

## It's Just a Concussion, right?

### Introduction - What is Traumatic Brain Injury?

Traumatic Brain Injury (TBI) is defined as a blow or jolt to the head, or penetration of the head that leads to a disruption of the brain's functioning. The leading causes of TBI are falls, vehicular collisions, violent acts, and sports-related injuries. Many of our veterans returning from Afghanistan and Iraq have TBI due to shock waves from explosive devices.

There are several types of TBIs. Concussions, the most common form of TBI, are closed-head injuries to the brain, and are considered to be mild in severity. Penetration injuries result from bullets or other outside objects entering the skull. When a blow to the head causes the brain to bleed, this is called a contusion. Lastly, tearing of brain tissue can occur, which is called a Diffuse Axonal Injury. This is the type of injury that occurs with Shaken Baby Syndrome.

There are two basic types of damage that can occur when the brain is injured – Primary and Secondary Damage. Primary Damage is the immediate damage to the brain caused by the injuring event. A strain or tear occurs when the nerve fibers, neuronal connections, and/or axonal sheaths (the coverings of the neurons) are stretched or ruptured. Essentially, the wires of the brain get cut. These injuries are often microscopic and can be difficult to detect, even with an MRI or CAT scan. In fact, studies have shown that only 10-15% of head injuries are detected by initial CAT scans.

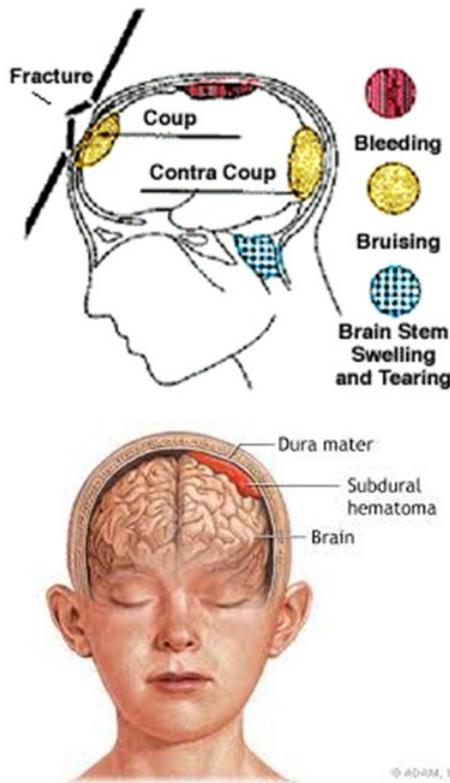
Other forms of Primary Damage are bruising and

contusions. These occur most frequently in the frontal lobe (behind the forehead) and the temporal lobe (the sides of the head). Multiple areas of the brain can be damaged in different ways. For example, if a person is in a car accident and the front of his head hits the windshield, the front of his brain will slosh forward and hit the skull, typically causing bruising, while the back of his brain may be stretched or torn. The back of the brain may also be bruised as the body flies backward causing the brain to bounce against the back of the skull. This is called a coup-contrecoup injury.

A third form of Primary Damage is primary bleeding and possibly blood clots. When the brain bleeds, there is no room for the extra blood. The skull does not give way, so the brain tissue must. Subsequently, there is increased pressure on the brain itself, which can also cause additional damage.

Secondary Damage is damage to the brain that occurs over time following a TBI. This can manifest days, even months after the injuring event, despite the person initially appearing to be fine. For example,

swelling, or "edema," can occur, resulting in decreased blood flow and oxygen to the brain and increased cranial pressure. Secondary infections, such as Encephalitis may also occur. Secondary bleeding, sometimes called a "slow bleed," may go undetected for long periods of time. A slow bleed is usually only discovered after it has existed long enough to cause increased cranial pressure.



## After the Injury - What to Expect at the Hospital

If someone receives a blow or jolt to the head, but remains alert and responsive, and is able to move normally, they probably have a mild injury and do not require assessment at the Emergency Room (however, always follow your agency's policies & directives

*Even when a CAT scan is negative, the person could have microscopic tears in blood vessels causing slow bleeds that won't show up until days to months later.*

for when to go to the ER). The person should still see their doctor within 1-2

days of any head injury, no matter how mild it may appear.

When an injuring event occurs that requires a trip to the ER, there are often multiple injuries and issues that must be explored upon arrival (other physical traumas, the reason for a fall, etc.). It is very

important that someone who is able to answer questions about the injuring event, and who knows the person well enough to notice changes, accompanies the person. Be prepared to answer the following questions: *How did the injury occur? Where was the head / body struck? How forceful was the injury? How far did the person fall? Where they whipped around or jarred? Did the person lose consciousness and, if so, for how long? Did you notice any other changes in alertness, speaking, coordination, or any other concerns of note?* It is also important that medical personnel are aware if the person has taken aspirin or anti-coagulant medication.

