- A traumatically induced structural injury or physiological disruption of brain function, as a result of an external force, that is indicated by new onset or worsening of at least one of the following clinical signs immediately following the event:
  - Any alteration in mental status (e.g., confusion, disorientation, slowed thinking, etc.). (**AOC**)
  - Any period of loss of or a decreased level of consciousness, observed or self-reported. (**LOC**)
  - Any loss of memory for events immediately before or after the injury. (**PTA**)



Identifying Concussion

Severity	Mild (Concussion)	Moderate	Severe
Structural imaging (Computed tomography)	Normal	Normal or abnormal	Normal or abnormal
Loss of consciousness (LOC)	0 to 30 minutes	>30 minutes to <24 hours	>24 hours
Alteration of consciousness (AOC)	A moment up to 24 hours	> 24 hours	>24 hours
Post-traumatic amnesia (PTA)	0 to 1 day	>1 day to <7 days	>7 days

Scenario #1:

No Prior Concussions (continued)

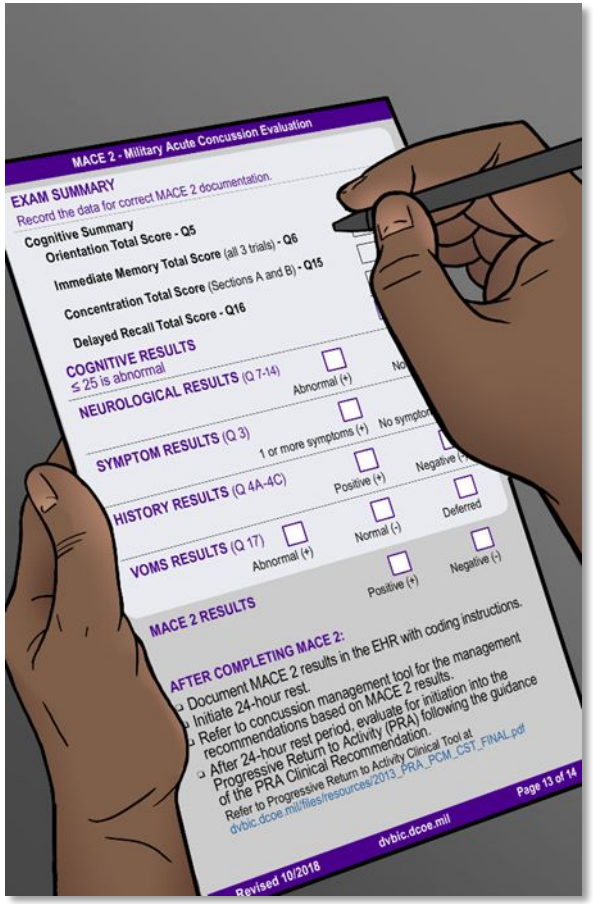
You perform a MACE 2 exam and he screens positive for concussion, with a normal neurologic examination. As stated before, he complains of a headache of 2/10, mild nausea and very slight dizziness. He lives close to base and says he's off from work for the rest of the day. His vital signs are:

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

Question 2:

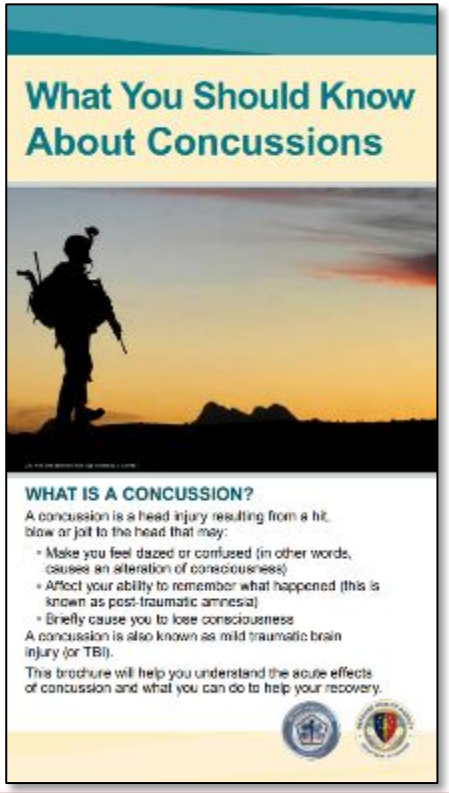
What two things should you do as part of SSgt Rogers's discharge plan? These two things should be done for <u>EVERY</u> patient who has sustained a concussion.

An appointment is scheduled the following day in sick call.



Education

- Education is the single most effective intervention following acute concussion showing the greatest decrease in the number and duration of symptoms

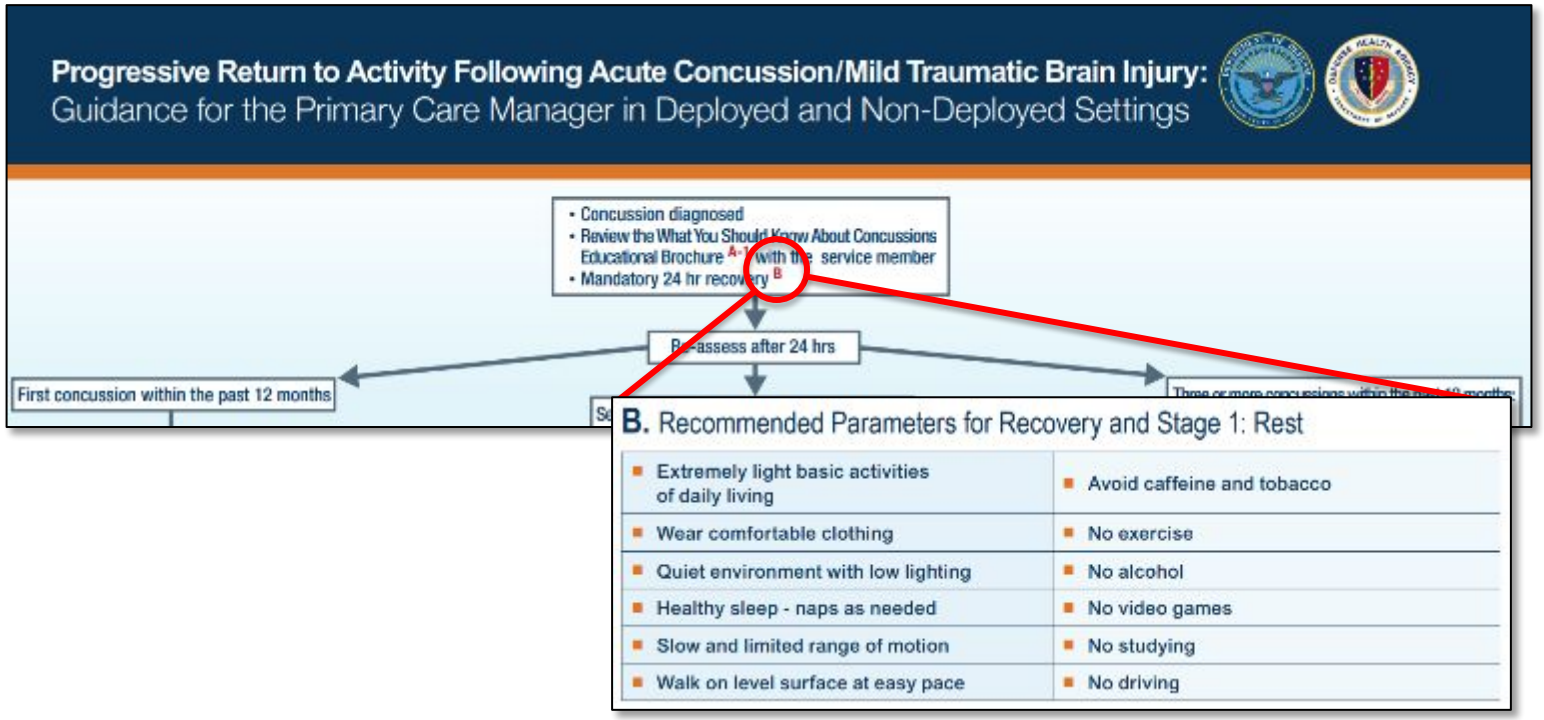


What You Should Know About Concussions brochure:

- Initial patient education source and should be given to all SMs at time of diagnosis of concussion
- Used in the first 24 hours to establish expectation of recovery

Initial Diagnosis of Concussion

- All patients receive *What You Should Know About Concussions* brochure
- Mandatory 24-hour rest/recovery
- Re-assess after 24 hours



Scenario #1:

No Prior Concussions (continued)

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 PRA Reference Card algorithm 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.

