

LEARNING ABOUT TRAUMATIC BRAIN INJURY

The Silent Epidemic

Produced by:

**Brain Injury Association
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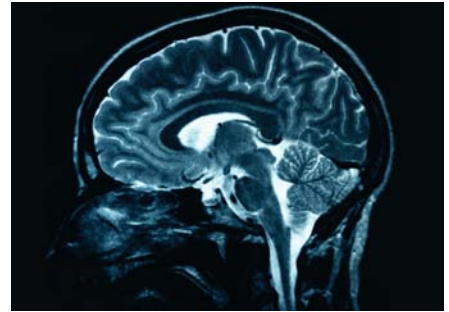
**The Florida Department of Health
Brain & Spinal Cord Injury Program**



Learning About Traumatic Brain Injury *The Silent Epidemic*

The human brain is the most complex and mysterious organ in the body. Weighing in at about three pounds, with the consistency of Jello and no moving parts, the brain is the ultimate multi-tasker, working 24 hours, 7 days a week to keep our hearts beating and our lungs breathing. From the blink of an eye to rocket science - every move we make, our intellect and emotions, our personalities and dreams – all are made possible by the brain.

In this presentation, Brain Injury Association of Florida will introduce you to our organization and the population we represent: Individuals with Traumatic Brain Injury (TBI). We will discuss what traumatic brain injury is, how it impacts the lives of individuals who sustain one, and what resources and services are available to help these individuals in the State of Florida.



Before we continue, please take a few moments to answer the following questions. The answers will be provided at the end of the presentation.

How much do you know about TBI?

1. Must an individual lose consciousness in order to sustain a traumatic brain injury?
2. True or False: Concussion is a form of brain injury.
3. Traumatic brain injury results from which of the following?
 - a) Falls
 - b) Congenital or birth trauma
 - c) Illness
 - d) Stroke
4. True or False: Most people who survive a traumatic brain injury must learn to live with long-term or permanent disabilities.
5. What is the cure for traumatic brain injury?

Traumatic Brain Injury does not discriminate – it can happen to anyone.

What is Traumatic Brain Injury (TBI)?

Florida Statute 381 defines Traumatic Brain Injury or TBI as an “insult to the skull, brain or its covering, resulting from external trauma which produces an altered state of consciousness or anatomic motor, sensory, cognitive or behavioral deficits.”

The two key points to remember are: Traumatic brain injury is caused by an *external* force, and although individuals may not lose consciousness, they could have an *altered state of consciousness*, such as post-traumatic amnesia, as a result of external trauma.

Acquired vs Traumatic

Traumatic brain injury is a subset of a much larger category called acquired brain injury. Acquired brain injury includes injuries to the brain such as birth trauma, near drowning, brain tumors, strokes and other brain disorders. Traumatic brain injuries are considered preventable. A traumatic brain injury is an acquired brain injury. However, an acquired brain injury is not necessarily a traumatic brain injury.

Causes in Adults in Florida

In 2005, falls became the leading cause of traumatic brain injury in adults, with car crashes a close second. Pedestrian related incidents and violence (such as shootings and assaults) are the third and fourth highest causes of traumatic brain injuries for adults in Florida.

Causes in Children in Florida

Motor vehicle crashes continue to be a significant cause of traumatic brain injury in children under 17 years of age. Think about the risk to a child who is placed in an improperly restrained car seat. Children who are walking and hit by a moving vehicle and kids using handguns are also major causes of traumatic brain injury among Florida’s children, as well as diving into natural waters such as lakes and rivers, jumps and falls, and sport-related injuries.

Shaken Baby Syndrome

Violently shaking a baby, or even tossing a baby into the air, bouncing the baby on one’s knee or bouncing the baby on a bed can cause the brain injury known as shaken baby syndrome. Children under one year of age are most at risk. People who shake a baby usually say they did it because the baby was crying.

Consequences of shaken baby syndrome may be blindness, paralysis and mental disabilities. Since an infant cannot self-report symptoms such as headaches or dizziness, doctors must order eye scans to detect retinal hemorrhages, an indication of shaken baby syndrome.

Remember: *Never, never, never shake a baby.*

How It Happens

We will now discuss different types of brain injury. A focal injury is when trauma occurs to the brain from a single point of entry such as a knife wound or gunshot wound to the head.

