

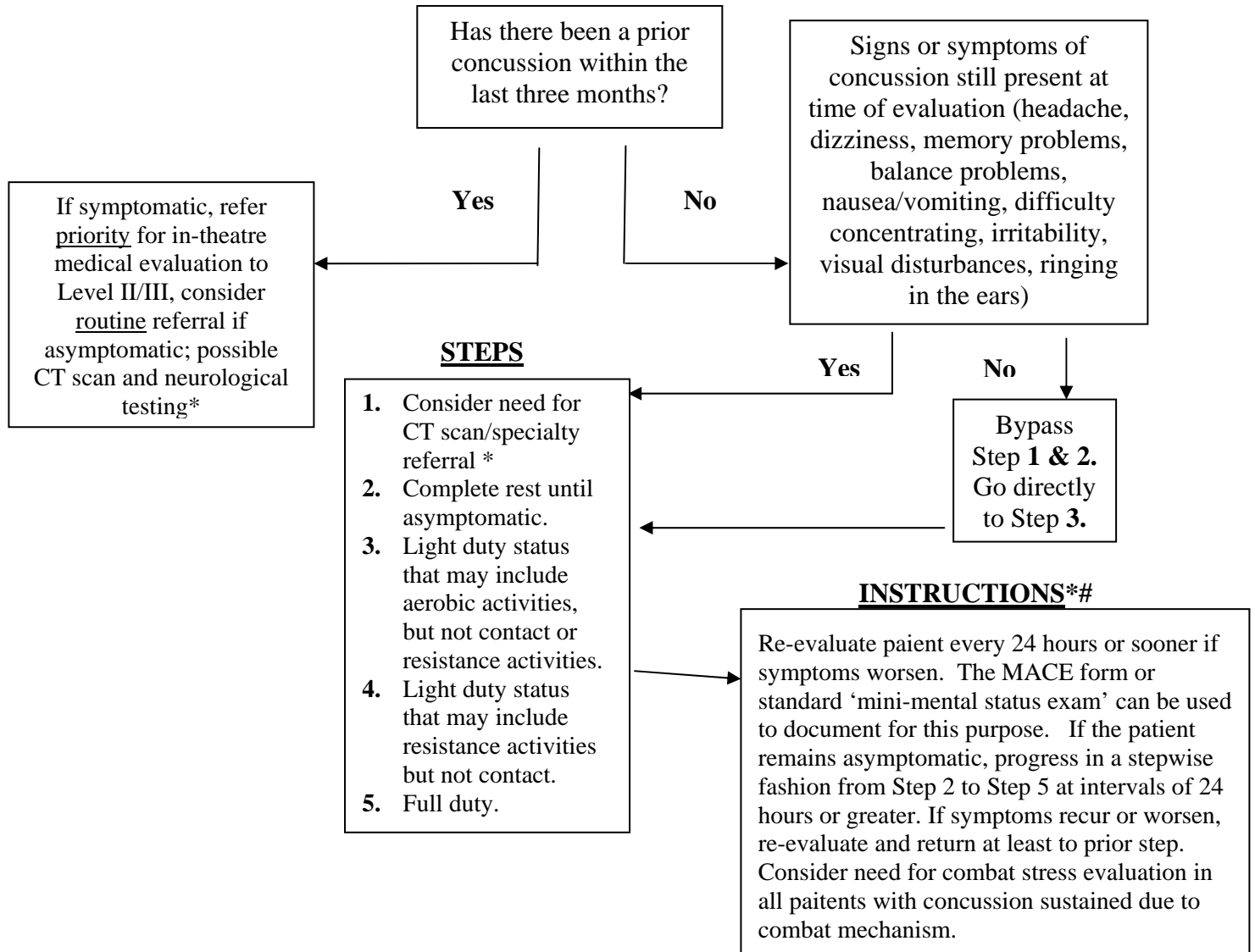
GUIDELINE ONLY—NOT A SUBSTITUTE FOR CLINICAL JUDGEMENT AND SUBJECT TO OVERRIDING OPERATIONAL CONSIDERATIONS Updated: August 2006

**JTTS CLINICAL PRACTICE GUIDELINES FOR**

**IN-THEATRE MANAGEMENT OF MILD TRAUMATIC BRAIN INJURY (CONCUSSION)**

Anyone involved in an explosion/blast, fall, blow to the head and/or motor vehicle crash who was dazed, confused, “saw stars” or lost consciousness (even momentarily) should be considered to have suffered a concussion.