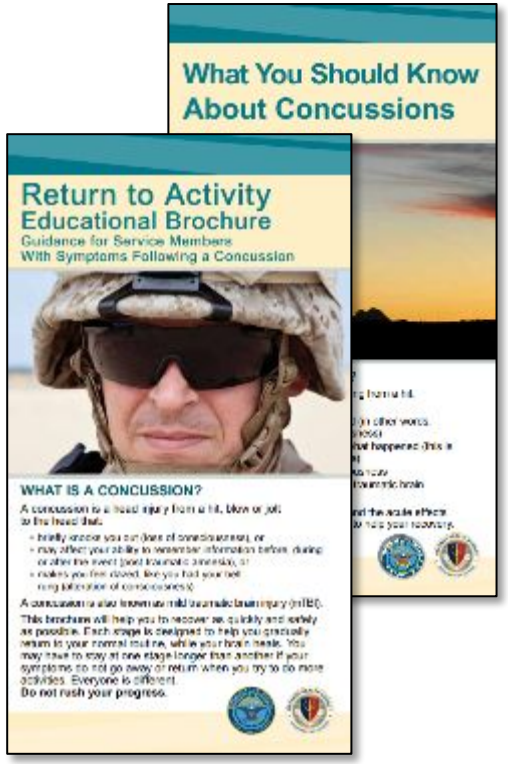
Role of the Primary Care Manager

- After a concussion is diagnosed and confirmed, you want to enter a new **ERA** of concussion care:

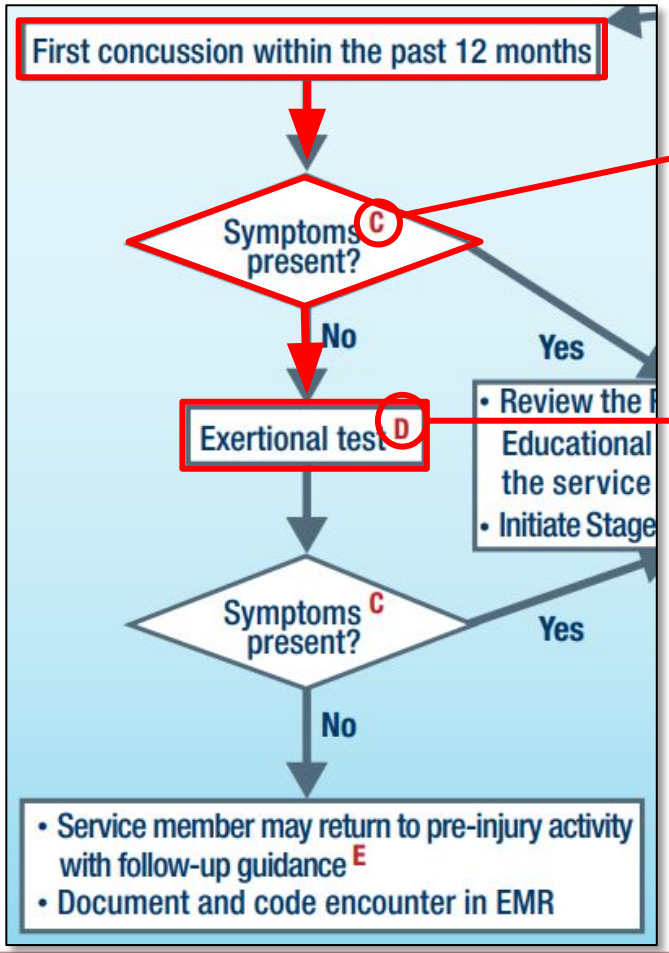
E → Provide **E**ducation
- Education is the single most effective intervention following acute mTBI, showing the greatest decrease in symptom number and duration
- *What You Should Know About Concussions* brochure
- *Return to Activity Educational Brochure*

R → Provide mandatory **R**est
- 24 hours for any concussion (no matter how many they've had in the past 12 months)

A → **A**sk how many concussions they've had
- Algorithms based on number of concussions in previous 12 months
- For three or more concussions within 12 months refer to higher level of care for recurrent concussion evaluation



Algorithm Review:
First Concussion Asymptomatic



C. Symptoms

Confusion (24 hrs)	Irritability
Unsteady on feet	Vertigo/dizziness
Headaches	Photophobia
Phonophobia	Sleep issues

D. Exertional Testing

- 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
- Maintain this level of exertion for approximately two minutes
- Assess for symptoms (headache, vertigo, photophobia, balance, dizziness, nausea, visual changes, etc.)
- If symptoms/red flags exist with exertional testing, stop testing, and consult with provider

Recommendation

If possible, patient should wear gear they would normally use in their job/MOS while doing exertional testing.

Scenario #1:

No Prior Concussions (continued)

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.

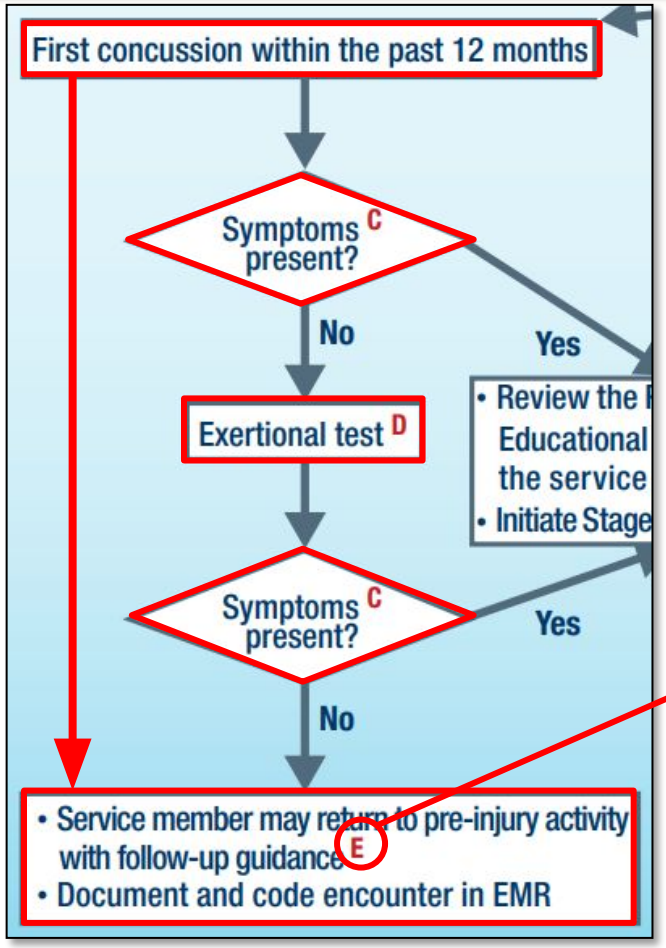
Question 4:

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?

Algorithm Review:
First Concussion Follow-up Guidance

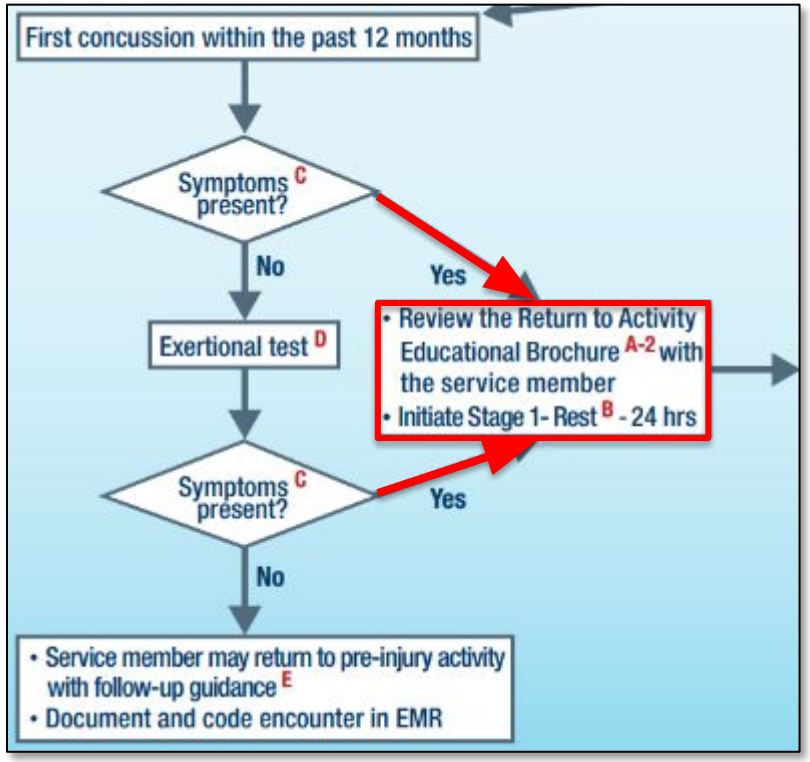


E. Follow-up Guidance

Instruct patient to follow up with provider if:

- symptoms return
- symptoms increase in number and/or severity
- not able to progress for two consecutive days for first concussion

Algorithm Review:
First Concussion Additional Rest (24 hours)



