



Head Injury in Pediatric & Adult Patients Desk Reference Card

PRE-HOSPITAL EVALUATION OF TRAUMATIC BRAIN INJURY:

Initial management

♦ Airway and Cervical Spine control

- Provide manual in-line stabilization for the cervical spine.
- Ensure open airway with a jaw-thrust maneuver
- Avoid unnecessary neck movement.
- Assess for breathing
- If not breathing, provide CPR

♦ Circulation/Hemorrhage control

- Control life-threatening hemorrhage.
- Provide CPR if pulseless.

♦ Disability/Neurologic assessment

- If airway, breathing and circulation are ensured, then assessment for concussion can occur.

♦ Exposure/ Environmental control

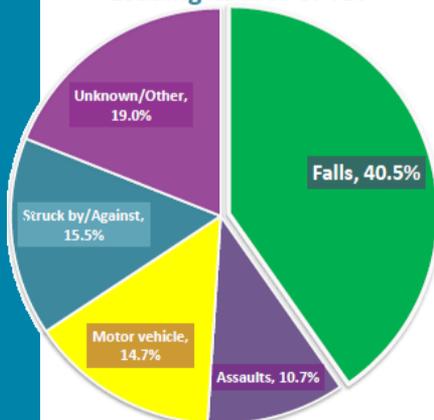
- Determine appropriate disposition, and if transport to ED is required.

♦ Transport to the ED if the following occur:

- Failure to become fully alert.
- Declining motor skills.
- Worsening symptoms or level of alertness
- Persistent vomiting
- Lucid interval followed by declining mental status
- Any focal neurologic findings
- Any concern for cervical spine injury (i.e., seizure or neck pain)



Leading Causes of TBI



	Mild TBI	Moderate TBI	Severe TBI
Glasgow Coma Scale	13 – 15	9 – 12	3 – 8
Loss of Consciousness	< 30 minutes	30 minutes to 24 hours	> 6 hours
Duration of Amnesia	< 1 day	1 – 7 days	> 7 days

The CDC defines a concussion as a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging brain cells.

PATIENTS WHO HAVE **ANY** SIGNS OR SYMPTOMS OF CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM ACTIVITY!

CDC SYMPTOMS OF CONCUSSION:

THINKING/REMEMBERING



- Difficulty Thinking Clearly
- Feeling slowed down
- Difficulty Concentrating
- Difficulty remembering new information

EMOTIONAL/MOOD



- Irritability
- Sadness
- More emotional
- Nervousness or anxiety

PHYSICAL



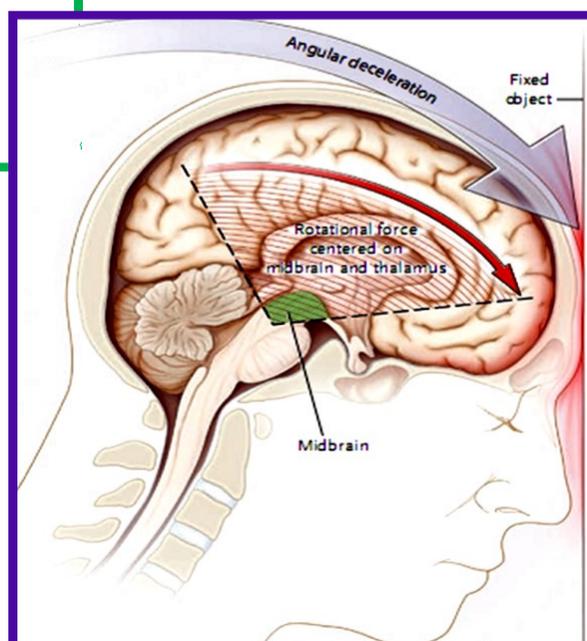
- Headache
- Fuzzy or blurry vision
- Nausea or vomiting (early on)
- Dizziness
- Sensitivity to noise or light
- Balance problems
- Feeling tired, having no energy

SLEEP



- Sleeping more than usual
- Sleeping less than usual
- Trouble falling asleep

The **blow** or **jolt** to the head causes the brain to **flex** with a focal point at its connection with the brainstem.



This causes a **mechanical stress and stretching** of neurons traveling through the **reticular activating system**.

OFFICE-BASED EVALUATION:

- ◆ Quantifiable symptom score (SCAT-5)
 - ◆ Primary Survey
 - ◆ Assessment for c-spine injury
 - ◆ Neurologic examination including:
 - Eye movements
 - ◆ Balance assessment
 - ◆ Cognitive assessment (can be computerized)
- Download or scan the SCAT-5 tool [here](#)
 - or-
 - <http://bjsm.bmj.com/content/bjsports/early/2017/04/26/bjsports-2017-097506SCAT5.full.pdf>



DEFINITIVE SIGNS OF CONCUSSION:



If any of the following definitive signs are observed, a concussion has occurred. The patient should be evaluated by a medical professional and removed from participation in sports or physical activity immediately.

- ◆ Loss of consciousness
- ◆ Balance disturbance/ataxia
- ◆ Clearly dazed or confused
- ◆ Not oriented to time place, person or event
- ◆ Definite behavioral changes
- ◆ Convulsions



DIFFERENTIAL DIAGNOSES:

◆ Acute conditions

- Intracranial injury (eg, subdural or epidural hematoma, cerebral contusion, or diffuse axonal injury)
- Heat illness
- Hypoglycemia
- Dehydration
- Syncope (cardiogenic, orthostatic, or vasovagal syncope)
- Adverse drug reaction/Drug overdose



◆ Subacute conditions

- Primary headache (eg, cervicogenic, migraine, tension, or other posttraumatic types)
- Psychiatric disorder (eg, depression, attention deficit hyperactivity disorder, anxiety or acute stress disorder, or substance abuse)
- Overtraining/burnout
- Chronic infection
- Chronic fatigue syndrome (CFS, also known as systemic exertion intolerance disease [SEID])
- Uncorrected vision

IN SUMMARY:

- ◆ Concussions are common and often go unreported and unrecognized.
- ◆ The most common symptoms following concussion are headaches, dizziness/balance dysfunction, and sleep disturbances.
- ◆ While most patients with a concussion will make a full recovery given time prompt recognition and appropriate management of symptoms is key in promoting a fast recovery and avoiding potential morbidity.
- ◆ Returning to activity needs to be well considered and occur in a step-wise fashion that balances the safety of the patient with their social, scholastic, and athletic commitments.
- ◆ Patients with a history of multiple concussions, those at high-risk for re-injury and high-performance athletes may benefit from a comprehensive evaluation in a specialized concussion clinic.



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