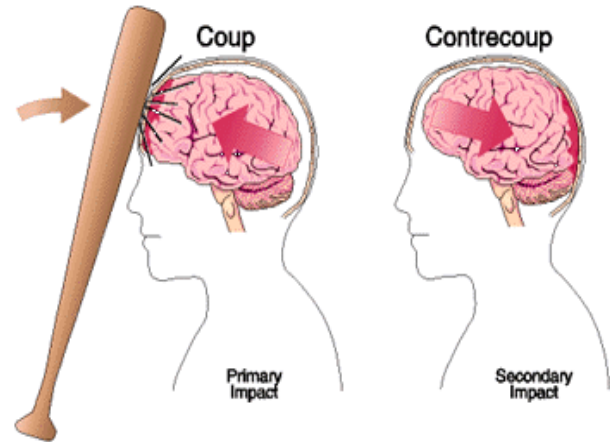
With Diffuse Injury (such as coup-contra coup), many areas may be affected, with more uncertainty in the prognosis or outcome of potential deficits.

Coup/Contra-Coup

The consistency of the brain is soft and custard-like. Under normal conditions, the brain floats within the skull in cerebrospinal fluid and therefore is sensitive to sudden movements of the head.

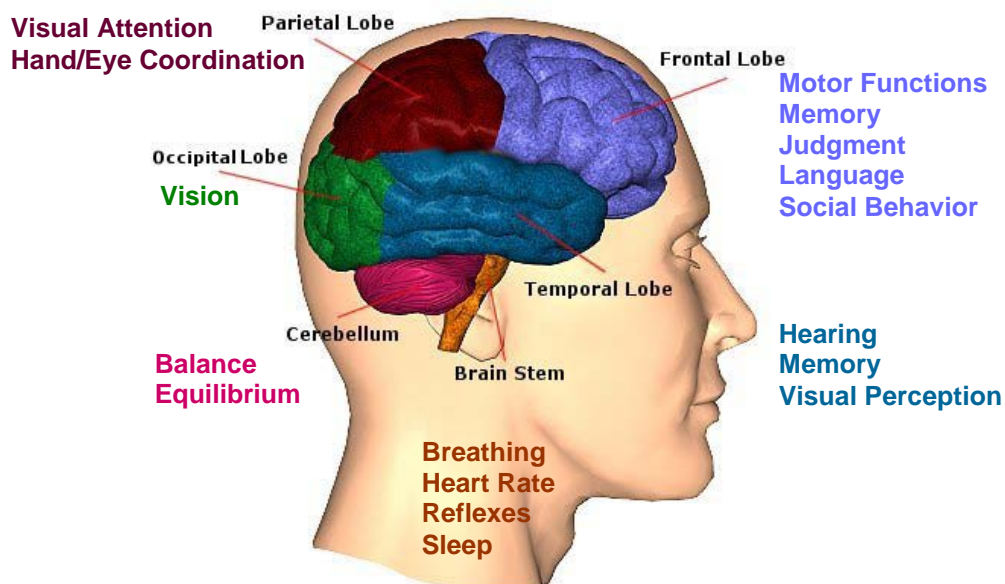
When the head receives a blow, the brain may bounce back and forth inside the skull, damaging the brain where the hit occurs and also damaging the opposite side of the brain. This is known as a coup-contra coup effect (the hit and opposing hit).

It's important to note that the inside of the skull contains bony ridges, and if the brain collides with these sharp ridges, the impact can damage the threadlike nerve connections called axons, which carry messages between the brain and the rest of the body.



Location of Injury

Another important factor in diagnosis, treatment and outcome of traumatic brain injury is which part or parts of the brain have been injured.



Mild, Moderate, and Severe

A “mild” brain injury, sometimes called a concussion, is one where the individual may lose consciousness or experience an altered state of consciousness lasting from a few seconds to up to 30 minutes, and may include posttraumatic amnesia. Retrograde amnesia is a loss of memory of events immediately before the injury. Loss of memory of events just after the injury is referred to as anterograde amnesia. Both are common in mild brain injuries.

A traumatic brain injury is considered moderate when the loss of consciousness lasts from several minutes to a few hours, followed by days or weeks of post-traumatic amnesia.

These classifications are generally thought to be predictive of outcome, however new research is showing that a TBI classified as Mild or Moderate can still produce serious and long-term consequences.

After sustaining a severe brain injury, an individual may be in a comatose state for days, weeks, or longer. How such an injury affects a person depends on many factors, some of which will be addressed later in this presentation.