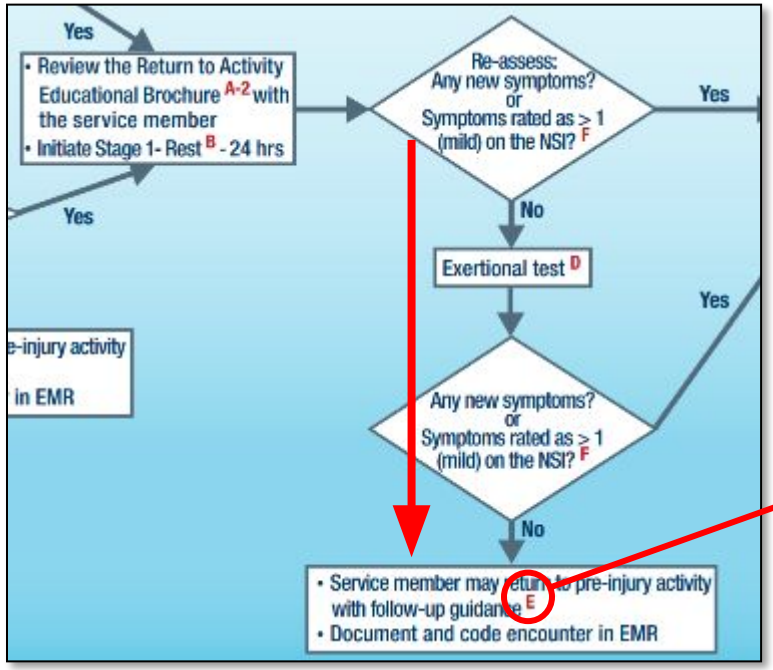
- Two circumstances to give the SM 24 hours of further rest:
  1) Symptoms present after the initial 24 hours of rest
  2) Exertional testing completed after the initial 24 hours and patient has symptoms present
- In these cases:
  - Use the *Return to Activity Educational Brochure* to provide a detailed review of allowable activities for each stage
  - Initiate Stage 1 of PRA protocol; 24-hour REST period

Algorithm Review:
First Concussion □ Asymptomatic □ Exertion Test

- If SM has no new symptoms **OR**
- SM has no symptoms NSI rated > 1 (mild)

→ **Exertion Test**

- If no symptoms with exertion, or NSI score of 0 or 1→ Return to pre-injury activity



E. Follow-up Guidance

Instruct patient to follow up with provider if:

- symptoms return
- symptoms increase in number and/or severity
- not able to progress for two consecutive days for first concussion

Scenario #1:
Recovery

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!

Progressive Activity Process

- Six stage approach from *Rest* to *Unrestricted Activity*
- Progression is described across physical, cognitive and vestibular domains
- Uses the Neurobehavioral Symptom Inventory (NSI) for symptom tracking
- Resting heart rate and blood pressure are used as physiological measures to evaluate activity tolerance

DoD photo by Sgt. Justin Naylor (left), MWR West Point (center), US MilitaryCycling.com (right)

Progressive Activity Stages

Stage	Description	Objective
1	Rest	Symptom resolution
2	Light Routine Activity	Introduce and promote limited effort
3	Light Occupation-oriented Activity	Increase light activities that require a combined use of physical, cognitive and/or balance skills
4	Moderate Activity	Increase the intensity and complexity of physical, cognitive and balance activities
5	Intensive Activity	Introduce activity of duration and intensity that parallels the service member's typical role, function and tempo
6	Unrestricted Activity	Return to pre-injury activities

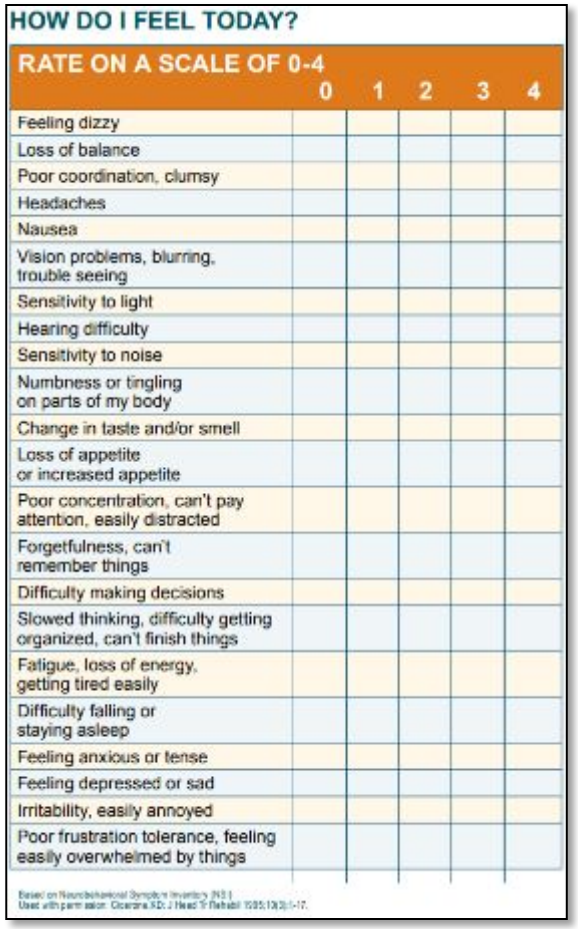
Neurobehavioral Symptom Inventory

- Twenty-two item inventory of non-specific but common mTBI symptoms
- Symptoms reported on a scale of 0 to 4
- NSI becomes part of the medical record

RATE YOUR SYMPTOMS:

Each morning, rate your symptoms based on the table on the following page from 0-4.

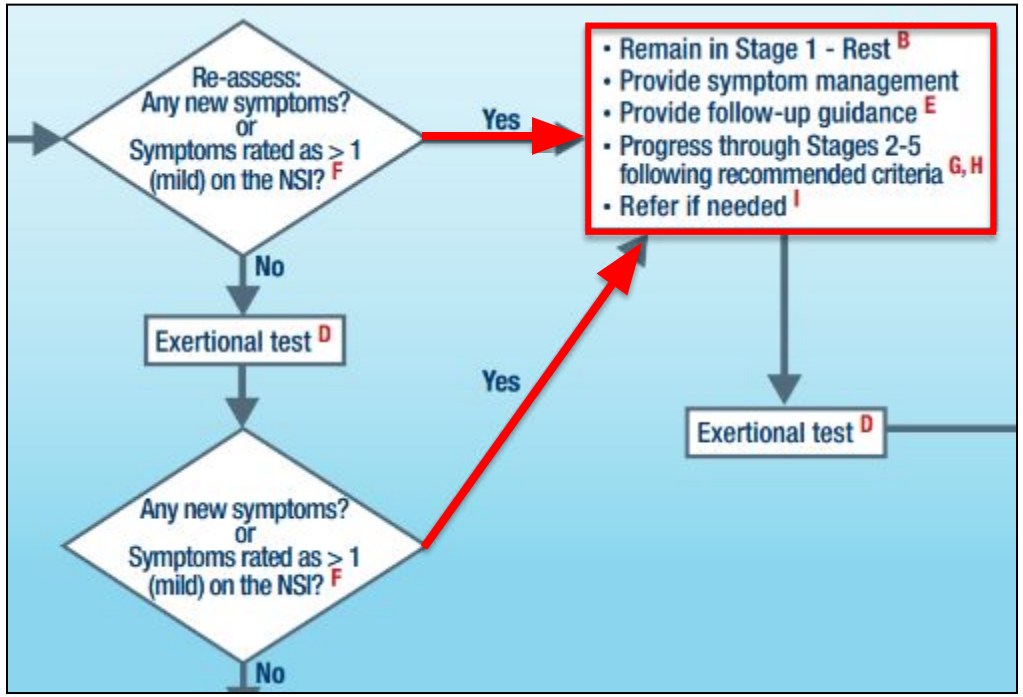
0 = Rarely or never present. (None)
1 = Occasionally present but doesn't disrupt my activities. (Mild)
2 = Often present and occasionally disrupts my activities. I feel somewhat concerned. (Moderate)
3 = More frequently present and disrupts my activities. I can only do fairly easy, simple things. I feel I need help. (Severe)
4 = Almost always present. I can't perform at work, school or home because of it and I need help. (Very Severe)



HOW DO I FEEL TODAY?

RATE ON A SCALE OF 0-4	0	1	2	3	4
Feeling dizzy					
Loss of balance					
Poor coordination, clumsy					
Headaches					
Nausea					
Vision problems, blurring, trouble seeing					
Sensitivity to light					
Hearing difficulty					
Sensitivity to noise					
Numbness or tingling on parts of my body					
Change in taste and/or smell					
Loss of appetite or increased appetite					
Poor concentration, can't pay attention, easily distracted					
Forgetfulness, can't remember things					
Difficulty making decisions					
Slowed thinking, difficulty getting organized, can't finish things					
Fatigue, loss of energy, getting tired easily					
Difficulty falling or staying asleep					
Feeling anxious or tense					
Feeling depressed or sad					
Irritability, easily annoyed					
Poor frustration tolerance, feeling easily overwhelmed by things					

