1. Description of Incident

A. Record the event as described by the service member or witness. Use open-ended questions to get as much detail as possible.

Key questions:

- Can you tell me what you remember?
- What happened?

B. Record the type of event. Check all that apply:

- [ ] Explosion/Blast
- [ ] Fragment
- [ ] Motor Vehicle Crash
- [ ] Blunt Object
- [ ] Sports Injury
- [ ] Gunshot Wound
- [ ] Fall
- [ ] Other ____________________________

C. Was there a head injury event?

- [ ] YES
- [ ] NO

Key questions:

- Did your head hit any objects?
- Did any objects strike your head?
- Did you feel a blast wave? (A blast wave that is felt striking the body/head is considered a blow to the head.)
CONCUSSION SCREENING – continued

2. Alteration of Consciousness or Memory (AOC/LOC/PTA)

A. Was there Alteration of Consciousness (AOC)?
AOC is temporary confusion or “having your bell rung.”

☐ YES  ☐ NO
If yes, for how long? _____ minutes

Key question:
• Were you dazed, confused, or did you “see stars” immediately after the injury?

B. Was there Loss of Consciousness (LOC)?
LOC is temporarily passing out or blacking out.

☐ YES  ☐ NO
If yes, for how long? _____ minutes

Key question:
• Did you pass out or black out?

C. Was there any Post Traumatic Amnesia (PTA)?
PTA is a problem remembering part or all of the injury events.

☐ YES  ☐ NO
If yes, for how long? _____ minutes

Key questions:
• What is the last thing you remember before the event?
• What is the first thing you remember after the event?

Tips for assessment:
• Ask witness to verify AOC/LOC/PTA and estimate duration.

D. Was there a witness?

☐ YES  ☐ NO
If yes, name of witness:

CONCUSSION SCREENING RESULTS (Possible Concussion?)

YES to 1C AND YES to 2A, 2B or 2C

CONTINUE the MACE:
• Complete the Cognitive, Neurological and Symptoms portions of the MACE

STOP the MACE:
• Evaluate and treat any other injuries or symptoms
• Enter negative screening result into electronic medical record (V80.01)
• Communicate results with provider and line commanders
• Check for history of previous concussions and refer to Concussion Management Algorithm for appropriate rest period

NO to 1C OR NO to 2A, 2B and 2C

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3. Orientation

Score 1 point for each correct response.

<table>
<thead>
<tr>
<th>Ask This Question</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>“What month is this?”</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>“What is the date or day of the month?”</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>“What day of the week is it?”</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>“What year is it?”</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>“What time do you think it is?”</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Correct response must be within 1 hour of actual time.

4. Immediate Memory

Choose one list (A-F below) and use that list for the remainder of the MACE.

Read the script for each trial and then read all 5 words. Circle the response for each word for each trial. Repeat the trial 3 times, even if the service member scores perfectly on any of the trials.

**Trial 1 Script:**

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

**Trials 2 and 3 Script:**

• “I am going to repeat that list again. Repeat back to me as many words as you can remember, in any order, even if you said them before.”

<table>
<thead>
<tr>
<th>List F</th>
<th>Incorrect</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dollar</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Honey</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mirror</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Saddle</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Anchor</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Immediate Memory Alternate Word Lists**

<table>
<thead>
<tr>
<th>List E</th>
<th>Jacket</th>
<th>Arrow</th>
<th>Pepper</th>
<th>Cotton</th>
<th>Movie</th>
</tr>
</thead>
<tbody>
<tr>
<td>List D</td>
<td>Finger</td>
<td>Penny</td>
<td>Blanket</td>
<td>Lemon</td>
<td>Insect</td>
</tr>
<tr>
<td>List C</td>
<td>Baby</td>
<td>Monkey</td>
<td>Perfume</td>
<td>Sunset</td>
<td>Iron</td>
</tr>
<tr>
<td>List B</td>
<td>Candle</td>
<td>Paper</td>
<td>Sugar</td>
<td>Sandwich</td>
<td>Wagon</td>
</tr>
<tr>
<td>List A</td>
<td>Elbow</td>
<td>Apple</td>
<td>Carpet</td>
<td>Saddle</td>
<td>Bubble</td>
</tr>
</tbody>
</table>
NEUROLOGICAL EXAM

5. Eyes
Test pupil response to light, tracking
☐ Normal
☐ Abnormal

Tips for assessment:
• Pupils should be round, equal in size and briskly constrict to a direct, bright light.
• Both eyes should smoothly track your finger side-to-side and up and down.

