

# Acute Concussion Evaluation (ACE)

## Physician/Clinician Office Version

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

DOB: \_\_\_\_\_ Age: \_\_\_\_\_

Date: \_\_\_\_\_ ID/MR# \_\_\_\_\_

### A. Injury Characteristics Date/Time of Injury \_\_\_\_\_ Reporter: Patient Parent Spouse Other \_\_\_\_\_

#### 1. Injury Description \_\_\_\_\_

- 1a. Is there evidence of a forcible blow to the head (direct or indirect)?  Yes  No  Unknown  
 1b. Is there evidence of intracranial injury or skull fracture?  Yes  No  Unknown  
 1c. Location of Impact:  Frontal  Lt Temporal  Rt Temporal  Lt Parietal  Rt Parietal  Occipital  Neck  Indirect Force  
 2. **Cause:**  MVC  Pedestrian-MVC  Fall  Assault  Sports (*specify*) \_\_\_\_\_ Other \_\_\_\_\_  
 3. **Amnesia Before (Retrograde)** Are there any events just BEFORE the injury that you/ person has no memory of (even brief)?  Yes  No Duration \_\_\_\_\_  
 4. **Amnesia After (Anterograde)** Are there any events just AFTER the injury that you/ person has no memory of (even brief)?  Yes  No Duration \_\_\_\_\_  
 5. **Loss of Consciousness:** Did you/ person lose consciousness?  Yes  No Duration \_\_\_\_\_  
 6. **EARLY SIGNS:**  Appears dazed or stunned  Is confused about events  Answers questions slowly  Repeats Questions  Forgetful (recent info)  
 7. **Seizures:** Were seizures observed? No  Yes  Detail \_\_\_\_\_

### B. Symptom Check List\* Since the injury, has the person experienced any of these symptoms any more than usual today or in the past day?

Indicate presence of each symptom \*Lovell & Collins, 1998 JHTR

PHYSICAL	Check all that apply	COGNITIVE	Check all that apply	SLEEP	Check all that apply
Headache	<input type="checkbox"/>	Feeling mentally foggy	<input type="checkbox"/>	Drowsiness	<input type="checkbox"/>
Nausea	<input type="checkbox"/>	Feeling slowed down	<input type="checkbox"/>	Sleeping less than usual	N/A
Vomiting	<input type="checkbox"/>	Difficulty concentrating	<input type="checkbox"/>	Sleeping more than usual	N/A
Balance problems	<input type="checkbox"/>	Difficulty remembering	<input type="checkbox"/>	Trouble falling asleep	N/A
Dizziness	<input type="checkbox"/>				
Visual problems	<input type="checkbox"/>	EMOTIONAL		<b>Exertion:</b> Do these symptoms <u>worsen</u> with: Physical Activity <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Cognitive Activity <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A  <b>Overall Rating:</b> How <u>different</u> is the person acting compared to his/her usual self? (circle) Normal 0 1 2 3 4 5 6 Very Different	
Fatigue	<input type="checkbox"/>	Irritability	<input type="checkbox"/>		
Sensitivity to light	<input type="checkbox"/>	Sadness	<input type="checkbox"/>		
Sensitivity to noise	<input type="checkbox"/>	More emotional	<input type="checkbox"/>		
Numbness/Tingling	<input type="checkbox"/>	Nervousness	<input type="checkbox"/>		
	<input type="checkbox"/>		<input type="checkbox"/>		

### C. Follow-Up Action Plan Complete ACE Care Plan and provide copy to patient/family.

- No Follow-Up Needed  
 Physician/Clinician Office Monitoring: Date of next follow-up \_\_\_\_\_  
 Referral:  
 Neuropsychological Testing  
 Physician: Neurosurgery \_\_\_\_\_ Neurology \_\_\_\_\_ Primary Care \_\_\_\_\_ Emergency Department \_\_\_\_\_ Psychiatrist \_\_\_\_\_  
 Other \_\_\_\_\_

ACE Completed by: \_\_\_\_\_ Date: \_\_\_\_\_

**A concussion (or mild traumatic brain injury (MTBI))** is a complex pathophysiologic process affecting the brain, induced by traumatic biomechanical forces secondary to direct or indirect forces to the head. Disturbance of brain function is related to neurometabolic dysfunction, rather than structural injury, and is typically associated with normal structural neuroimaging findings (i.e., CT scan, MRI). Concussion may or may not involve a loss of consciousness (LOC). Concussion results in a constellation of physical, cognitive, emotional, and sleep-related symptoms. Symptoms may last from several minutes to days, weeks, months or even longer in some cases.