**NOTE** Certain signs or symptoms will warrant a prompt medical evaluation\*, potentially including neuro imaging (see **Red Flags** # below)



**Red Flags#:** Serious signs to watch for over first two days after injury:

\*Neuro imaging, specialty referral and neuro testing at discretion of healthcare provider based on H&P/expertise

Refer for medical evaluation\* immediately for any of the following:

Double vision	Seizures
Breathing difficulties	Slurred speech
Headache that worsens	Unsteady on feet
Can't recognize people or places/Disorientation	Repeated vomiting
Can't be awakened easily	Weakness or numbness in arms/legs
Behaves unusually or seems confused and irritable	Progressively declining neurological examination

**#NOTE:** any patient with concussion who is either admitted to the hospital for >24 hours or develops a Red Flag sign/symptom should remain at Step 4 and NOT be returned to full duty status or resume any ‘off-FOB’ activity until 4 weeks from the time symptoms resolve. Casualties suffering 3 such events during a single deployment should remain in ‘no off-FOB activity’ status, be re-deployed or evacuated.

**JTTS CLINICAL PRACTICE GUIDELINES FOR  
IN-THEATRE MANAGEMENT OF MILD TRAUMATIC BRAIN INJURY (CONCUSSION)  
ADMINISTRATION INSTRUCTIONS FOR THE MACE**

**Immediate Memory:** The words in the immediate memory section should be read to the patient in the same order as they appear on the test. The patient should then be asked to repeat back as many words as they can recall in any given order. This procedure is then repeated two more times for a total of three trials. A check mark is given for all words correctly recalled over all three trials.

**TRIAL 1:** “I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order.”

**TRIALS 2&3:** “I am going to repeat that list again. Again, repeat back as many as you can remember in any order, even if you said them before.”

Two important points should be noted: 1) The subject should be aware that on Trials 2 & 3 they should repeat even those words they had recalled on the previous trial or trials; 2) Following trial 3, the patient should **not** be given any cue regarding the delayed recall segment which will follow a few minutes later.

**Orientation:** This segment is intended to assess the patient’s awareness of the accurate time, place and circumstance. Specifically, instruct the patient that:  
“I am going to ask you some questions about where we are, are you ready?”  
“What month is it?”  
“What is the date or day of the month?”  
“What day of the week is it?”  
“What year is it?”

- The patient is granted a check mark for each correct response. All answers must be precise to earn the check mark. The total possible correct for the Orientation section is 4.

**Neurological Screening Exam:** Self-explanatory

**Concentration:** Inform the patient that,  
“I am going to read you a string of numbers, and when I am finished, repeat them back to me backwards, that is, in reverse order of how I read them to you. For example, if I say 1-2-3, you would say 3-2-1.”

- If a patient is correct on the first trial of a string length, proceed to the next string length. If incorrect, administer the second trial of the same string length. Proceed to the next string length if correct on the second trial. Discontinue after failure on both trials of the same string length and document 2 missed string lengths.
- Following the reverse digit span test, instruct the patient: “Now tell me the months in reverse order. That is, start with December and end with January.”
- One check mark is awarded for each correct string length on the reverse digit span test and one check mark for the months of the year in correct reverse order, for a possible of 5 total check marks on the Concentration section of the exam.

**Delayed Recall:** This segment assesses the patient’s ability to retain previously learned information by asking him or her to recall as many words as possible from the initial list. Specifically, ask the patient: “Do you remember that list of words I read a few minutes earlier? I want you to tell me as many words from the list as you can remember in any order.” Check mark is awarded for each correct answer.