Algorithm Review:
PRA Stage Progression

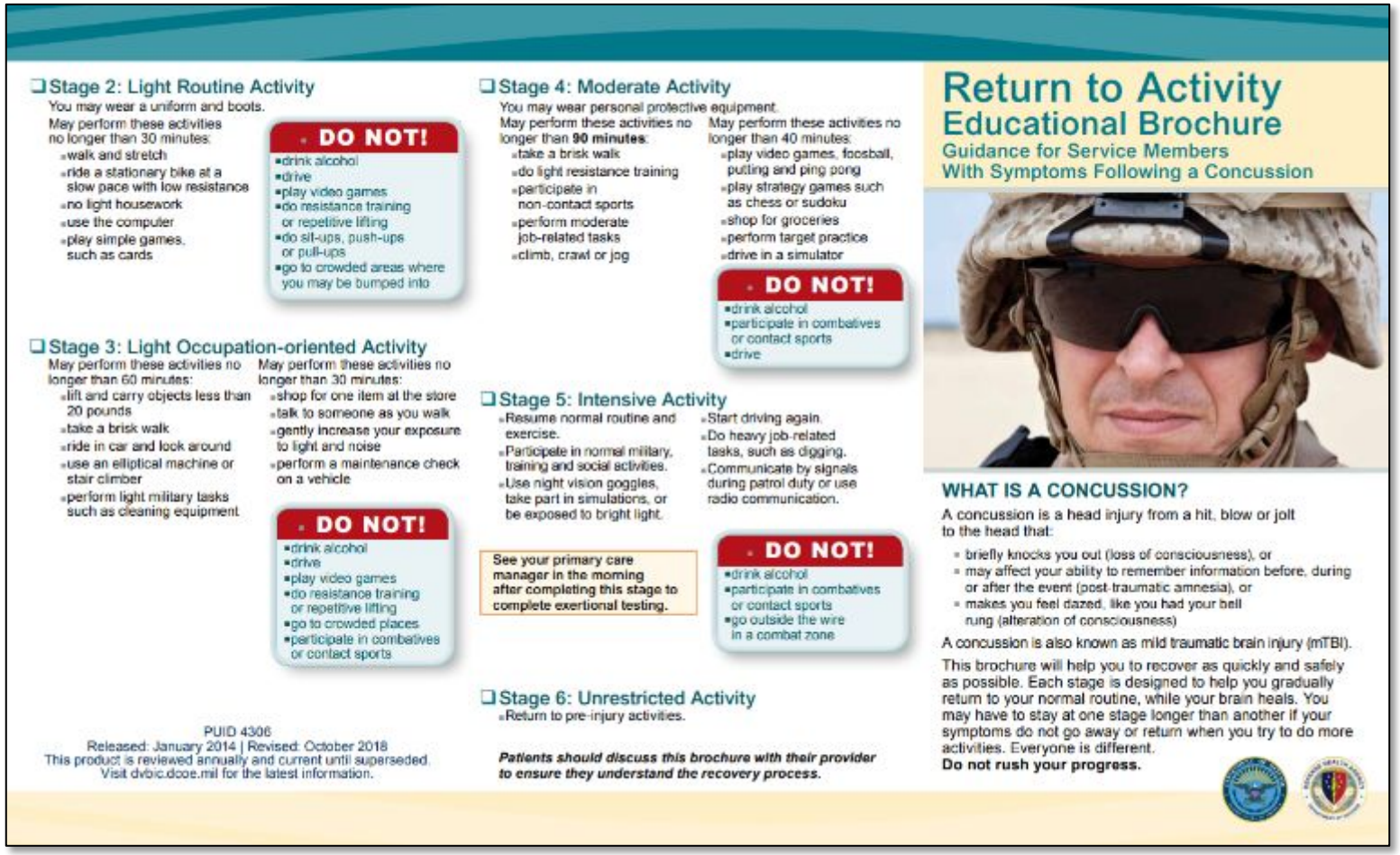


- Two circumstances that put the SM into the stage progression of the PRA:

1. After 24 hours of rest, the patient has new symptoms or symptoms with a NSI rated >1

2. Patient has performed exertional testing after 24 hours of rest and is symptomatic

Return to Activity Educational Brochure



❑ Stage 2: Light Routine Activity

You may wear a uniform and boots.

May perform these activities no longer than 30 minutes:

- walk and stretch
- ride a stationary bike at a slow pace with low resistance
- no light housework
- use the computer
- play simple games, such as cards

DO NOT!

- drink alcohol
- drive
- play video games
- do resistance training or repetitive lifting
- do sit-ups, push-ups or pull-ups
- go to crowded areas where you may be bumped into

❑ Stage 3: Light Occupation-oriented Activity

May perform these activities no longer than 60 minutes:

- lift and carry objects less than 20 pounds
- take a brisk walk
- ride in car and look around
- use an elliptical machine or stair climber
- perform light military tasks such as cleaning equipment

May perform these activities no longer than 30 minutes:

- shop for one item at the store
- talk to someone as you walk
- gently increase your exposure to light and noise
- perform a maintenance check on a vehicle

DO NOT!

- drink alcohol
- drive
- play video games
- do resistance training or repetitive lifting
- go to crowded places
- participate in combatives or contact sports

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Released: January 2014 | Revised: October 2018
This product is reviewed annually and current until superseded.
Visit dvbic.dcoe.mil for the latest information.

❑ Stage 4: Moderate Activity

You may wear personal protective equipment.

May perform these activities no longer than **90 minutes**:

- take a brisk walk
- do light resistance training
- participate in non-contact sports
- perform moderate job-related tasks
- climb, crawl or jog

May perform these activities no longer than 40 minutes:

- play video games, foosball, putting and ping pong
- play strategy games such as chess or sudoku
- shop for groceries
- perform target practice
- drive in a simulator

DO NOT!

- drink alcohol
- participate in combatives or contact sports
- drive

❑ Stage 5: Intensive Activity

- Resume normal routine and exercise.
- Participate in normal military, training and social activities.
- Use night vision goggles, take part in simulations, or be exposed to bright light.
- Start driving again.
- Do heavy job-related tasks, such as digging.
- Communicate by signals during patrol duty or use radio communication.

See your primary care manager in the morning after completing this stage to complete exertional testing.

DO NOT!

- drink alcohol
- participate in combatives or contact sports
- go outside the wire in a combat zone

❑ Stage 6: Unrestricted Activity

- Return to pre-injury activities.

Patients should discuss this brochure with their provider to ensure they understand the recovery process.

Return to Activity
Educational Brochure
Guidance for Service Members With Symptoms Following a Concussion

WHAT IS A CONCUSSION?

A concussion is a head injury from a hit, blow or jolt to the head that:

- briefly knocks you out (loss of consciousness), or
- may affect your ability to remember information before, during or after the event (post-traumatic amnesia), or
- makes you feel dazed, like you had your bell rung (alteration of consciousness)

A concussion is also known as mild traumatic brain injury (mTBI).

This brochure will help you to recover as quickly and safely as possible. Each stage is designed to help you gradually return to your normal routine, while your brain heals. You may have to stay at one stage longer than another if your symptoms do not go away or return when you try to do more activities. Everyone is different.
Do not rush your progress.

"Medically Ready Force…Ready Medical Force"

Return to Activity Educational Brochure (Back)

WHAT SHOULD I EXPECT?

- Most people fully recover from concussions.
- Immediately or soon after the injury, you may have the symptoms noted on the table on the following page.
- Symptoms after a concussion can affect your performance, placing the safety of you or your unit at risk.
- These temporary symptoms resolve faster when your brain gets rest, so it is important for you to take time to gradually recover.
- Recovery is different for each person, but symptoms typically improve within hours, and resolve completely within days to weeks.

Red Flags: When Should I Seek Help?

If you experience any of the following, contact your primary care manager immediately:

- passing out or blackouts
- weakness or numbness of any part of the body
- one pupil larger or smaller than the other
- slurred speech or difficulty speaking
- changes in hearing, taste or vision
- difficulty recognizing people
- not knowing where you are
- worsening headache
- unsteady on feet
- seizures
- vomiting
- unusual behavior
- double vision
- something just isn't right

AVOID

- caffeine (it interferes with sleep)
- tobacco products
- sleeping aids or drugs, unless recommended to you by your health care provider

RATE YOUR SYMPTOMS:

Each morning, rate your symptoms based on the table on the following page from 0-4.

0 = Rarely or never present. (None)
1 = Occasionally present but doesn't disrupt my activities. (Mild)
2 = Often present and occasionally disrupts my activities. I feel somewhat concerned. (Moderate)
3 = More frequently present and disrupts my activities. I can only do fairly easy, simple things. I feel I need help. (Severe)
4 = Almost always present. I can't perform at work, school or home because of it and I need help. (Very Severe)

HOW DO I FEEL TODAY?

RATE ON A SCALE OF 0-4	0	1	2	3	4
Feeling dizzy					
Loss of balance					
Poor coordination, clumsy					
Headaches					
Nausea					
Vision problems, blurring, trouble seeing					
Sensitivity to light					
Hearing difficulty					
Sensitivity to noise					
Numbness or tingling on parts of my body					
Change in taste and/or smell					
Loss of appetite or increased appetite					
Poor concentration, can't pay attention, easily distracted					
Forgetfulness, can't remember things					
Difficulty making decisions					
Slowed thinking, difficulty getting organized, can't finish things					
Fatigue, loss of energy, getting tired easily					
Difficulty falling or staying asleep					
Feeling anxious or tense					
Feeling depressed or sad					
Irritability, easily annoyed					
Poor frustration tolerance, feeling easily overwhelmed by things					

DAILY GUIDANCE

- Complete the table on the previous page every morning. If you rate your symptoms as None or Mild (0-1), then move on to the next stage.
- If any symptoms get worse or you develop new ones, immediately stop what you are doing and rest for the remainder of that day.
- If your symptoms go away or are rated as mild (0-1) the next morning, you may carefully try the activities that you were doing the day before. Make certain that you follow the guidelines closely and do a little less of the activity that caused your symptoms to worsen.
- If your symptoms are rated at 2 or higher on the NSI the next morning, go back to the last stage where you had no symptoms. Stay at that stage and contact your Primary Care Manager for further instructions.