Rating Scales

Emergency Medical Technicians and physicians at the scene or in the hospital use the Glasgow Coma Scale to rate the level or degree of unconsciousness.

GLASCOW COMA SCALE

Best Eye Response. (4)

- No eye opening
- Eye opening to pain
- Eye opening to verbal command
- Eyes open spontaneously

Best Verbal Response. (5)

- No verbal response
- Incomprehensible sounds
- Inappropriate words
- Confused
- Orientated

Best Motor Response. (6)

- No motor response
- Extension to pain
- Flexion to pain
- Withdrawal from pain
- Localizing pain
- Obeys Commands

The Rancho Los Amigos Scale rates a person's level of cognition and is a way of measuring the individual's improvement. The Rancho scale was developed by rehabilitation professionals (such as Speech and Language Pathologists, and Occupational and Physical Therapists) to provide a common language to understand how the individual is progressing through recovery.

Rancho Los Amigos Scale

- I NO RESPONSE:** Does not respond to voices, sounds, light, or touch; appears in a deep sleep.
- II GENERALIZED RESPONSE:** Limited, inconsistent, non-purposeful responses; first reaction may be to deep pain; may open eyes but will not seem to focus on anything in particular
- III LOCALIZED RESPONSE:** Inconsistent responses but purposeful in that reacts in a more specific manner to stimulus; may focus on a presented object; may follow simple commands.
- IV CONFUSED, AGITATED:** Heightened state of activity; confusion; unable to do self-care; unaware of present events. Reacts to own inner confusion, fear, disorientation; excitable behavior may be abusive or aggressive.
- V CONFUSED, INAPPROPRIATE, NON-AGITATED:** Appears alert; responds to commands; follows tasks for 2-3 minutes but easily distracted by environment; frustrated; verbally inappropriate; does not learn new information.
- VI CONFUSED APPROPRIATE:** Follows simple directions consistently; needs cueing; can relearn old skills; serious memory problems but improving; attention improving; self-care tasks performed without help; some awareness of self and others.
- VII AUTOMATIC APPROPRIATE:** If physically able, can carry out routine activities but may have robot-like behavior, minimal confusion, shallow recall; poor insight into condition; initiates tasks but needs structure; poor judgment, problem-solving and planning skills; overall appears normal.
- VIII PURPOSEFUL APPROPRIATE:** Alert, oriented; recalls and integrates past events; learns new activities and can continue without supervision; independent in home and living skills; capable of driving; defects in stress tolerance, judgment; abstract reasoning persist; many function at reduced levels in society.

Consequences of TBI – Physical

Common physical consequences of traumatic brain injury include:

- Paralysis on one side of the body (Hemiplegia)
- Defective muscle coordination, such as uncontrollable shaking.
- Inability to perform purposeful movements, although there is no sensory or motor deficit. (Apraxia)
- Double Vision and Partial Blindness
- Headaches
- Seizures - Brief attacks of altered consciousness, motor activity or sensory phenomena. Convulsive seizures are the most common form, but any recurrent seizure is considered epilepsy.

Consequences of Traumatic Brain Injury – Cognitive Recovery

Cognitive consequences refer to difficulties with thinking skills. Cognitive skills usually are recovered in a particular order and build on each other sequentially.

The first cognitive skill to recover is Attention / Concentration. The three types of attention and concentration are:

- Sustained Attention, which refers to the duration or length of time an individual is able to attend to stimuli.
- Span of Attention refers to the number of items to which one can attend at the same time.
- Focus of Attention is the individual's ability to stay on task, or not respond to distractions or other stimuli.
 - Mental Control is a type of focus. Mental control is the ability to switch attention between two or more different subjects.

After attention and concentration, individuals usually recover their sensory or perceptual skills. This is generally a time when symptoms like ringing in the ears, tingling in the limbs, or double vision tend to resolve or improve.

When the individual has regained some of their attention, concentration and perceptual skills, memory is the next skill to recover.

- Usually Long-term memory returns first, followed by
- Short-Term or recent memory.

Organization & Planning refers to the ability to use two or more pieces of information in a sequential order. Once an individual can organize pieces of information, they can then begin to problem solve, which is the ability to develop some form of prioritization.

The last cognitive skill to return is generally Judgment: There are two types of judgment, which incorporate all of the above skills. They are safety judgment and interpersonal social judgment.

Consequences of TBI – Symptoms of Cognitive Deficits

Symptoms of cognitive deficits are often misunderstood as behavioral or psychological problems. Some of the symptoms frequently misunderstood are: aggression, agitation, disinhibition, impulsivity, poor initiation, withdrawal, and some personality changes.



