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**Boston Assessment of TBI-Lifetime**

**BAT-L**

**VA Boston Healthcare System**

**This research was supported by the**

**Translational Research Center for TBI and Stress Disorders (TRACTS)**

**a VA Rehabilitation Research and Development Traumatic Brain Injury**

**Center of Excellence  (B6796-C).**

**BAT-L**

The Boston Assessment of Traumatic Brain Injury-Lifetime (BAT-L) was designed to capture the unique injuries sustained during OEF/OIF deployment with particular attention on the assessment of blast injuries. In addition, head injuries incurred across the lifespan are evaluated. The emphasis of this semi-structured interview is to obtain a detailed account of the injury including the context and events occurring before, during, and after the injury in both civilian and military experiences.

**Administration**

The BAT-L is designed to be used by doctoral level neuropsychologists or other comparably trained professionals (e.g., neuropsychology graduate students, fellows or clinical psychologists with supervision of a licensed neuropsychologist) and was validated as a consensus diagnostic instrument (Fortier et al., In Press). It was created for use in a research setting where detailed information regarding TBI incidence and severity is necessary. The instrument guides the examiner in gathering necessary information from veterans and service members about the three worst TBIs for each category of injury (military blast, military other, pre-military, and post-military). Information is reviewed by a TBI diagnostic consensus team consisting of at least three doctoral-level psychologists, including at least one neuropsychologist. The consensus approach is integral to the instrument. If used without a consensus team, review of selected cases is suggested to assure a consistent diagnostic approach. It may be used both independently as well as part of a larger clinical interview. Please contact the TRACTS team for consultation and training requests.

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**BAT-L hybrid classification system for the diagnosis of mTBI into mild Grade I, II, and III injuries (adapted from Bailes and Cantu, 2001) and VA and DoD consensus criteria for TBI severity as defined in the *Clinical practice guidelines: management of concussion—mild traumatic brain injury (mTBI).* (DOD, 2009).**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Criteria | Mild | | | | | Moderate | Severe |
| Grade I | | Grade II | Grade III | |
| Loss of Consciousness | None | < 5 minutes | | | > 5 minutes and < 30 minutes | > 30 minutes and < 24 hours | > 24 hours |
| Alteration of Mental Status | 0 – 15 minutes | > 15 minutes and < 24 hours | | | > 24 hours | > 24 hours; severity based on other criteria | |
| Post Traumatic Amnesia | 0 – 15 minutes | > 15 minutes and < 24 hours | | | > 24 hours | > 1 day and  < 7 days | > 7 days |
| Glascow Coma Scale | 13 - 15 | | | | | 9 - 12 | < 9 |

Department of Veterans Affairs and Department of Defense. (2009). VA/DOD clinical practice guideline for the management of

concussion/mild traumatic brain injury. Retrieved from http://www.healthquality.va.gov/mtbi/concussion\_mtbi\_full\_1\_0.pdf.

**BAT-L SUMMARY SCORE SHEET**

**MILITARY-RELATED BLAST:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total # of Blast Exposures:** | 0 - 10 Meters | 11 - 25 Meters | 26 - 100 Meters |