WHAT SHOULD I DO?

After Mandatory 24 Hours of Recovery:

❑ Stage 1: Rest

Rest or do very light activity for another 24 hours. Only do basic things like eating, using the bathroom, resting and sleeping.

- Keep your head above your heart (when you put on your shoes, bring your foot to your knee).
- Sit down when dressing and showering if needed.
- Walk on level surfaces at an easy pace.
- Limit head movements that cause symptoms.
- Stay in a quiet environment with low lighting.
- Watch periods of television with rest breaks each hour.
- Sleep as needed.
- Dress comfortably.

After this stage, see your primary care manager to discuss symptoms and determine next steps.

DO NOT!

- work or study
- drink alcohol
- exercise
- drive
- hold your breath or grunt*
- exert yourself to the point of making your heart race
- play video games

*Pay attention to whether you are holding your breath when you bend over or are under stress.

Practice good sleep habits (get 7-8 hours)
See Healthy Sleep fact sheet at dvbic.dcoe.mil.

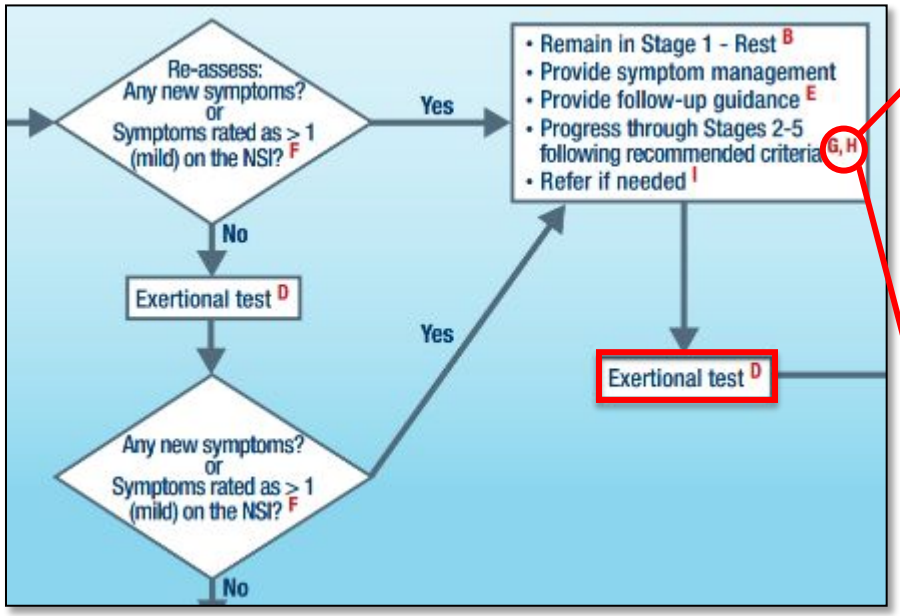
If your heart starts to race, immediately STOP what you are doing and rest.

Education:
Avoid Common Recovery-Prolonging Substances

- Education following mTBI should include:
  - Avoid “excessive” alcohol consumption
  - Avoid “excessive” caffeine and nicotine use
- Use of these substances may:
  - Increase or mask symptoms
  - Delay recovery
  - Affect blood pressure (BP) and heart rate

Algorithm Review:
Criteria for Progression

- If patient progresses through all five stages, return to clinic for exertion test



G. Criteria for Progression

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

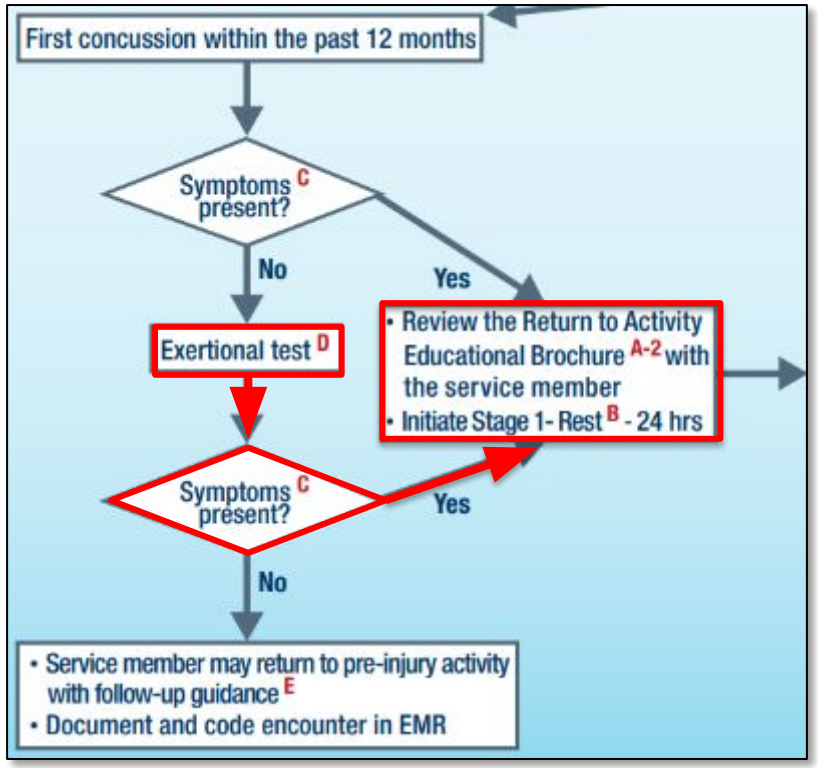
H. What to do When Symptoms Occur

1. If symptoms increase in number or severity during an activity, the service member should stop the activity and rest for the remainder of the day.
2. The following day, if symptoms are 2 or higher on the NSI, the service member should follow up with the PCM. If symptoms remain at 0 or 1 on the NSI, the service member may resume the previous day's stage.
3. When repeating the previous day's activity, if there is an increase in symptom number and severity, the service member should follow up with the PCM.

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.*

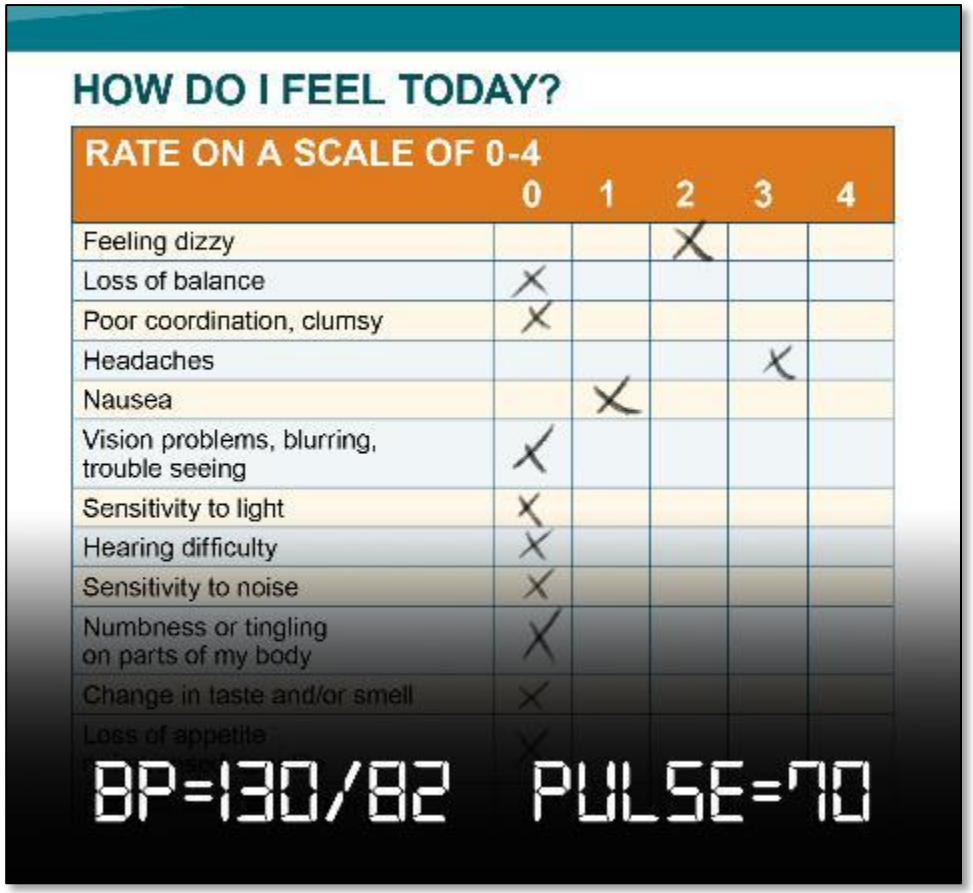


Scenario #2:
Symptomatic

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.