6. Speech
Test speech fluency and word finding
☐ Normal
☐ Abnormal

Tips for assessment:
• Speech should be fluid and effortless – no pauses or unnatural breaks.
• Assess difficulties with word finding:
  - Does service member have trouble coming up with the name of a common object?

7. Motor
Test grip strength and pronator drift
☐ Normal
☐ Abnormal

Tips for assessment:
• Assess grip strength.
• Assess for pronator drift for 5-10 seconds by directing patient to close eyes and extend arms forward, parallel to the ground with palms up:
  - Does either palm turn inward?
  - Does either arm drift down?

8. Balance
Tandem Romberg Test
☐ Normal
☐ Abnormal

Tips for assessment:
• Have patient stand with eyes closed, one foot in front of the other heel-to-toe, arms extended forward, palms up. Observe for 5-10 seconds:
  - Does the service member stumble or shift feet?

NEUROLOGICAL EXAM RESULTS

[Diagram showing green and red symbols for normal and abnormal results]

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COGNITIVE EXAM\textsuperscript{a} - Continued

9. Concentration

A. Reverse Digits

Read the script and begin the trial by reading the first string of numbers in Trial 1.

Script:

• “I am going to read you a string of numbers. When I am finished, repeat them back to me backward. That is, in reverse order of how I read them to you. For example, if I said 7 - 1 - 9, then you would say 9 - 1 - 7.”

Circle the response for each string.

• If correct on string length of Trial 1, proceed to the next longer string length in the same column.
• If incorrect on string length of Trial 1, move to the same string length of Trial 2.
• If incorrect on both string lengths in Trials 1 and 2, STOP and record score as zero for that string length. Record total score as sum of previous correct trials.

<table>
<thead>
<tr>
<th>List F</th>
<th>Trial 1</th>
<th>Trial 2 (if Trial 1 is incorrect)</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-7-1</td>
<td>4-7-9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1-6-8-3</td>
<td>3-9-2-4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2-4-7-5-8</td>
<td>8-3-9-6-4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5-8-6-2-4-9</td>
<td>3-1-7-8-2-6</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

REVERSE DIGITS SCORE (9A) \[ \(4\) \]

Concentration Alternate Number Lists

Note: Use the same list (A-F) that was used in Question 4.
COGNITIVE EXAM® - Continued

9. Concentration - Continued
B. Months in Reverse Order

Script:
• “Now tell me the months of the year in reverse order. Start with the last month and go backward. So you’ll say: December, November…Go ahead.”

Correct Response:
Jun – May – Apr – Mar – Feb – Jan

<table>
<thead>
<tr>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL months in reverse order</td>
<td>0</td>
</tr>
</tbody>
</table>

MONTHS IN REVERSE ORDER (9B) [1]

CONCENTRATION TOTAL SCORE
Sum of scores:
9A (0-4 points) and 9B (0 or 1 point) [5]

10. Delayed Recall

Read the script and circle the response for each word.
Do NOT repeat the word list.

Note: Use the same list (A-F) that was used in Question 4.

Script:
• “Do you remember that list of words I read a few minutes earlier? I want you to tell me as many words from that list as you can remember. You can say them in any order.”