|  |
| --- |
| **Total # Blast TBIs:** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1st Most Severe** | | |  | | **2nd Most Severe** | |  | **3rd Most Severe** | |
| **Age** |  |  | | **Age** | |  |  | **Age** |  |
| **AMS** | hr / min / sec |  | | **AMS** | | hr / min / sec |  | **AMS** | hr / min / sec |
| **PTA** | hr / min / sec |  | | **PTA** | | hr / min / sec |  | **PTA** | hr / min / sec |
| **LOC** | hr / min / sec |  | | **LOC** | | hr / min / sec |  | **LOC** | hr / min / sec |
| **Severity** | ***If Mild:*** |  | | **Severity** | | ***If Mild:*** |  | **Severity** | ***If Mild:*** |
| ❑ Mild | ❑ Stage I |  | | ❑ Mild | | ❑ Stage I |  | ❑ Mild | ❑ Stage I |
| ❑ Moderate | ❑ Stage II |  | | ❑ Moderate | | ❑ Stage II |  | ❑ Moderate | ❑ Stage II |
| ❑ Severe | ❑ Stage III |  | | ❑ Severe | | ❑ Stage III |  | ❑ Severe | ❑ Stage III |
| **BATL Score (0 – 5)** |  |  | | **BATL Score (0 – 5)** | |  |  | **BATL Score (0 – 5)** |  |
| **Nature of Blast** | | |  | | **Nature of Blast** | |  | **Nature of Blast** | |
| ❑ Primary | (Head) |  | | ❑ Primary | | (Head) |  | ❑ Primary | (Head) |
| ❑ Secondary | (Head: ❑ Yes ❑ No) |  | | ❑ Secondary | | (Head: ❑ Yes ❑ No) |  | ❑ Secondary | (Head: ❑ Yes ❑ No) |
| ❑ Tertiary | (Head: ❑ Yes ❑ No) |  | | ❑ Tertiary | | (Head: ❑ Yes ❑ No) |  | ❑ Tertiary | (Head: ❑ Yes ❑ No) |
| ❑ Quaternary | (Head: ❑ Yes ❑ No) |  | | ❑ Quaternary | | (Head: ❑ Yes ❑ No) |  | ❑ Quaternary | (Head: ❑ Yes ❑ No) |

**MILITARY OTHER:**

|  |
| --- |
| **Total # Other TBIs:** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1st Most Severe** | | |  | | **2nd Most Severe** | |  | **3rd Most Severe** | |
| **Age** |  |  | | **Age** | |  |  | **Age** |  |
| **AMS** | hr / min / sec |  | | **AMS** | | hr / min / sec |  | **AMS** | hr / min / sec |
| **PTA** | hr / min / sec |  | | **PTA** | | hr / min / sec |  | **PTA** | hr / min / sec |
| **LOC** | hr / min / sec |  | | **LOC** | | hr / min / sec |  | **LOC** | hr / min / sec |
| **Severity** | ***If Mild:*** |  | | **Severity** | | ***If Mild:*** |  | **Severity** | ***If Mild:*** |
| ❑ Mild | ❑ Stage I |  | | ❑ Mild | | ❑ Stage I |  | ❑ Mild | ❑ Stage I |
| ❑ Moderate | ❑ Stage II |  | | ❑ Moderate | | ❑ Stage II |  | ❑ Moderate | ❑ Stage II |
| ❑ Severe | ❑ Stage III |  | | ❑ Severe | | ❑ Stage III |  | ❑ Severe | ❑ Stage III |
| **BATL Score (0 – 5)** |  |  | | **BATL Score (0 – 5)** | |  |  | **BATL Score (0 – 5)** |  |
| **Nature of Injury** | | |  | | **Nature of Injury** | |  | **Nature of Injury** | |
| ❑ MVA | ❑ Physical Assault |  | | ❑ MVA | | ❑ Physical Assault |  | ❑ MVA | ❑ Physical Assault |
| ❑ Fall | ❑ Penetrating Injury |  | | ❑ Fall | | ❑ Penetrating Injury |  | ❑ Fall | ❑ Penetrating Injury |
| ❑ Sports-  Related | ❑ Other: |  | | ❑ Sports-  Related | | ❑ Other: |  | ❑ Sports-  Related | ❑ Other: |