If no one has observed any symptoms of brain injury, the person is not likely to be given a CAT Scan, despite a known blow or jolt to the head. This does NOT mean that the person does not

have a head injury. Even when a CAT Scan is done and is negative, this does not mean the person doesn't have microscopic tears in blood vessels causing slow bleeds that won't show up until days to months later. A diagnosis of Concussion -- considered a mild TBI -- does not mean the person cannot develop complications later. We must continue to observe the person for signs and symptoms and respond immediately should we see them. Keep in mind that changes can occur very slowly and may be difficult to notice, particularly in the elderly. Although only about one in 1,000 people will experience a slow bleed following a mild TBI, the build-up of blood and the subsequent pressure on the brain can lead to permanent brain damage and even death, sometimes very rapidly after the onset of symptoms.

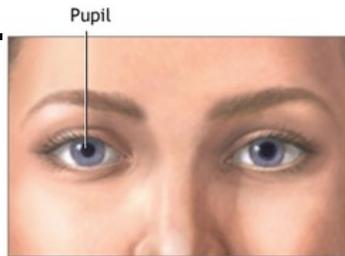
## After the Hospital - Signs and Symptoms to Watch For

Symptoms common to concussion are typically mild and relatively short-lived. Some of these symptoms may have been present when the person was diagnosed and require nothing more than our careful observation and support for the person. They should

go away on their own within a few hours to a few weeks. However, if ANY of the following symptoms appear or begin to worsen with time, medical attention should be sought immediately!

| Physical Signs & Symptoms:  | Possible Behavioral Manifestations:  |
|---|--|
| <p><b>Headache or sense of pressure in head</b> – although commonly experienced with concussions, should symptoms be persistent or get worse, <i>seek medical attention immediately</i> (NOTE: TBIs can sometimes alter the person's perception of and response to pain, so typical indicators may not apply)</p> | <p>Head hitting / banging; waving head back &amp; forth; waving fingers in front of eyes; intense rocking with a preoccupied look; grimacing; groaning; increased muscle tension</p> |

| Physical Signs & Symptoms <i>(continued)</i> :   | Possible Behavioral Manifestations <i>(continued)</i> :   |
|--|---|
| <b>Nausea or vomiting</b> – if the person is vomiting repeatedly, <i>seek medical attention immediately</i>  | Refusal of food; scratching / rubbing / gouging stomach or chest; hugging chest; sticking hand / fist down throat |
| <b>Fatigue / drowsiness</b> – if the person becomes increasingly drowsy or difficult to rouse, <i>seek medical attention immediately</i>   | Refusal of activities; appears tired; unusual gait; frequent napping; slowed movements; withdrawal                |
| <b>Changes in sleep</b> (difficulty sleeping or increased sleeping) – if you cannot wake the person, <i>seek medical attention immediately</i>   | Problems at bedtime or wake time; frequent napping; sleeping more than usual                                      |
| <b>Dizziness or loss of balance</b> – if symptoms keep recurring or get worse, or if the person shows a loss of co-ordination (stumbling or clumsiness) or changes to one side of the body, <i>seek medical attention immediately</i>                      | Avoids movement; leans to one side; unsteady / unusual gait; sudden sitting; increasing falls                     |
| <b>Additional symptoms that require immediate medical attention:</b> convulsions / seizures, dilation of one or both pupils, slurred speech, difficulty swallowing, weakness or numbness in fingers & toes, or clear fluids draining from the nose or ears | Head banging (seizures); biting fingers or hand slapping (numbness)   |



**“IT WAS A SHARP, BURNING, ACRID SMELL. ONLY LATER DID I REALIZE THAT’S A SYMPTOM OF GETTING A CONCUSSION.”**

-BANAS

| Sensory Signs & Symptoms   | Possible Behavioral Manifestations:   |
|--|---|
| <b>Blurred or double-vision</b> – the person may also see “stars” or flashing lights | Excessive blinking; raising eyebrows; opening eyes; weeping eyes; movement stimulation (ex. waving head from side to side); waving fingers in front of eyes; banging head |
| <b>Ringling in the ears</b>  | Covering ears; banging head; biting hand  |
| <b>Changes in ability to smell</b> or complaining of smelling strange odors          | Disgusted facial expression   |
| <b>Changes in ability to taste</b> , or having a “bad taste” in one’s mouth          | Disgusted facial expression; refusing food; seeking strong- or sweet-tasting food   |
| <b>Sensitivity to light / sound</b>  | Avoids or becomes agitated in bright or loud environments; may prefer to stay in dark, quiet room   |

| Cognitive Signs & Symptoms   | Possible Behavioral Manifestations:  |
|--|--|
| <b>Memory or concentration problems</b>  | Difficulty answering simple questions; delayed response to questions / requests; difficulty remembering how to complete ADLs |
| <b>Mood changes / mood swings</b> – if you observe changes in the person’s behavior, such as irritability, <i>seek medical attention immediately</i> | Irritability; low frustration tolerance; aggression toward self, others, or property; cries easily                           |
| Feelings of <b>Depression or Anxiety</b>   | Sad or disinterested (Depression) or excessive fear / worry, agitation, pacing / restlessness (Anxiety)                      |
| <b>Confusion or disorientation</b> – <i>seek medical attention immediately</i>   | Difficulty recognizing familiar people / places; appears “dazed;” verbalizations don’t make sense; repeated questions        |

**IF THE PERSON ISN'T ACTING LIKE HIM or HERSELF, THEN MEDICAL CARE IS NEEDED!**

**Recovery**

Concussion can usually be treated by the person’s Primary Care Physician. However, a concussion specialist may be recommended if the person has a history of repeated concussions, disorder or migraines, or has pre-existing psychological issues (such as ADHD or Learning Disability).