List F

<table>
<thead>
<tr>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dollar</td>
<td>0</td>
</tr>
<tr>
<td>Honey</td>
<td>0</td>
</tr>
<tr>
<td>Mirror</td>
<td>0</td>
</tr>
<tr>
<td>Saddle</td>
<td>0</td>
</tr>
<tr>
<td>Anchor</td>
<td>0</td>
</tr>
</tbody>
</table>

DELAYED RECALL TOTAL SCORE [5]

Delayed Recall Alternate Word Lists

List A
Elbow
Apple
Carpet
Saddle
Bubble

List B
Candle
Paper
Sugar
Sandwich
Wagon

List C
Baby
Monkey
Perfume
Sunset
Iron

List D
Finger
Penny
Blanket
Lemon
Insect

List E
Jacket
Arrow
Pepper
Cotton
Movie

List F
Dollar
Honey
Mirror
Saddle
Anchor

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SYMPTOM SCREENING
11. Symptoms — Check all that apply:
☐ Headache  ☐ Balance Problems  ☐ Irritability
☐ Dizziness  ☐ Nausea/Vomiting  ☐ Visual Disturbances
☐ Memory Problems  ☐ Difficulty Concentrating  ☐ Ringing in the Ears
☐ Other

SUMMARY
Record the data for correct MACE documentation.

Cognitive Summary

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation Total Score - Q3</td>
<td>5</td>
</tr>
<tr>
<td>Immediate Memory Total Score (all 3 trials) - Q4</td>
<td>15</td>
</tr>
<tr>
<td>Concentration Total Score (Sections A and B) - Q9</td>
<td>5</td>
</tr>
<tr>
<td>Delayed Recall Total Score - Q10</td>
<td>5</td>
</tr>
</tbody>
</table>

COGNITIVE RESULTS

30

NEUROLOGICAL RESULTS (Page 4)

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (Green)</td>
<td></td>
</tr>
<tr>
<td>Abnormal (Red)</td>
<td></td>
</tr>
</tbody>
</table>

SYMPTOM RESULTS

<table>
<thead>
<tr>
<th>Symptom Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms (A)</td>
<td></td>
</tr>
<tr>
<td>1 or more symptoms</td>
<td></td>
</tr>
</tbody>
</table>

MACE RESULTS (Report all 3 parts.) Example: 24/Red/B

Abnormality in any area should be discussed with provider.

C  /  N  /  S
Cognitive / Neurological / Symptoms

CONCUSSION HISTORY IN PAST 12 MONTHS
12. During the past 12 months have you been diagnosed with a concussion, not counting this event?
☐ YES  ☐ NO
If yes, how many? ______

Refer to Concussion Management Algorithm for clinical care guidance.
ADDITIONAL INFORMATION ABOUT MACE COGNITIVE SCORES

Although cognitive is listed first in the summary of MACE results, this should not suggest that any one of the three screening categories is more or less important than the others. Each area (Cognitive, Neurological, Symptoms) must be evaluated carefully. The results of all three evaluations must be included in any MACE report for it to be considered complete.

Regarding cognitive scores, in studies of non-concussed subjects, the mean total cognitive score was 28. Therefore, a score of < 30 does not imply that a concussion has occurred. Definitive normative data for a cut-off score are not available. The Concussion Management Algorithm stipulates that a cognitive score of < 25 or the presence of symptoms requires consultation with a provider.

Repeating the MACE cognitive exam with a different version (A-F) may be used to evaluate acute concussion recovery; however, a physical exam and symptom assessment must accompany any repeated cognitive exam. Providers should be mindful of other factors affecting the MACE cognitive score such as sleep deprivation, medications or pain.

Coding Tips for Concussion:

1. Primary code (corpsmen/medics require co-sign)
   • 850.0 – Concussion without LOC
   • 850.11 – Concussion with LOC ≤ 30 min.

2. Personal history of TBI in Global War on Terror (GWOT)
   • V15.52_2 – Injury related to GWOT, mild TBI

3. Symptom codes
   • As appropriate

4. Deployment status code
   • V70.5_5 – During deployment encounter

5. Screening code
   • V80.01 – Special screening for TBI code

6. E-code (external cause of injury)
   • E979.2 (if applicable) – Terrorism involving explosions and fragments

References


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