**PRE-MILITARY:**

|  |
| --- |
| **Total # TBIs:** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1st Most Severe** | | |  | | **2nd Most Severe** | |  | **3rd Most Severe** | |
| **Age** |  |  | | **Age** | |  |  | **Age** |  |
| **AMS** | hr / min / sec |  | | **AMS** | | hr / min / sec |  | **AMS** | hr / min / sec |
| **PTA** | hr / min / sec |  | | **PTA** | | hr / min / sec |  | **PTA** | hr / min / sec |
| **LOC** | hr / min / sec |  | | **LOC** | | hr / min / sec |  | **LOC** | hr / min / sec |
| **Severity** | ***If Mild:*** |  | | **Severity** | | ***If Mild:*** |  | **Severity** | ***If Mild:*** |
| ❑ Mild | ❑ Stage I |  | | ❑ Mild | | ❑ Stage I |  | ❑ Mild | ❑ Stage I |
| ❑ Moderate | ❑ Stage II |  | | ❑ Moderate | | ❑ Stage II |  | ❑ Moderate | ❑ Stage II |
| ❑ Severe | ❑ Stage III |  | | ❑ Severe | | ❑ Stage III |  | ❑ Severe | ❑ Stage III |
| **BATL Score (0 – 5)** |  |  | | **BATL Score (0 – 5)** | |  |  | **BATL Score (0 – 5)** |  |
| **Nature of Injury** | | |  | | **Nature of Injury** | |  | **Nature of Injury** | |
| ❑ MVA | ❑ Physical Assault |  | | ❑ MVA | | ❑ Physical Assault |  | ❑ MVA | ❑ Physical Assault |
| ❑ Fall | ❑ Penetrating Injury |  | | ❑ Fall | | ❑ Penetrating Injury |  | ❑ Fall | ❑ Penetrating Injury |
| ❑ Sports-  Related | ❑ Other: |  | | ❑ Sports-  Related | | ❑ Other: |  | ❑ Sports-  Related | ❑ Other: |

**POST-MILITARY:**

|  |
| --- |
| **Total # TBIs:** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1st Most Severe** | | |  | | **2nd Most Severe** | |  | **3rd Most Severe** | |
| **Age** |  |  | | **Age** | |  |  | **Age** |  |
| **AMS** | hr / min / sec |  | | **AMS** | | hr / min / sec |  | **AMS** | hr / min / sec |
| **PTA** | hr / min / sec |  | | **PTA** | | hr / min / sec |  | **PTA** | hr / min / sec |
| **LOC** | hr / min / sec |  | | **LOC** | | hr / min / sec |  | **LOC** | hr / min / sec |
| **Severity** | ***If Mild:*** |  | | **Severity** | | ***If Mild:*** |  | **Severity** | ***If Mild:*** |
| ❑ Mild | ❑ Stage I |  | | ❑ Mild | | ❑ Stage I |  | ❑ Mild | ❑ Stage I |
| ❑ Moderate | ❑ Stage II |  | | ❑ Moderate | | ❑ Stage II |  | ❑ Moderate | ❑ Stage II |
| ❑ Severe | ❑ Stage III |  | | ❑ Severe | | ❑ Stage III |  | ❑ Severe | ❑ Stage III |
| **BATL Score (0 – 5)** |  |  | | **BATL Score (0 – 5)** | |  |  | **BATL Score (0 – 5)** |  |
| **Nature of Injury** | | |  | | **Nature of Injury** | |  | **Nature of Injury** | |
| ❑ MVA | ❑ Physical Assault |  | | ❑ MVA | | ❑ Physical Assault |  | ❑ MVA | ❑ Physical Assault |
| ❑ Fall | ❑ Penetrating Injury |  | | ❑ Fall | | ❑ Penetrating Injury |  | ❑ Fall | ❑ Penetrating Injury |
| ❑ Sports-  Related | ❑ Other: |  | | ❑ Sports-  Related | | ❑ Other: |  | ❑ Sports-  Related | ❑ Other: |

|  |  |
| --- | --- |
| **BAT-L Score (0 – 5):** | **BAT-L Lifetime Total Score** |
| 0 = no TBI | Sum Military-Related Blast BATL Scores  Sum Military Other BATL Scores  Sum Pre-Military BATL Scores  Sum Post-Military BATL Scores  BAT-L TOTAL LIFETIME SCORE TOTAL |
| 1 = mTBI grade I |
| 2 = mTBI grade II |
| 3 = mTBI grade III |
| 4 = moderate TBI |
| 5 = severe TBI |
| BAT-L Total Score = Sum of the scores for the three worst TBIs across all categories of injury (blast-related, military other, pre-military, and post-military) (BAT-L Total Score: Range = 0 - 60). | |

**MILITARY/ Deployment-RELATED head INJURIES**

During this interview I will be asking you about any blows to the head that may have occurred to you during your life. First, I will ask you about any blasts or explosions you may have been exposed to while in the military.