Scenario #2:

Symptomatic (continued)

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?

Scenario #2:

Symptomatic (continued)

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?

Scenario #2:

Symptomatic (continued)

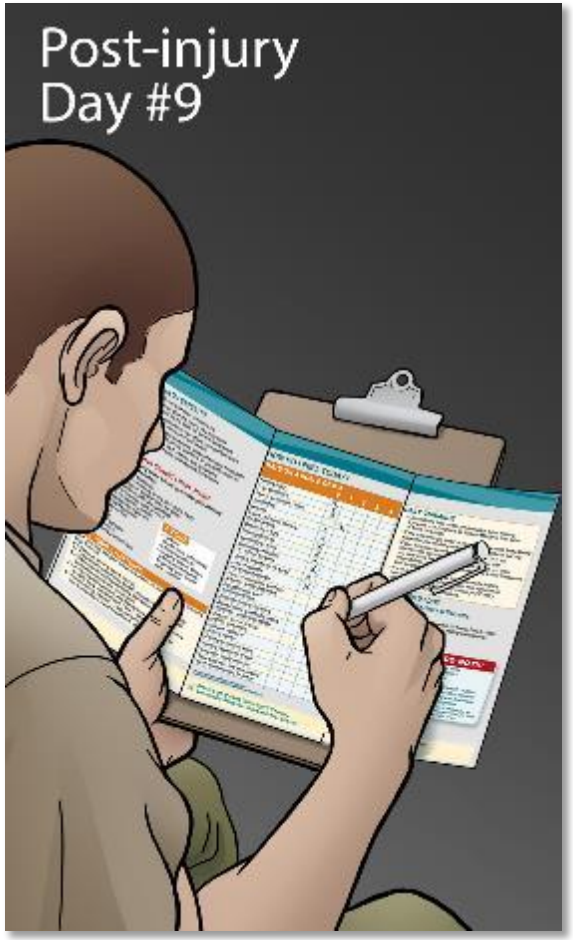
The patient decides to go back to work and feels comfortable advancing on his own.

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?



Scenario #2:
Symptomatic (continued)

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) Age*5 + 100

Question 10:

When you are ready to perform exertional testing on SSgt Rogers, what is the correct target heart rate range (as %) 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

Scenario #2:
Recovery

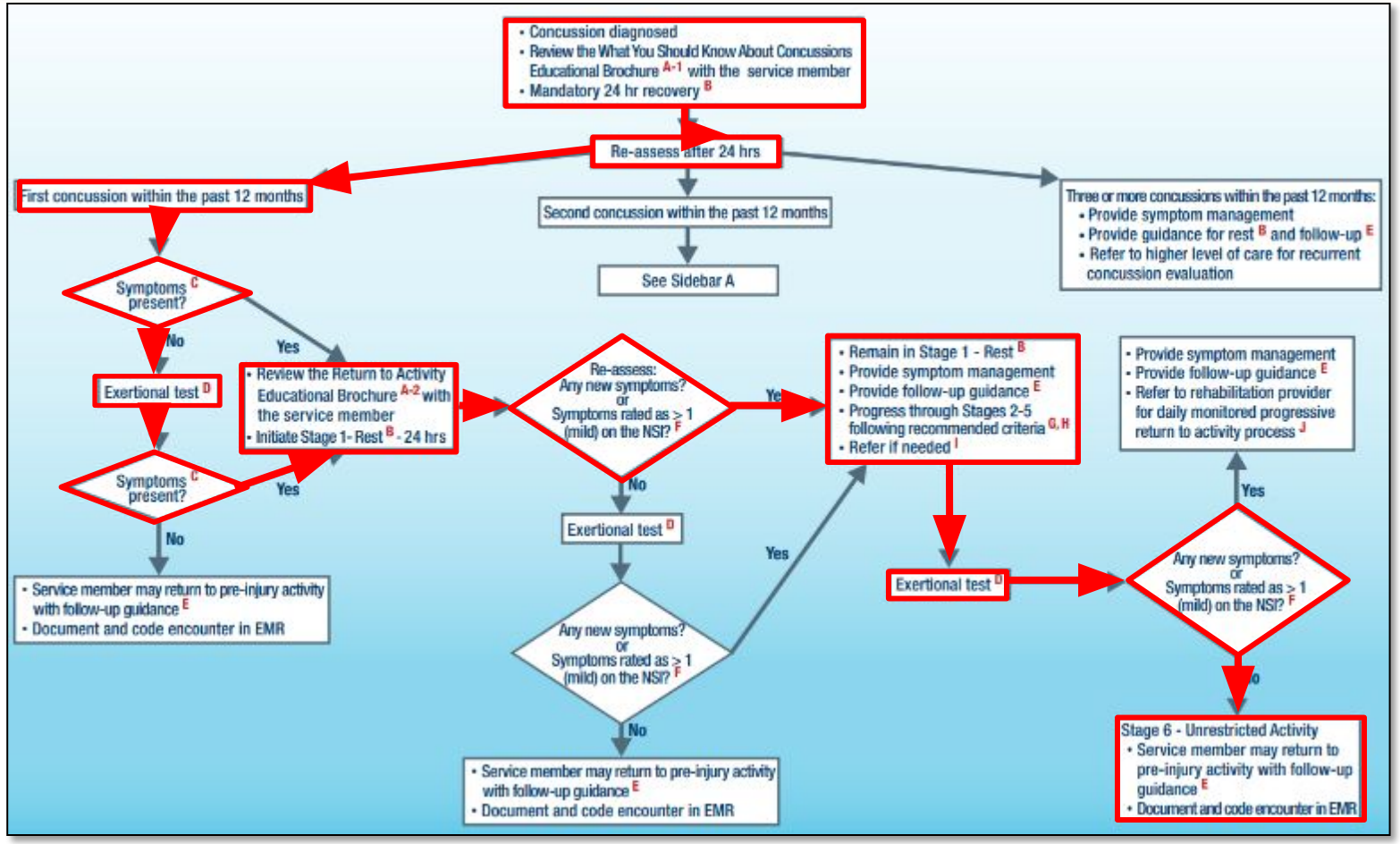
The patient performs the exertion test, has no increase in symptoms and says he is ready to “Get back into the fight!”

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

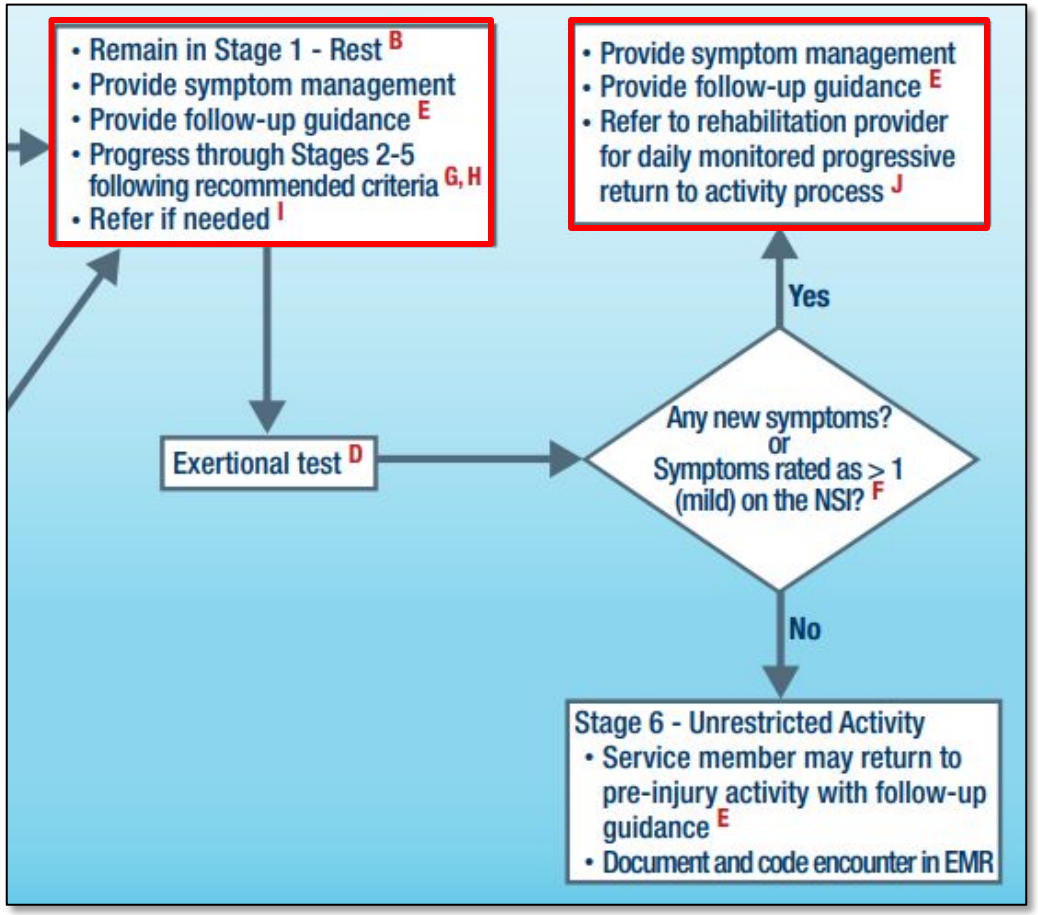
Make sure you document appropriately in AHLTA/MHS Genesis, and instruct the patient to return to clinic if he has worsening of symptoms.