Consequences of TBI – Psychosocial

When an individual sustains a traumatic brain injury, they often undergo an alteration or loss of social networks and supports. It is not uncommon that if they work, they will lose their job, resulting in a loss of income. Living arrangements often change from independence to losing one's home or even living with parents or other caregivers. When this happens, the individual can experience feelings of isolation and depression.

Neuropsychologists

Neuropsychologists are specialists in understanding the relationship between brain and behavior. They go beyond the traditional roles of a psychologist, using a process approach to testing, rather than standardized tests. Also, neuropsychologists will often suggest strategies for addressing problems, after determining which areas of the brain have been affected.

Statewide Resources and Services

Brain Injury Association of Florida (BIAF) is a not-for-profit membership organization funded through membership fees, private donations, federal, state and local dollars. Our organization has several statewide programs available to individuals with traumatic brain injuries, family members, professionals and the general public.

The Traumatic Brain Injury Resource & Support Center

BIAF's Traumatic Brain Injury Resource & Support Center provides access to information, resource referrals and advocacy based on the needs of each individual who contacts our toll-free helpline or website. Information and resources are provided at no charge to individuals with a brain injury and family members.

The helpline staff determines the caller's needs and offers varying levels of service including:

- Verbal information
- Printed materials in electronic and hard copy
- Referrals to outside entities, or
- Referral to a BIAF Resource Facilitation Coordinator

Resource Facilitation

Resource Facilitation (RF) is a central component of the Traumatic Brain Injury Resource & Support Center (TBIRSC). The primary goal of the Resource Facilitation program is to link individuals with TBI with appropriate, accessible resources to assist them in attaining the highest possible level of independence and community integration.

Achieving this goal requires ongoing collaboration with many partners, including state agencies, Vocational Rehabilitation, Centers for independent Living, the Veterans Administration and Social Security. An important step in this process is to identify and document duplication, gaps and barriers in the delivery of services, and to advocate after such identification is made.

BIAF Resource Facilitation Coordinators Our Resource Facilitation Coordinators (RFC's) are located throughout the state, serving all 67 counties in Florida. RFC's are certified by ACBIS, the American Academy for the Certification of Brain Injury Specialists, and trained to work effectively with individuals with brain injury.

They collaborate with program participants, their families and caregivers to develop goals, identify needs and negotiate services from a variety of organizations. By working closely with the service providers in their regions, RFC's can offer accurate, accessible referrals and help participants to weave a network of support in their community.

RFC's provide training and education about TBI to local service providers. Understanding the unique and myriad challenges faced by persons with TBI enables providers to work more effectively with these individuals and their families.

Services provided by an RFC may include how to contact an organization or support group, or information on other areas of assistance including:

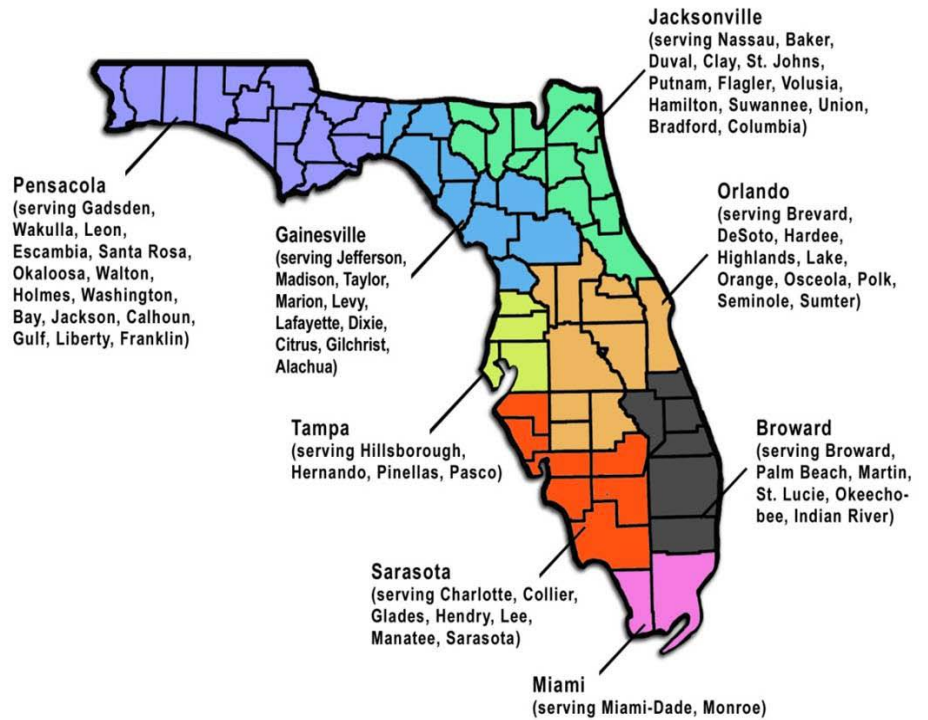
- Rights
- Advocacy
- Entitlements
- Community service systems
- help completing associated paperwork

