



# BRAIN INJURY SERVICES

*Effective strategies for working with individuals  
with acquired brain injury*

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# Goal of this Training:

Participants in this training will become more aware of the impact of acquired brain injury on the individual with the injury and for those who care for and about those individuals and learn practical strategies and skills for effectively helping these individuals.

# Objectives:

- Identify severity levels, types, causes and impact of acquired brain injury
- Identify physical, cognitive and emotional symptoms of acquired brain injury
- Understand and apply effective strategies when providing services to all individuals impacted by brain injury

# ZOOM POLL

# TBI Facts and Statistics



According to the CDC:

- There were over 69,000 TBI-related deaths in the United States in 2021 (about 190/day)
- There were approximately 214,110 TBI-related hospitalizations in 2020
- Those 75 years and older had the highest rates of TBI-related hospitalizations and deaths
- These estimates do not include the many TBIs that are only treated in the emergency department, primary care, urgent care, or those that go untreated [or unreported]

Centers for Disease Control (2024) <https://www.cdc.gov/traumatic-brain-injury/data-research/index.html>

# Incidence and Prevalence of Traumatic Brain Injury in the United States

According to the Centers for Disease Control (CDC) an estimated 5.3 million Americans (2%!) are living today with disability related to traumatic brain injury

[https://www.cdc.gov/traumaticbraininjury/pubs/tbi\\_report\\_to\\_congress.html](https://www.cdc.gov/traumaticbraininjury/pubs/tbi_report_to_congress.html)

Most studies indicate that males are far more likely to incur a TBI than females. The highest rate of injury occurs between the ages of 15-24 yrs. Persons under the age of 5 or over the age of 75 are also at high risk

<https://www.internationalbrain.org/resources/brain-injury-facts>

# Acquired Brain Injury Causes, Types and Severity

# What is a Brain Injury?

## TERMINOLOGY

### Acquired Brain Injury (ABI)



The “umbrella” term for all brain injuries:

Regardless of cause, ABIs affect the physical integrity and/or functional ability of the brain

