



## TRAUMATIC BRAIN INJURIES AFTER ACCIDENTS

### I Types of Traumatic Brain Injury

There are two types of brain injury: closed brain injury and penetrating brain injury.

#### CLOSED BRAIN INJURY

A closed brain injury is an injury that happens with no damage to the skull. These are concussions, brain bruises, and other such injuries that occur when the brain moves rapidly within the skull and the brain experiences bruising or tearing of brain tissue.

Closed brain injuries are the sort of injury most commonly seen in car accidents, falls, and sports. These are also the type of brain injury that you may overlook if symptoms don't appear right away.

#### PENETRATING BRAIN INJURY

A penetrating brain injury is an injury where the skull is damaged, either due to extreme force that breaks the skull or the skull being penetrated by an object. It's extremely unlikely that such an injury will be missed like a closed brain injury can be.

#### DIFFUSE AXONAL INJURY

[Diffuse Axonal Injuries \(DAI\)](#) make up 40-50% of the traumatic brain injuries that require hospitalization. A DAI is caused when the brain's connecting nerve fibers (axons) are torn or sheared during an injury.

DAIs can cause widespread brain damage, difficulty with thinking skills such as memory and learning new information, coma, or death.

### I Signs of a Traumatic Brain Injury

A traumatic brain injury can show up in many different ways. The damage can be physical and psychological. Sometimes symptoms will appear immediately after the traumatic event, other times symptoms may not appear until days or weeks later.

#### MILD TBIS

The signs and symptoms of a mild TBI can include:

- Headache
- Nausea or vomiting
- Fatigue or drowsiness
- Problems with speech
- Dizziness or loss of balance
- Sensory problems like blurred vision, ringing ears, bad tastes in the mouth with no source, and changes in the ability to smell
- Sensitivity to light and sound
- Loss of consciousness for up to a few minutes
- A state of being dazed, confused, or disoriented
- Memory and concentration problems
- Mood changes and mood swings
- Feeling depressed or anxious
- Difficulty sleeping
- Sleeping more than usual

# The brain can compensate for the loss of tissue by using other parts to compensate for the damage. It can also reroute function around damaged parts.

## MODERATE TO SEVERE TBIS

The signs for a moderate to severe TBI can include any of the previously listed symptoms, as well as the following symptoms that may appear within the first hours or days after a head injury:

- Loss of consciousness for several minutes to hours
- Persistent or worsening headache
- Repeated vomiting or severe nausea
- Convulsions or seizures
- Dilation of one or both pupils
- Clear fluid draining from the nose or ears
- Inability to wake up from sleep
- Weakness or numbness in fingers and toes
- Loss of coordination
- Significant confusion
- Agitation, combativeness, or other unusual behavior
- Slurred speech
- Coma and other consciousness disorders

## CHILDREN'S SYMPTOMS

Infants and young children with brain injuries may be unable to communicate things like headaches and sensory issues. A child with a TBI may show the following symptoms:

- Change in eating or nursing habits
- Unusual or easy irritability
- Persistent crying that cannot be consoled
- Change in attentiveness
- Change in sleeping habits
- Seizures
- Sad or depressed mood
- Drowsiness
- Loss of interest in their favorite activities and toys

## Potential Outcomes of a Traumatic Brain Injury

The brain is an incredibly complex organ. An injury that damages brain cells causes lasting damage; there is no way around that. However, recovery can occur for many people, especially younger people. The brain can compensate for the loss of tissue by using other parts to compensate for the damage. It can also reroute function around damaged parts.

This is a long and arduous process that generally requires years of treatment and rehabilitation, but recovery is possible.

## Recovery From a Traumatic Brain Injury

Rehabilitation from a brain injury involved working with the

body's natural ability to heal itself and the brain's ability to relearn. Rehabilitation also involves learning how to compensate for the damage done by the brain injury so that people can live as normal a life as possible.

There are several options for rehabilitation depending on a person's ability to perform the rehabilitation. It's essential to find the right option quickly because insurance companies often limit the amount of rehab a person can receive.

## ACUTE REHABILITATION

The medical team will start acute rehabilitation as early as possible, while still in the hospital or a rehabilitation hospital. The patient's health team will begin working with the patient to regain daily activities such as dressing, eating, using the restroom, walking, and speaking.

## POST-ACUTE REHABILITATION

Patients who have recovered enough to participate in more intensive therapy are transferred to a post-acute setting, such as a transitional rehab facility, also called residential rehabilitation or transitional living facilities.

The goal is to help the patient achieve as much independence as possible. This form of rehabilitation is intense. Patients undergo six or more hours of therapy every day. This comprehensive work is considered the gold standard for care and treatment following a TBI.

## SUB-ACUTE REHABILITATION

Sub-acute rehabilitation is for patients who may not be able to tolerate the intensity of a post-acute rehabilitation setting, but are still making progress. They just need the rehabilitation to take place over a longer period of time.

Sub-acute rehabilitation takes place in skilled nursing facilities or nursing homes.

## DAY TREATMENT

Day treatment occurs in a structured group environment during the day, and then the patient is able to return home. Some people transition to day treatment after post- or sub-acute treatment, while others move directly into day treatment after they are discharged from the hospital.

## OUTPATIENT THERAPY

Following other forms of rehabilitation, a patient may continue to receive outpatient therapies to maintain and enhance their recovery. Patients with brain injuries that did not require hospitalization may also receive outpatient therapy to address issues from their brain injury.