**MILITARY/ DEPLOYMENT-RELATED BLAST:**

|  |  |  |
| --- | --- | --- |
| **During your time in the military, were you involved in any blasts or explosions within 100 meters?** | | |
|  | ❑ Uncertain | |
|  | ❑ No | ***If no****, query further about types of blasts/explosions (item 1 below) to rule out blast exposure then discontinue questionnaire if none.* |
|  | ❑ Yes | ***If yes****,* How many blasts were you exposed to within \_\_\_\_ meters?  ***≤ 10 meters:***  ***Cue:*** Approximately 32 feet or the length of 2 parking spaces  ***11 – 25 meters:***  ***Cue:*** Approximately 82 feet or the distance between home base and first base in a professional baseball diamond  ***26 – 100 meters:***  ***Cue:*** Approximately 320 feet or the length of a professional football field  ***Total Blasts:*** |

|  |
| --- |
| Next, I am going to ask you about the three worst or most severe blasts you experienced while deployed. I am not looking for the most upsetting incidents, but rather the blasts that were the most severe or that were the strongest/closest. |

**MILITARY/ DEPLOYMENT-RELATED BLAST #1 (Most Severe):**

**Age (or best estimate) at time of occurrence:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. What type of blast/accident was it? | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | ❑ Unknown | | | | | | | ❑ Grenade | | | | | ❑ Bomb | | | | ❑ Other: | | | | | | | | | |
|  | ❑ IED | | | | | | | ❑ Land mine | | | | | ❑ Rocket | | | |  | | | | | | | | | |
|  | ❑ RPG | | | | | | | ❑ Mortar | | | | | ❑ Suicide vest/bomb | | | |  | | | | | | | | | |
| 2. Do you remember the blast/accident itself? ***If yes****,* Can you describe it to me? If you don’t remember, can you tell me what other people said happened? | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | a. Were others seriously injured? | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | ❑ Uncertain | | | | | | ❑ No | | | | ❑ Yes | | | | | | | | | | | | | |
|  | b. How far away was the blast/explosion? *Clarify/confirm distance of closest blast/explosion for consistency. If patient is uncertain, encourage pt to provide an estimate.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | c. What is the last thing you can remember just before the blast/accident? *Clarify timing of events. Cue pt to walk you through time until it is clear there are no gaps in memory. Probe to ensure clear recall.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | d. What is the first thing you can remember just after the blast/accident? *Following pt’s response ask,* How long do you think that was after the blast? *Clarify timing of events. Cue pt to walk you through time until it is clear there are no gaps in memory. Probe to ensure clear recall.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | e. *If injury is the result of an IED or bomb ask,* Do you remember hearing the explosion? | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | ❑ Uncertain | | | | | | ❑ No | ❑ Yes | | | | | | | | | | | | | | | |
|  | f. Do you remember feeling the pressure changes associated with the blast? | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | ❑ Uncertain | | | | | | ❑ No | ❑ Yes | | | | | | | | | | | | | | | |
|  | g. What direction did the blast wave/blast come from? *(multiple boxes may be checked)* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | ❑ Uncertain | | | | | | ❑ Front | | ❑ Back | | | ❑ Left | ❑ Right | | | | ❑ Under | | | ❑ Above | | | |
|  | Was it an incoming blast? | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | ❑ Uncertain | | | | | | ❑ No | ❑ Yes | | | ***If no,***What type/direction: | | | | | | | | | | | | |
|  | h. Were you thrown by the blast/accident, either out of a vehicle or off of your feet? Did you hit your head? Was something propelled or thrown at you/your head by the blast/accident? *If yes, ask pt to provide as much information and detail as possible. Note type of vehicle and position in the vehicle if pt was in a vehicle at the time of the blast.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | i. Did you experience any changes in your vision or hearing during the accident? *Establish that the pt is not reporting mental status change when was in fact hearing/vision change.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | j. Did you experience confusion or disorientation (not sure where you were, what day or time it was, perform simple math calculations, perform duties as expected) after the blast/accident? If so, for how long? *With this and the following question, try to determine if the pt experienced an actual change in mental status vs. vision/hearing difficulty associated with the blast/accident vs. the chaos surrounding the event. Probe if others thought pt was functioning normally.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | k. Did you experience a loss of consciousness at the time of the blast/accident (were you ‘knocked out’)? If so, for how long? If yes, was LOC witnessed (were you told by others you were knocked out/unconscious)? *Probe to ensure LOC is not due to anoxia/alcohol/substance overdose. Probe to differentiate LOC from PTA (if possible).* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | ❑ Uncertain | | | | | | ❑ No | ❑ Yes | | | | | | | | | | | | | | | |
|  | l. Did you experience any of the following immediately after the event? *Note Sx duration.* | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | ❑ Headaches | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Trouble thinking | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Nausea | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Dizziness | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Fatigue | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Poor coordination, balance problems, or slowed reaction times | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Sensory changes (Hearing/Vision/Taste/Smell) | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Numbness or tingling | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Mood changes (Anxiety/Depression/Irritability) | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Sleep trouble | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
|  |  | | | ❑ Other: | | | | | | | | | | | | | | | | | | | | *Duration:* | | |
| 3. At the time of the blast/accident, were you wearing a helmet, and if so was it modified (equipped with upgrade kit)? | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Uncertain | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ No | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Yes | | | | | ***If yes***, was it modified? | | | | | | | | | | | | ❑ Uncertain | | | ❑ No | | | | ❑ Yes |
|  | |  | | | | | ***If yes***, did the helmet stay on your head? | | | | | | | | | | | | ❑ Uncertain | | | ❑ No | | | | ❑ Yes |
| 4. At the time of blast/accident, were you wearing Kevlar body armor? | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Uncertain | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ No | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Yes | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. After the injury did you see a physician, trainer, medic or other trained personnel? | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Uncertain | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ No | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Yes | | | | ***If yes***, MACE (field mental status eval)? | | | | | | | | | | | | ❑ Uncertain | | | ❑ No | | | | ❑ Yes | |
|  | |  | | | | ***If yes***, was anything documented in your medical record? | | | | | | | | | | | | ❑ Uncertain | | | ❑ No | | | | ❑ Yes | |
|  | |  | | | | ***If yes***, do you have access to those records? | | | | | | | | | | | | ❑ Uncertain | | | ❑ No | | | | ❑ Yes | |
| 6. Did you experience a disruption of duty after the blast/accident? | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Uncertain | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ No | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | ❑ Yes | | | ***If Yes***:  *For how long were you pulled from duty?*  *Did you return to active duty?*  *Did this event lead to medical hold?*  *Sick leave?*  *Discharge?* | | | | | | | | | | | | | | | | | | | | | |