### TYPES OF ABI:

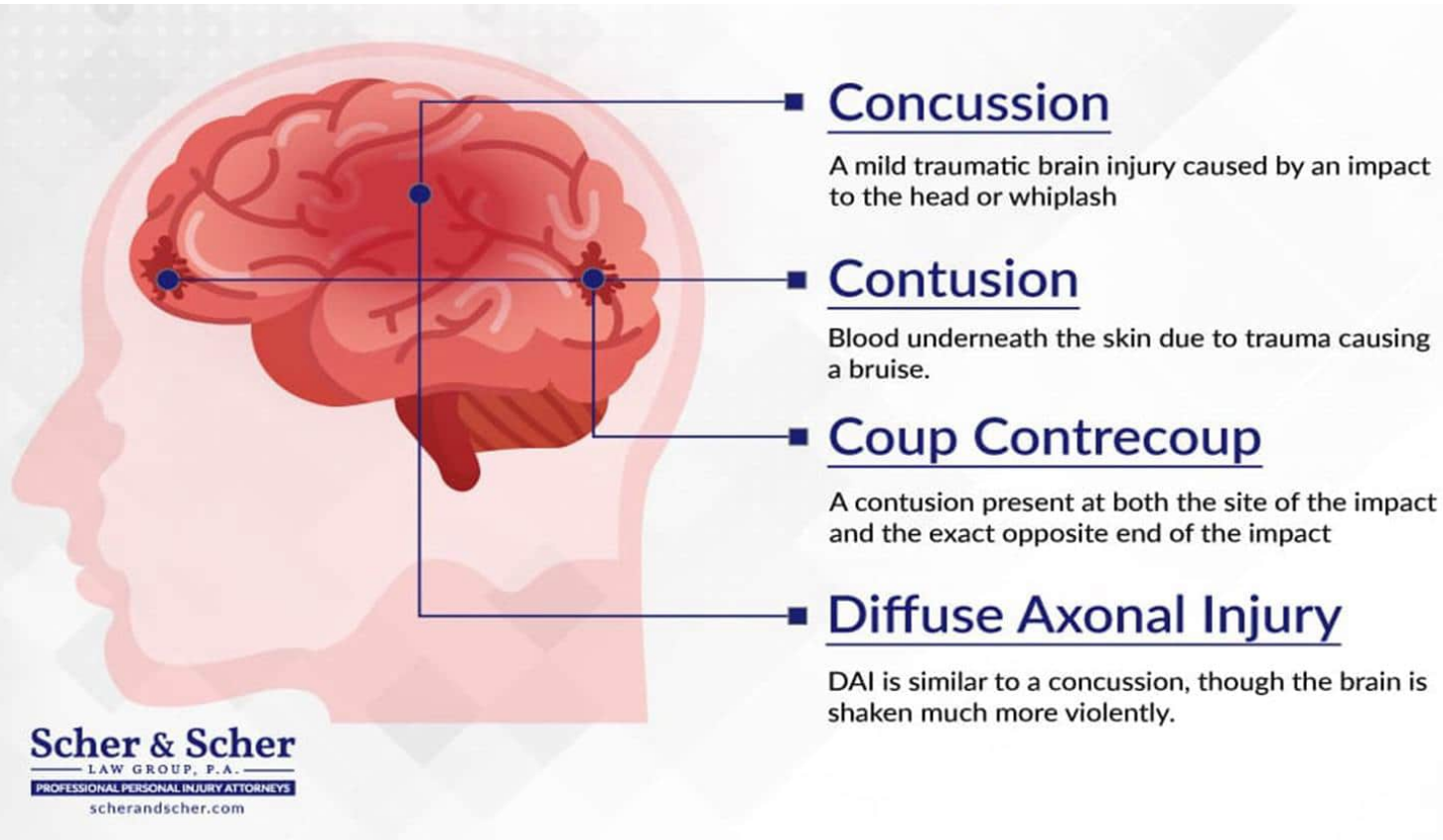
Traumatic Brain Injury (TBI)

Non-Traumatic Brain Injury  
(Non-TBI)



# Traumatic Brain Injury (TBI)

defined as an “alteration in brain function, or other evidence of brain pathology, caused by an external force”.



## TBIs are either:

1. closed (non-penetrating)
2. open (penetrating)

## Examples of TBI Possible Causes:

Falls

Assaults

Motor Vehicle Accidents

Sports Injuries

Explosive Blasts

<https://www.biausa.org/brain-injury/about-brain-injury/basics/overview>

# Injury Continuum: TBI

## **MILD / Concussion**

LOC - less than 30 minutes  
CT and MRI scans will look normal

PTA (disorientation) less than 24 hours

85% will completely recover...if it's the first injury

Not likely to have therapy unless symptoms persist

## **MODERATE**

Usually involves loss of consciousness less than 24 hours

PTA 1 to 7 days

May receive rehabilitative services

## **SEVERE**

Prolonged loss of consciousness

PTA more than 7 days

May or may not have a physical disability

Usually transferred to rehab after they are medically stable

# Non-Traumatic Brain Injury (N-TBI)

defined as an “alteration in brain function, or other evidence of brain pathology, caused by internal factors”.