Congratulations!

Algorithm Review:
Scenario #2



Algorithm Review:
Criteria for Rehabilitation Referral



- Refer to the rehabilitation provider for daily monitored progressive return to activity process **per provider judgment** or if:
  - Recovery is not progressing as anticipated
  - There is no progression in seven days
  - Symptoms are worsening
  - SM reports symptoms following exertional testing after Stage 5

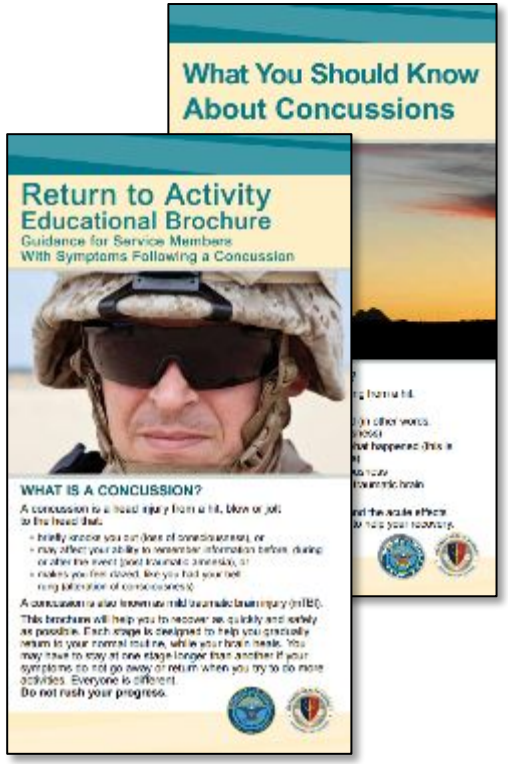
Remember ERA

- After a concussion is diagnosed and confirmed, you want to enter a new **ERA** of concussion care:

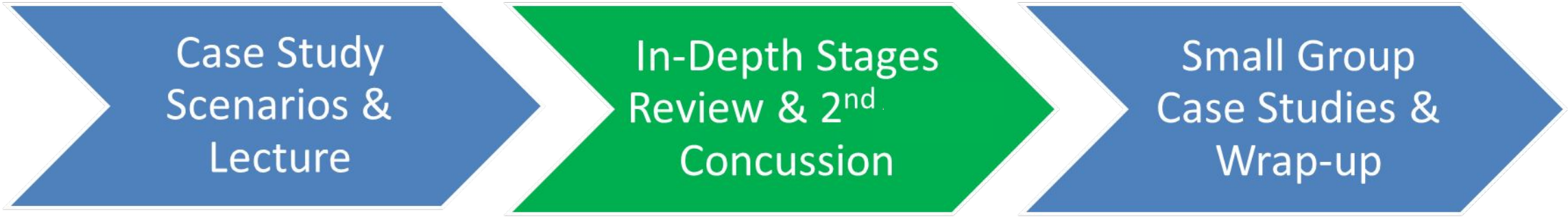
E → Provide **E**ducation
- Education is the single most effective intervention following acute mTBI, showing the greatest decrease in symptom number and duration
- *What You Should Know About Concussions* brochure
- *Return to Activity Educational Brochure*

R → Provide mandatory **R**est
- 24 hours for any concussion (no matter how many they've had in the past 12 months)

A → **A**sk how many concussions they've had
- Algorithms based on number of concussions in previous 12 months
- For three or more concussions within 12 months refer to higher level of care for recurrent concussion evaluation



PART 2


Case Study Scenarios & Lecture
In-Depth Stages Review & 2nd Concussion
Small Group Case Studies & Wrap-up

Stage 1: Rest

- **Objective**
  - Extremely light physical, cognitive and vestibular-balance activity with the goal of symptom resolution
- **Activity and rest guidelines**
  - Primarily rest with extremely limited cognitive activity
  - Basic activities of daily living and extremely light leisure activity
  - Extremely light vestibular-balance activity is permitted, including walking on level surfaces and limited head movements
  - No work, exercise, video games, studying or driving

Stage 2: Light Routine Activity

Objective

- Initiate and promote limited effort
- Activity limited to 30-min intervals or less followed by four hours of rest

Activities

- Outdoor or indoor light physical activities; stretching, walking, stationary cycling at low pace and resistance
- Cognitive activities such as computer use, leisure reading, and simple board games
- Vestibular and balance activities such as climbing stairs, putting on boots, and bending tasks
- NO video games, resistance training, weight lifting, driving, combatives or collision sports

Stage 3: Light Occupation-oriented Activity

- **Objective**
  - Increase intensity and complexity of exercise and cognitive activity
- **Activities** (in addition to previous stage)
  - Lift and carry objects < 20 lbs, use elliptical or stair climber machines, or light tasks such as clean military equipment
  - Cognitive activities such as increase exposure to light and noise, perform a maintenance check on vehicle or shop for one item
  - Balance activities including walking on uneven terrain, swimming (avoiding flip turns) or standing on one foot
  - Physical activities not > an hour followed by minimum four-hour rest; Light cognitive activities not ≤ 30 min followed by minimum 60-min rest
  - NO video games, driving, combatives or collision sports

Stage 4: Moderate Activity

- **Objective**
  - Increase in intensity and complexity of exercise and cognitive activity to match occupational demands
- **Activities** (in addition to previous stage)
  - Physical activities such as brisk hike, jogging or running (as can be tolerated), light resistance training or non-contact sports
  - Cognitive activity with greater demand such as video games, land navigation, driving simulator, weapons simulator or target practice
  - Vestibular/balance activities with greater demand such as swimming with flip turns or jumping rope
  - Physical activity ≤ 90 min followed by minimum six-hour rest; Cognitive activity ≤ 40 min followed by minimum 80-min rest
  - NO driving, combatives or collision sports

Stage 5: Intensive Activity

- **Objective**
  - Duration/intensity of activity parallels service member's typical role, function and tempo
- **Activity** (in addition to previous stage)
  - Resume usual physical exercise routine
  - Cognitive activities may include driving (as appropriate), weapons simulator or target practice
  - Vestibular/balance activities may include running, patrol duty, jump landing and use of night vision goggles
  - Physical activity duration is only limited if symptomatic; cognitive activity ≤ 50 min followed by rest
  - Cognitive activities include multitasking and problem solving
  - NO combatives or collision sports
- SM to see PCM after Stage 5 for exertional testing and before release to Stage 6

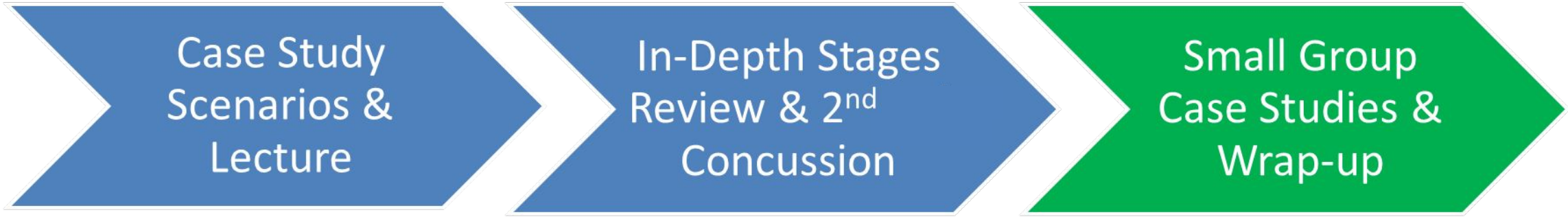
Stage 6: Unrestricted Activity

- **Objective:** Resume pre-injury activities
- Return to provider if symptoms return

2nd Concussion in 12 months (Sidebar A)

- Treated exactly the same as 1st Concussion at initial visit with education and rest
- Major differences from 1st Concussion protocol:
  - Review *Return to Activity Educational Brochure* sooner
  - Refer to rehabilitation provider sooner
  - Hold at Stage 2 minimum of 5 days for symptom resolution before progressing to higher stages