Most services are delivered by telephone and email. BIAF is not a crisis center and does not respond to medical issues.

Outreach & Prevention

BIAF's Outreach & Prevention programs provide information, education and support to the general public and targeted groups. Outreach activities to groups, organizations and agencies help increase awareness about TBI and the Resource & Support Center.

BRAIN INJURY ASSOCIATION OF FLORIDA



BIAF has been recognized nationally and internationally for the numerous brain injury prevention activities it conducts throughout the state. We present ways in which individuals of all ages can reduce their risk of sustaining a traumatic brain injury. Our mission in prevention is to enhance, aid, and supplement local safety programs with information, materials, and resources about brain injury.

Eligibility for Brain Injury Association of Florida Services

Brain Injury Association of Florida responds to all individuals who self refer as having a traumatic brain injury, those who are referred and reported as having a traumatic brain injury, or when there is a reasonable belief that the individual has sustained a traumatic brain injury.

The services and activities our organization provides are not diagnostic and do not establish or verify that an individual has a traumatic brain injury. For those who require diagnosis or treatment, our organization can identify professionals who specialize in diagnosing and treating brain injuries.

What is BSCIP?

Brain Injury Association of Florida works closely with the **Florida Department of Health, Brain and Spinal Cord Injury Program (BSCIP)**, the only state government agency solely dedicated to serving individuals who sustain a traumatic brain and/or spinal cord injury. BSCIP provides case management and other critical services necessary for community reintegration for qualified individuals who have: 1) sustained a traumatic brain and/or spinal cord injury; 2) have no other source of payment for these services.

BSCIP receives its funding from a trust fund managed by the Florida Department of Health, a percentage of which comes from traffic-related fines such as speeding, Driving Under the Influence, and fees from temporary license and motorcycle specialty tags.

Brain and Spinal Cord Injury Central Registry

Anyone who wishes to refer an individual for services, with a diagnosis of traumatic brain or spinal cord injury can contact the BSCIP Central Registry. Under Florida Statute 381, public and private health agencies, social service agencies and attending physicians should refer any person who has sustained a moderate to severe brain or spinal cord injury to the BSCIP Central Registry within five days of identification. The report should contain the name, age, residence and type of disability, plus any additional information necessary for BSCIP to determine eligibility for their services. **The number to call is 800-342-0778.**

Eligibility for BSCIP Services

For an individual to be eligible for BSCIP services, they must be a legal resident of the State of Florida, have sustained a traumatic injury as defined by Florida Statute 381, must be medically stable and there must be a reasonable expectation that the individual can be reintegrated into their community. For more information about what BSCIP has to offer, you may call toll free at **866-875-5660** or go to their website at **www.myflorida.com**, **key words “brain” and “spinal cord.”**

This concludes our introduction to traumatic brain injury and the statewide resources that are available. If you know of an individual who has sustained a traumatic brain injury or a family member seeking information about traumatic brain injury, please encourage them to call our toll free family helpline at **800-992-3442** or visit our website at www.byyourside.org.

All of us at Brain Injury Association of Florida thank you for taking the time to learn more about traumatic brain injury.

Answers to the questions asked at the beginning of this presentation are provided below.

How much do you know about TBI?

1. Must an individual lose consciousness in order to sustain a traumatic brain injury?
No, but they could have an altered state of consciousness.
2. **True** or False: Concussion is a form of brain injury.
3. Traumatic brain injury results from which of the following?
a) Falls
b) Congenital or birth trauma
c) Illness
d) Stroke
4. **True** or False: Most people who survive a traumatic brain injury must learn to live with long-term or permanent disabilities.
5. What is the cure for traumatic brain injury?
**There is no cure for traumatic brain injury.
Prevent Brain Injuries.**