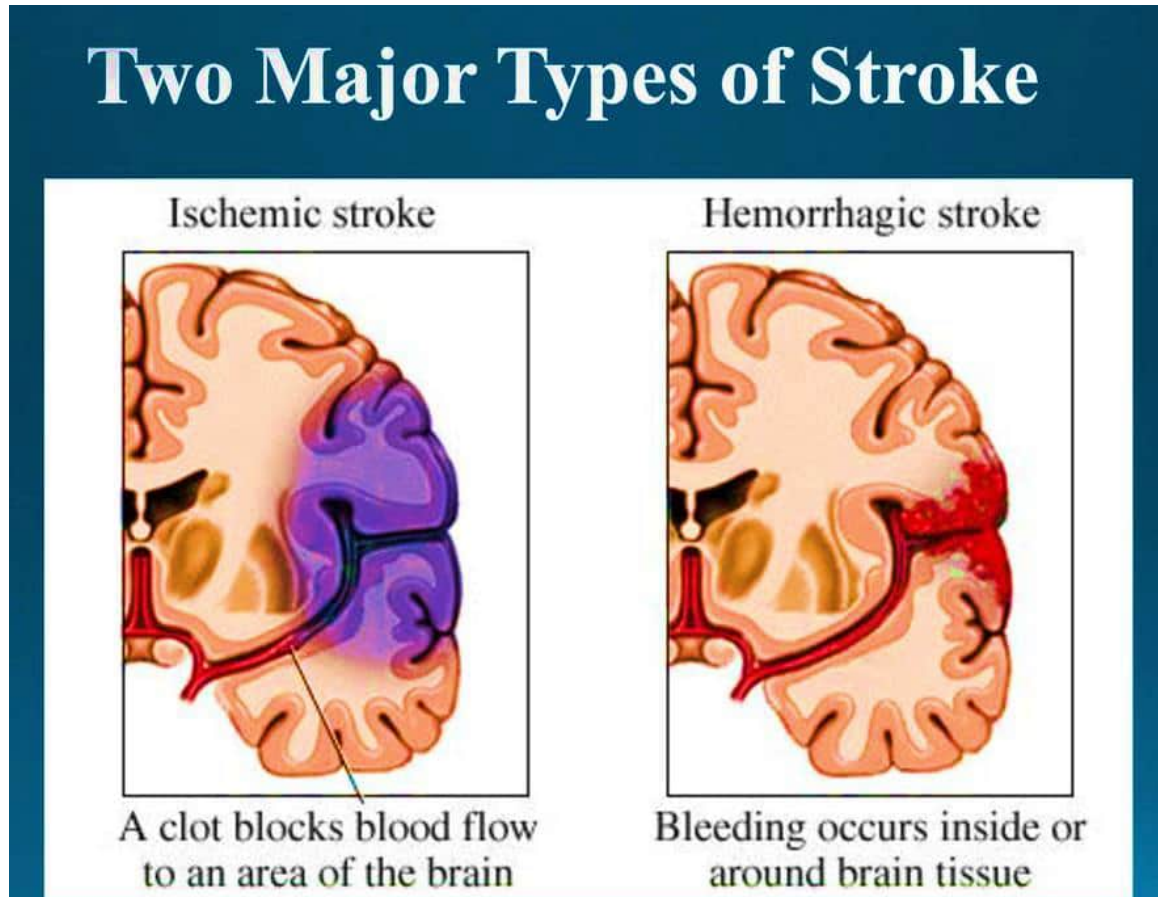


Image credit: <https://slideplayer.com/slide/12831142/>

on the web at [braininjurysvcs.org](http://braininjurysvcs.org)



**Most Common Type of N-TBI:**  
Cerebrovascular Accident  
(CVA) AKA Stroke

## Types of Stroke:

- **Ischemic Stroke** (*most common*)
- **Hemorrhagic**
- **Transient Ischemic Attack** (*mini-stroke*)

## Other Causes of N-TBI:

- **Aneurism**
- **Anoxia** (*i.e., near drowning, or heart attack*)
- **Exposure to toxins/chemicals**
- **Tumors/Cysts** (*surgery*)

**Infectious Disease** (*meningitis, COVID-19*)

<https://www.biausa.org/brain-injury/about-brain-injury/basics/overview>

# Incidence and Prevalence of Strokes in the US

According to the CDC, someone in the United States has a stroke every **40 seconds** and every 4 minutes, someone dies of stroke