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**JTTS CLINICAL PRACTICE GUIDELINES FOR  
THE TREATMENT OF MILD TRAUMATIC BRAIN INJURY  
Military Acute Concussion Evaluation (MACE)  
Developed in Conjunction with Defense & Veterans Brain Injury Center**

If no other H&P format or neuro assessment tool is available, use this form to assist in the evaluation of any patient involved in an explosion/blast, fall or motor vehicle crash who was dazed, confused, "saw stars" or lost consciousness, even momentarily.

Patient Name: \_\_\_\_\_

SS#: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Unit: \_\_\_\_\_ Date of Injury: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time of Injury: \_\_\_\_\_

Clinic: \_\_\_\_\_ Examiner: \_\_\_\_\_

Date of Evaluation: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time of Evaluation: \_\_\_\_\_

**History: (I – VIII)**

**I. Description of Incident**

- a) What happened?
- b) Tell me what you remember.
- c) Were you dazed, confused, "saw stars"? Yes No
- d) Did you hit your head? Yes No

**II. Cause of Injury (Circle all that apply):**

- 1) Explosion/Blast 4) Fragment 7) Other \_\_\_\_\_
- 2) Blunt object 5) Fall
- 3) MVC 6) Gunshot wound

**III. Was a helmet worn?**

Yes No Type \_\_\_\_\_

**IV. Amnesia Before: Are there any events just BEFORE the injury that are not remembered? (Assess for continuous memory prior to injury)**

Yes No  
If yes, how long? \_\_\_\_ Seconds \_\_\_\_\_ Minutes \_\_\_\_\_ Hours

**V. Amnesia After: Are there any events just AFTER the injuries that are not remembered? (Assess time until**

**continuous memory after the injury)**

Yes No  
If yes, how long? \_\_\_\_ Seconds \_\_\_\_\_ Minutes \_\_\_\_\_ Hours

**VI. Does the individual report loss of consciousness or "blacking out"?**

Yes No  
If yes, how long? \_\_\_\_\_ Seconds \_\_\_\_\_ Minutes \_\_\_\_\_ Hours

**VII. Did anyone observe a period of loss of consciousness or unresponsiveness?**

Yes No  
If yes, how long? \_\_\_\_\_ Seconds \_\_\_\_\_ Minutes \_\_\_\_\_ Hours

**VIII. Symptoms (circle all that apply)**

- 1) Headache 2) Dizziness 3) Memory Problems
- 4) Balance problems 5) Nausea/Vomiting 6) Difficulty Concentrating
- 7) Irritability 8) Visual Disturbances 9) Ringing in the ears
- 10) Other \_\_\_\_\_

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**Examination: (IX – XIII)** (best done in order listed, to include immediate and delayed recall)

**IX. Immediate Memory:** Read all 5 words and ask the patient to recall them in any order. Repeat steps two more times for a total of three trials. (check block for each correct word for each trial). Do NOT warn patient that delayed recall will be tested later.

List	Trial 1	Trial 2	Trial 3
Elbow			
Apple			
Carpet			
Saddle			
Bubble			

**X. Neurological Screening:** As the clinical condition permits, examine and record abnormalities:

**Eyes:** pupillary response and tracking

**Verbal:** speech fluency and word finding

**Motor:** pronator drift, gait/coordination

**XI. Orientation** (check block for each correct answer)

Month:	
Date:	
Day of Week:	
Year:	

**XII. Concentration**

- Reverse Digits: tell patient you will read string of numbers and they should read back to you in reverse order, i.e., 1-2-3 = 3-2-1 (use first column first; go to next string length if correct on first trial; if incorrect first trial, go to second column string. Stop if incorrect on both trials at any given string length. Check appropriate correct boxes, use 'x' for incorrect responses)

4-9-3	6-2-9		
3-8-1-4	3-2-7-9		
6-2-9-7-1	1-5-2-8-5		
7-1-8-4-6-2	5-3-9-1-4-8		

- Months in reverse order: (circle last correct month recited if not all correct)  
Dec-Nov-Oct-Sep-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan Answered correctly? Y/N

**XIII. Delayed Recall :** WITHOUT re-reading the word list, ask the patient to recall the 5 words from the earlier memory test.

Elbow	
Apple	
Carpet	
Saddle	
Bubble	

**Notes and Assessment:**

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