PART 3


Case Study Scenarios & Lecture
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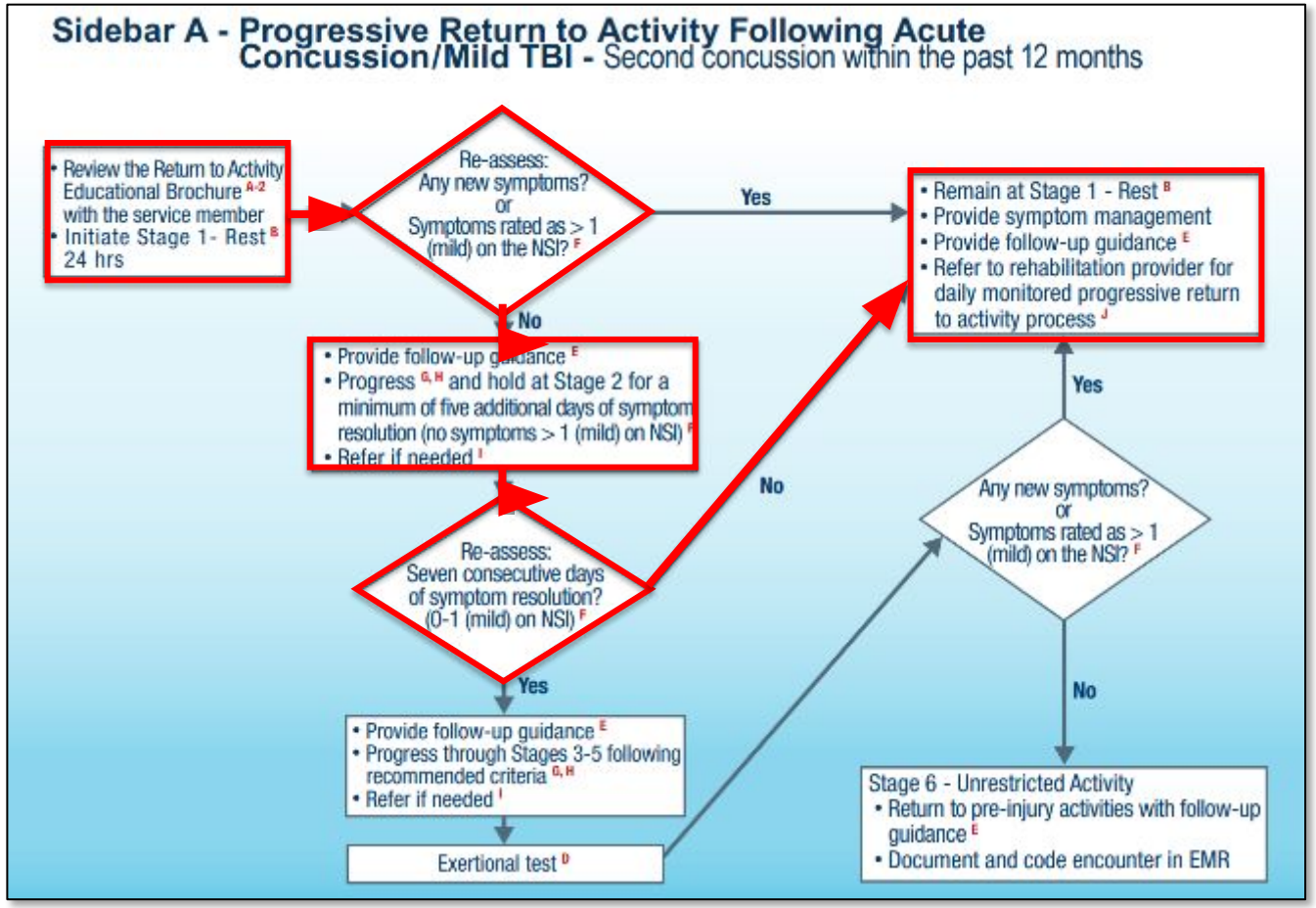
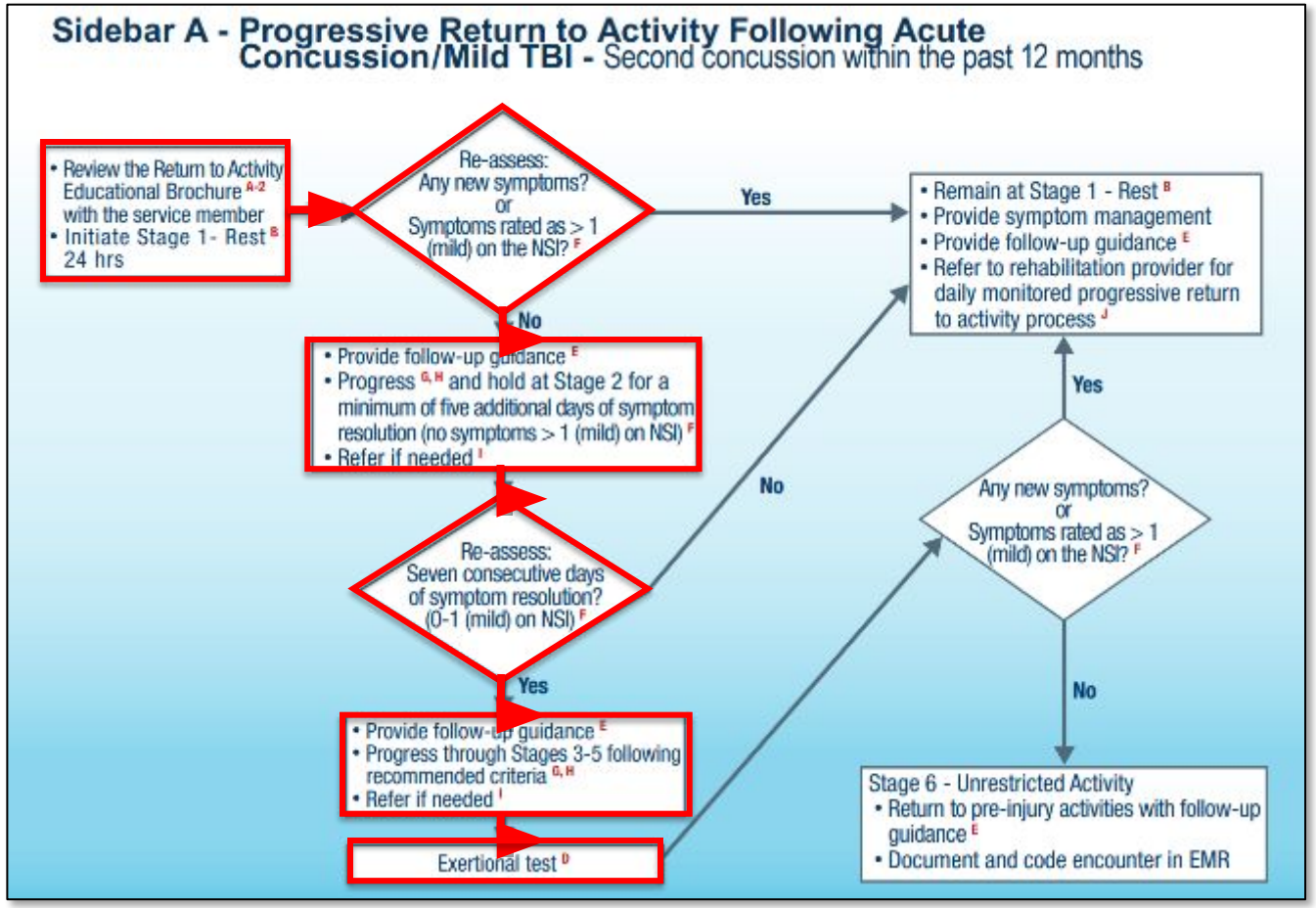
Algorithm Review:
Case Study #1



Algorithm Review:
Case Study #2



Key Points

- Remember we're in a new **ERA** … **E**ducation, Mandatory 24 hours of **R**est and **A**sk # of previous concussions on <u>all</u> concussed patients
- Progressive return to activity is recommended for SMs who remain symptomatic after completing the mandatory recovery period
- If a patient complains of worsening symptoms during the day at any given stage, they should be told to rest for the remainder of that day and the following day; they should return to the previous stage in which they were asymptomatic
- If a SM fails to progress for more than seven days, they should be referred to a rehabilitation provider or concussion care specialist
- The SM is not required to do all of the activities in the PRA brochure to advance (the examples provided are for reference)
- It's recommended that a patient remain in each stage for a <u>minimum</u> of one day

Key Points (continued)

First Concussion

- SM may return to pre-injury activity level if:
  - They remain asymptomatic or has a 1 (mild) NSI score after exertional testing
- Exertional testing may be performed:
  - If they're asymptomatic after 24-hour mandatory recovery period
  - If SM has no new symptoms or has a 1 (mild) NSI score following Stage 1 (Rest)
  - After successfully completing Stage 5 (Intensive Activity)

Second Concussion

- SM may return to pre-injury activity level if:
  - SM is asymptomatic for seven consecutive days *and* remains asymptomatic or, after completing Stage 5 (Intensive Activity), has a 1 (mild) NSI score following exertional testing

Contact

Insert presenter contact information

Acknowledgements

- All illustrations created by Kori Zick (DVBIC)

References

Defense and Veterans Brain Injury Center (DVBIC). (2014). Progressive return to activity following acute concussion/mild traumatic brain injury: Guidance for the primary care manager in deployed and non-deployed settings. Retrieved from https://dvbic.dcoe.mil/system/files/resources/1624.1.2.2_PRA_PCM_CR_508.pdf

Vanderploeg, R. D., Silva, M. A., Soble, J. R., Curtiss, G., Belanger, H. G., Donnell, A. J., & Scott, S. G. (2013). The structure of postconcussion symptoms on the Neurobehavioral Symptom Inventory: A comparison of alternative models. *Journal of Head Trauma Rehabilitation 30*(1), 1-11. doi: 10.1097/HTR.0000000000000009

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