- Every year, more than **795,000 people** in the United States have a stroke. About 610,000 of these are first or new strokes
- About 185,000 strokes—nearly 1 of 4—are in people who have had a previous stroke
- About **87%** of all strokes are ischemic strokes, in which blood flow to the brain is blocked

Stroke is the leading cause of long-term disability

<https://www.cdc.gov/stroke/facts.htm>

# Neuroanatomy of Cognition and Behavior

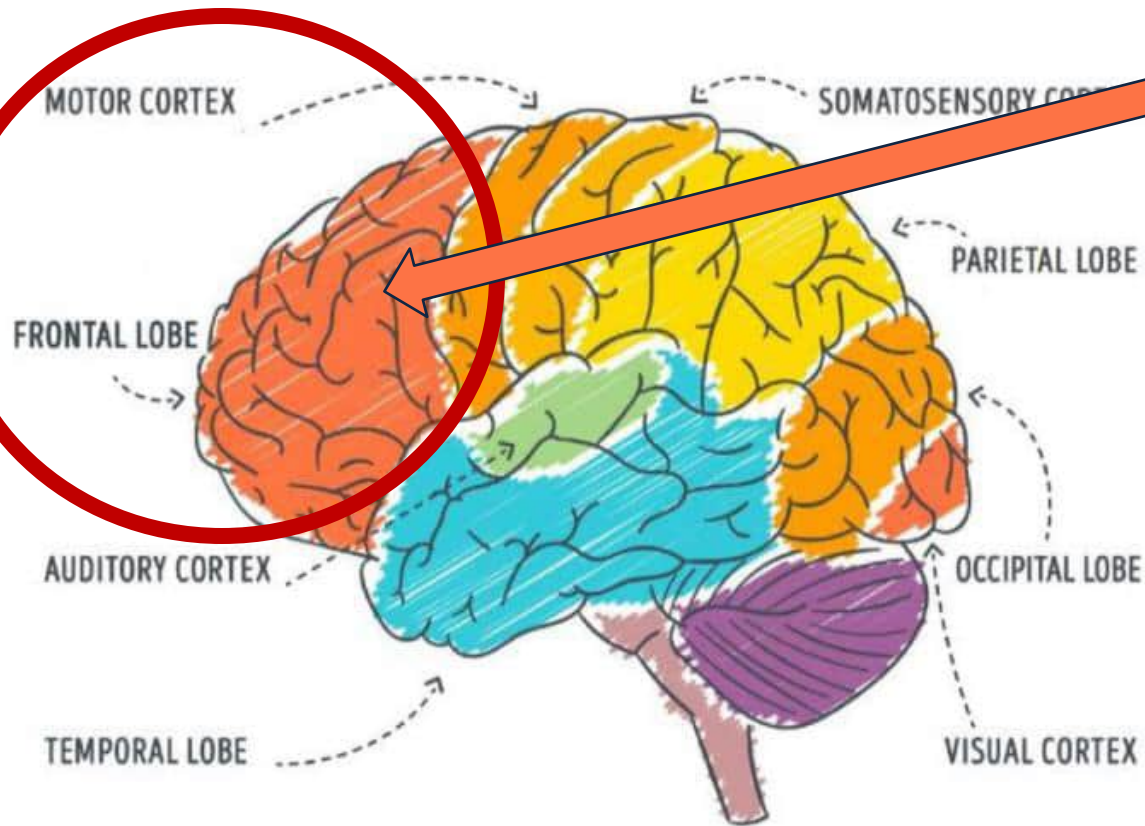
The  
"CEO" of  
the Brain

## Frontal Lobe

Manages executive functions:

organizing, impulse control, decision making

Damage can cause changes in emotional control, motivation, initiation and frustration tolerance