### **ACE Instructions**

The ACE is intended to provide an evidence-based clinical protocol to conduct an initial evaluation and diagnosis of patients (both children and adults) with known or suspected MTBI. The research evidence documenting the importance of these components in the evaluation of an MTBI is provided in the reference list.

#### **A. Injury Characteristics:**

1. Obtain **description of the injury** – how injury occurred, type of force, location on the head or body (if force transmitted to head). Different biomechanics of injury may result in differential symptom patterns (e.g., occipital blow may result in visual changes, balance difficulties).
2. Indicate the **cause of injury**. Greater forces associated with the trauma are likely to result in more severe presentation of symptoms.
- 3/4. **Amnesia**: Amnesia is defined as the failure to form new memories. Determine whether amnesia has occurred and attempt to determine length of time of memory dysfunction – **before** (retrograde) and **after** (anterograde) injury. Even seconds to minutes of memory loss can be predictive of outcome. Recent research has indicated that amnesia may be up to 4-10 times more predictive of symptoms and cognitive deficits following concussion than is LOC (less than 1 minute).<sup>1</sup>
5. **Loss of consciousness (LOC)** – If occurs, determine length of LOC.
6. **Early signs**. If present, ask the individuals who know the patient (parent, spouse, friend, etc) about specific signs of the concussion that may have been observed. These signs are typically observed early after the injury.
7. Inquire whether **seizures** were observed or not.

#### **B. Symptom Checklist:**<sup>2</sup>

1. Ask patient (and/or parent, if child) to report presence of the four categories of symptoms since injury. It is important to assess all listed symptoms as different parts of the brain control different functions. One or all symptoms may be present depending upon mechanisms of injury.<sup>3</sup> Place checkmark in column if present.
2. For all symptoms, indicate presence of symptoms as experienced within the past 24 hours. Since symptoms can be present pre-morbidly/at baseline (e.g., inattention, headaches, sleep, sadness), it is important to assess **change** from their usual presentation.
3. (Note: most sleep symptoms are only applicable after a night has passed since the injury. Drowsiness may be present on the day of injury.) If symptoms are new and present.
4. **Exertion**: Inquire whether any symptoms worsen with physical (e.g., running, climbing stairs, bike riding) and/or cognitive (e.g., academic studies, multi-tasking at work, reading or other tasks requiring focused concentration) exertion. Clinicians should be aware that symptoms will typically worsen or re-emerge with exertion, indicating incomplete recovery. Over-exertion may protract recovery.
5. **Overall Rating**: Determine how different the person is acting from their usual self. Circle "0" (Normal) to "6" (Very Different).

**C. Follow-Up Action Plan:** Develop a follow-up plan of action for symptomatic patients. The physician/clinician may decide to (1) monitor the patient in the office or (2) refer them to a specialist. Serial evaluation of the concussion is critical as symptoms may resolve, worsen, or ebb and flow depending upon many factors (e.g., cognitive/physical exertion, comorbidities). Referral to a specialist can be particularly valuable to help manage certain aspects of the patient's condition. (Physician/Clinician should also complete the ACE Care Plan included in this tool kit.)

1. **Physician/Clinician serial monitoring** – Particularly appropriate if number and severity of symptoms are steadily decreasing over time and/or fully resolve within 3-5 days. If steady reduction is not evident, referral to a specialist is warranted.
2. **Referral to a specialist** – Appropriate if symptom reduction is not evident in 3-5 days, or sooner if symptom profile is concerning in type/severity.
  - Neuropsychological Testing** can provide valuable information to help assess a patient's brain function and impairment and assist with treatment planning, such as return to play decisions.
  - Physician Evaluation** is particularly relevant for medical evaluation and management of concussion. It is also critical for evaluating and managing focal neurologic, sensory, vestibular, and motor concerns. It may be useful for medication management (e.g., headaches, sleep disturbance, depression) if post-concussive problems persist.