***EVALUATE MILITARY/ DEPLOYMENT-RELATED BLAST #1:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Using the questions above, or in spontaneous dialogue, evaluate the following:*** | | | | |  |
| ***Alteration of mental status:*** | | | **❑ *NO* ❑ *YES***  ***If yes****, enter the estimated duration of the AMS?* hr / min / sec  ***\*AMS = AMS + PTA + LOC*** | | ***Substance Related:***  ❑ *NO*  ❑ *YES* |
| ***PTA:*** | | | **❑ *NO* ❑ *YES***  ***If yes****, enter the estimated duration of the PTA?* hr / min / sec  ***\*PTA = PTA + LOC*** | |
| ***Setting of Injury:***  ❑ *Combat*  ❑ *Non-Combat Military (e.g., training)* |
| ***LOC:*** | | | **❑ *NO* ❑ *YES***  ***If yes****, enter the estimated duration of the LOC?* hr / min / sec | |
| ***Does the patient actually recall this information themselves? (e.g., can provide specific information regarding what they were doing when blast occurred, etc., or was knowledge gained from the reports of witnesses?)*** | | | | |
| ***Emotional Context of Injury:***  ❑ *Traumatic*  ❑ *Non-traumatic* |
|  | **❑ Uncertain** | **❑ No** | | **❑ Yes** |