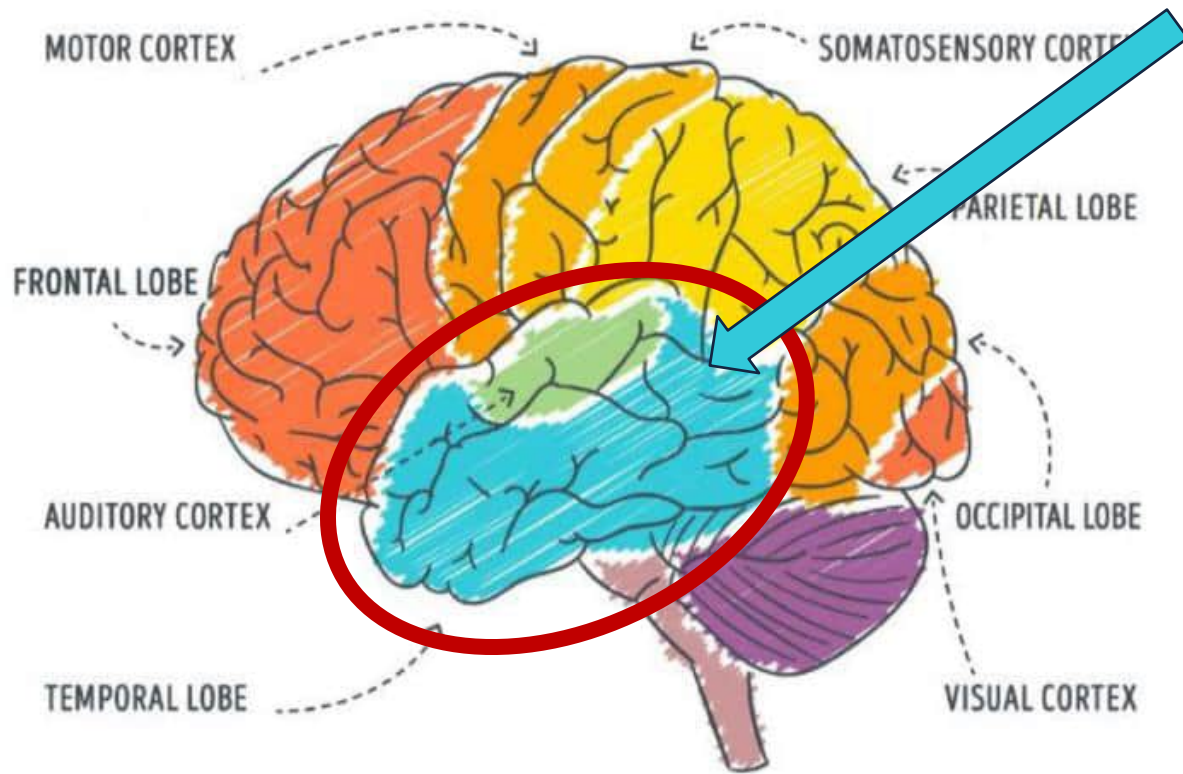


# Neuroanatomy of Cognition and Behavior

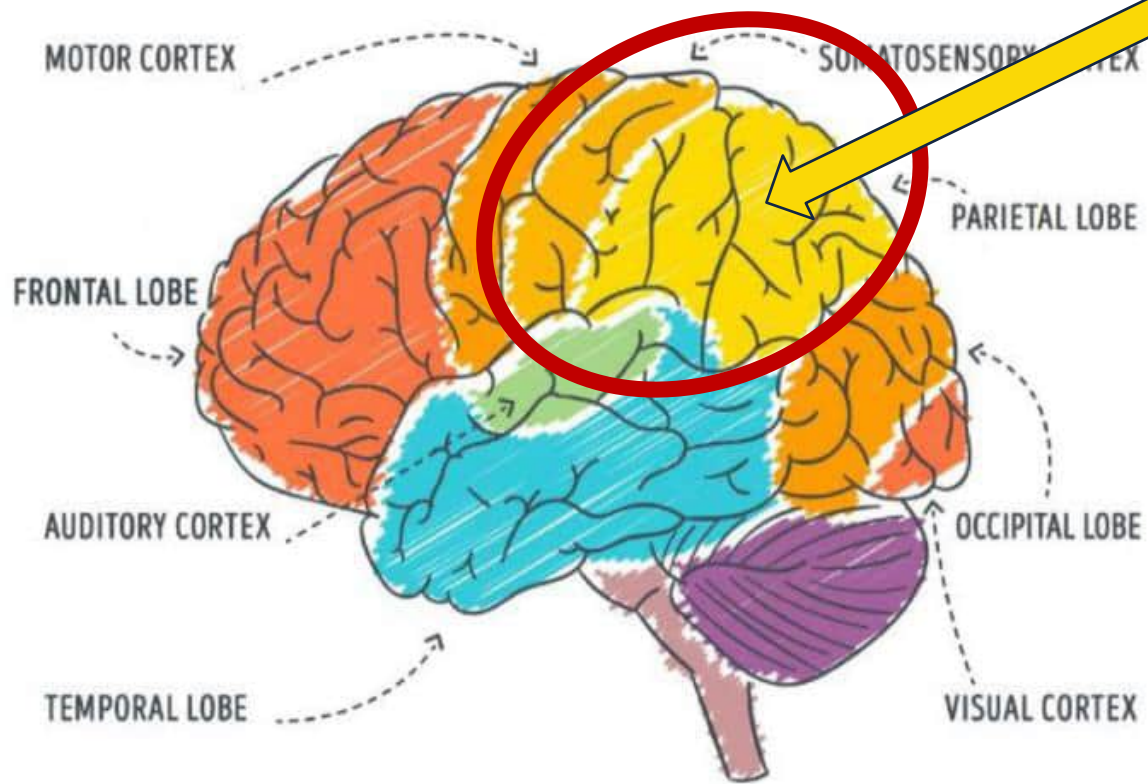
## Temporal Lobe

Controls language and memory (hippocampus), and fear emotions (amygdala and basal ganglia)