When a person has experienced a concussion, it is important to remember that the brain is more sensitive and the person should take steps to avoid additional injury.

The person may be instructed to limit physical activity. The reason for this is that the injured brain requires glucose to heal. Glucose is brought to the brain via blood flow, which may already be reduced by the concussion. Any physical activity uses glucose, thus diverting it from repairing the brain.

This is also true of mental activity; subsequently, the person may also be prescribed “brain rest,” which typically means no electronics (computer, texting,



video games, etc.), no school / work, no puzzles, no music, and no bright lights -- basically, anything that requires the person to think / focus / concentrate harder than usual.

The person *may* be permitted small periods of TV or reading, as long as it doesn’t provoke symptoms (ex. headache). The person is encouraged to “Be bored. Sleep.” For some individual’s this may be difficult, as they may struggle to find ways to fill their time. Part of supporting the person through a concussion may be to help them find things to do while on “brain rest.” Focus on activities that require minimal thought and memory, and involve slow, relaxed movement.

The person’s doctor will guide the process of slowly returning the person to normal activity. This may take several weeks, but it is important to encourage and support the person to follow instructions for recovery, as studies have consistently shown that brain rest speeds recovery.

## Head Injury Test

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

Role/Title: \_\_\_\_\_

Agency: \_\_\_\_\_

Date: \_\_\_\_\_

Please provide contact information (email address, fax number, or mailing address) where you would like your certificate to be sent:

---

---

You must submit your completed test, with at least a score of 80%, to receive **1 hour** of training credit for this course.

- \* To submit via fax, please fax the test and evaluation (only) to 814-728-8887.
- \* To submit via email, please send an email to [HCQUNW@MilestonePA.org](mailto:HCQUNW@MilestonePA.org). Please put "Head Injury Test" in the subject line, and the numbers 1—10 along with your answers, in the body of the email, OR scan the test and evaluations pages and email as attachments.
- \* To submit via mail, send the test and evaluation pages to Milestone HCQU NW, 247 Hospital Drive, Warren PA 16365.

### Knowledge Assessment:

1. Concussions are considered a severe form of Traumatic Brain Injury. **True False**
2. Symptoms of a TBI may not show up for months after the injuring event. **True False**
3. Bruising of the brain is most likely in the frontal & temporal lobes. **True False**
4. If the person remains alert & responsive, and able to move normally, the person will likely NOT be given a CAT Scan following a blow or jolt to the head. **True False**
5. If the CAT Scan at the Emergency Room (following the injuring event) comes back negative, the person should be considered free from head injury. **True False**
6. A slow bleed can lead to rapid death. **True False**
7. If the person who is recovering from a concussion begins to experience slurred speech, you should call his / her Primary Care Physician to make an appointment as soon as possible. **True False**
8. If the person seems dazed and begins asking questions repeatedly you should seek medical care immediately. **True False**
9. Most concussions can be treated and monitored by the person's Primary Care Physician.  
**True False**
10. A person who has a brain injury should reduce mental activity and increase physical activity.  
**True False**

### Home Study Evaluation

Training Title: Head Injury Date: \_\_\_\_\_

- Direct Support Professional
- Program Specialist
- Consumer/Self-Advocate
- Support Coordinator
- PCH Staff/Administrator
- FLP/LSP
- Provider Administrator/Supervisor
- Provider Clinical Staff
- Family Member
- Support Coordinator Supervisor
- County MH/MR/IDD
- Other (please list): \_\_\_\_\_

Please circle your PRIMARY reason for completing this home-study training:

It's mandatory     interested in subject matter     need training hours     convenience

Please circle the best response to each question.

**5 = Strongly Agree**    4 = Agree    3 = Undecided    2 = Disagree    **1 = Strongly**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. As a result of this training, I have increased my knowledge. | 5 | 4 | 3 | 2 | 1 |
| 2. I learned something I can use in my own situation.           | 5 | 4 | 3 | 2 | 1 |
| 3. This training provided needed information.                   | 5 | 4 | 3 | 2 | 1 |
| 4. The training material was helpful and effective.             | 5 | 4 | 3 | 2 | 1 |
| 5. Overall, I am satisfied with this training.                  | 5 | 4 | 3 | 2 | 1 |
| 6. I am glad I completed this training.                         | 5 | 4 | 3 | 2 | 1 |

Suggestions for improvement: \_\_\_\_\_

Additional information I feel should have been included in this training: \_\_\_\_\_

I would like to see these topics/conditions developed into home-study trainings: \_\_\_\_\_