Damage here can cause aggression, persistent talking, PTSD



# Neuroanatomy of Cognition and Behavior



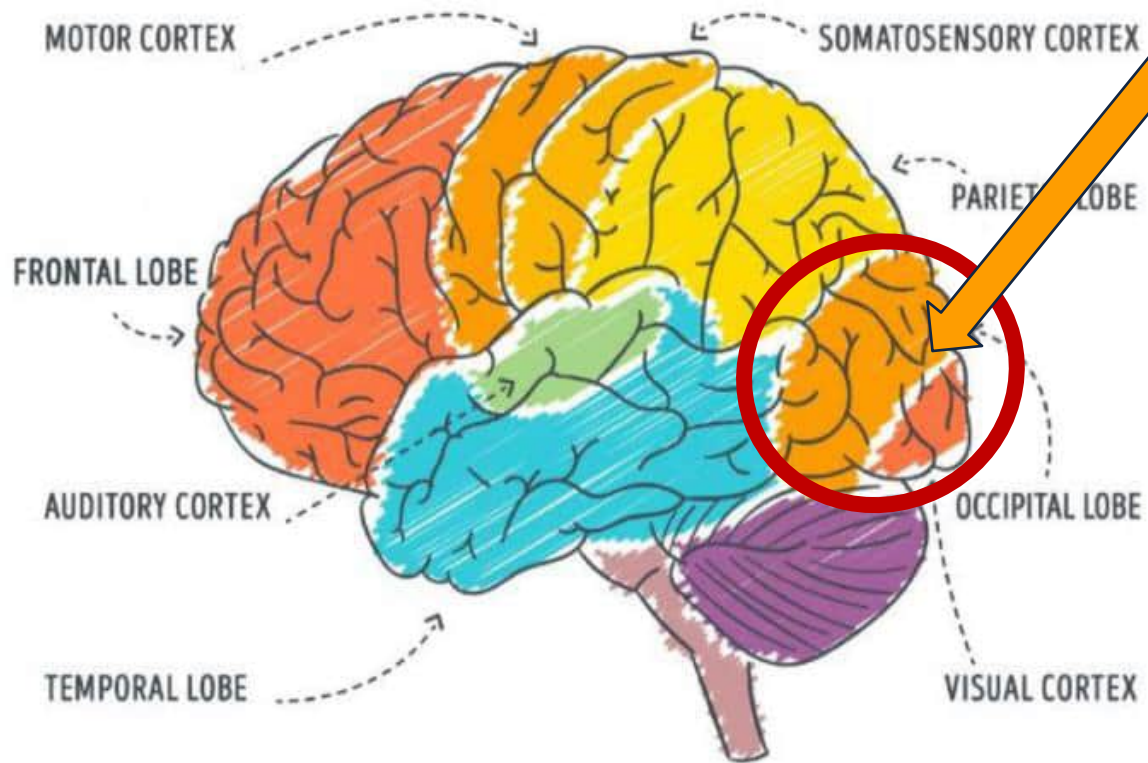
## Parietal Lobe

Sensory perception and integration, including the management of taste, hearing, touch, and smell

region where the brain interprets input from other areas of the body

Damage here can result in an inability to coordinate movement, understand where your body is in space, and respond to sensory info in an appropriate way

# Neuroanatomy of Cognition and Behavior



## Occipital Lobe

the visual processing area of the brain

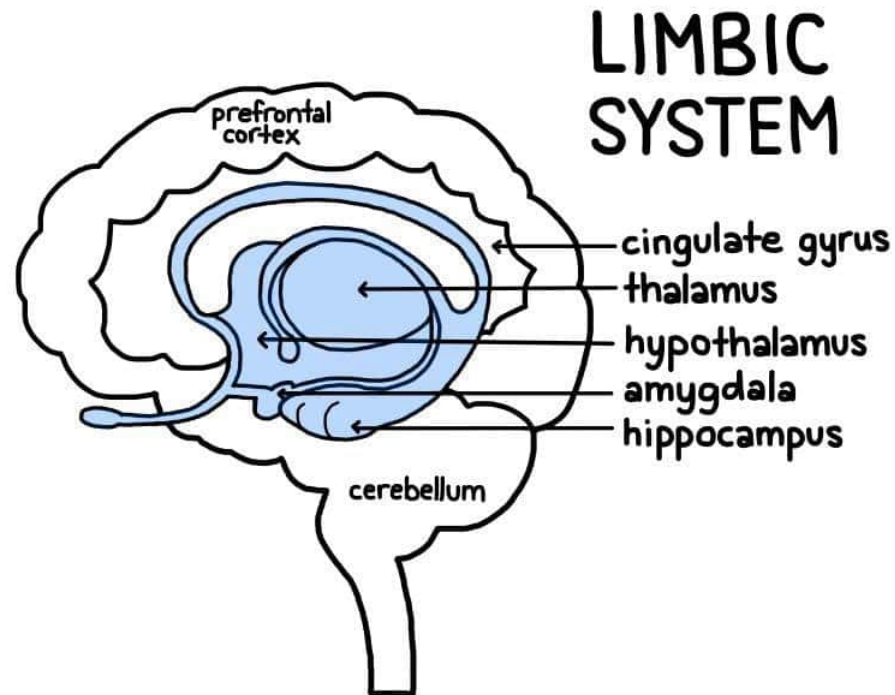
Controls visuospatial processing, distance and depth perception, color determination, object and face recognition, and memory formation

Damage here can result in full or partial blindness, or visual conditions that can hinder recognizing faces or familiar objects



# Neuroanatomy of Cognition and Behavior

## Limbic System



Involved in our behavioral and emotional responses, especially when it comes to behaviors we need for survival: feeding, reproduction and caring for our young, and fight or flight responses

Damage in this area impacts the “fight, flight or freeze” response and leads to hormonal disruptions

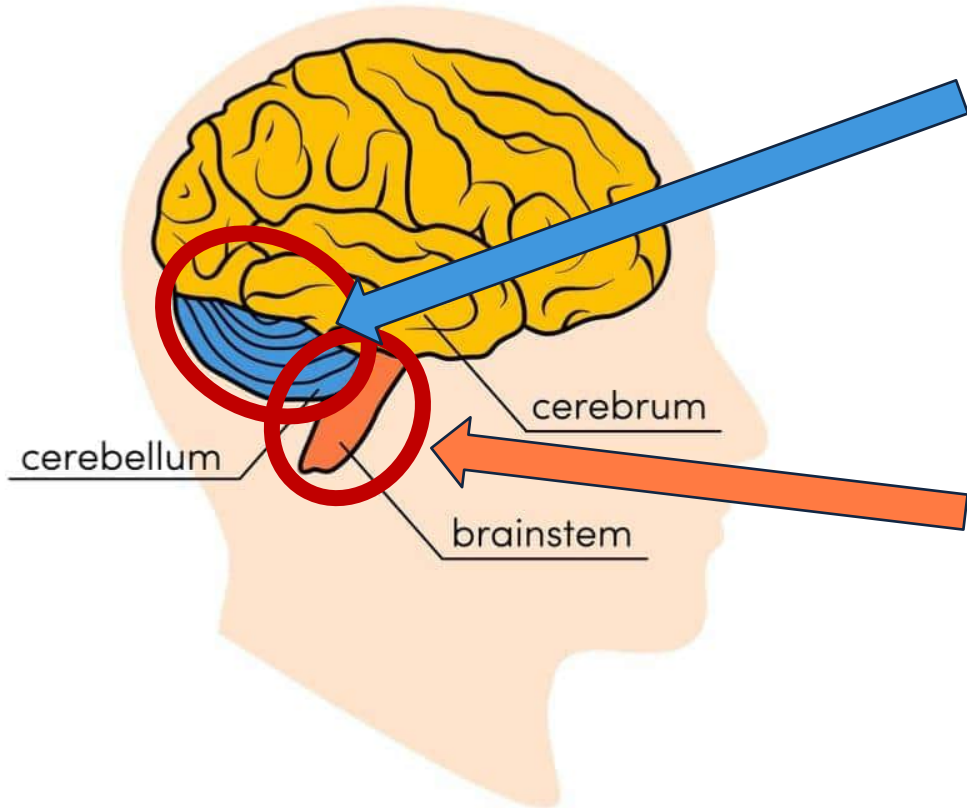
# Neuroanatomy of Cognition and Behavior

## The Cerebellum

**Motor Functions; movement, equilibrium, balance, posture**

## The Brainstem

**Involuntary actions of the body; heartbeat, blood pressure, breathing, sleeping, digesting**



# Possible Symptoms after Brain Injury



**Physical**



**Cognitive**



**Emotional**

# Physical Symptoms

- Motor function loss
- Difficulty with speech (*aphasia*)
- Motor weakness
- Seizures
- Headaches
- Fatigue
- Sleep disorders
- Balance issues
- Dizziness



**Physical**

## Vision Changes

- Light sensitivity, blurry vision, double vision, visual processing, depth perception
- May have 20/20 vision but the brain may not interpret the image correctly

## Hearing Changes

- Noise sensitivity
- Difficulty hearing
- Ringing, buzzing, humming.

# Cognitive Symptoms

- Trouble concentrating
- Poor attention span
- Feeling confused or “foggy”
- Slowed processing
- Trouble understanding others
- Memory disturbance
- Learning difficulty

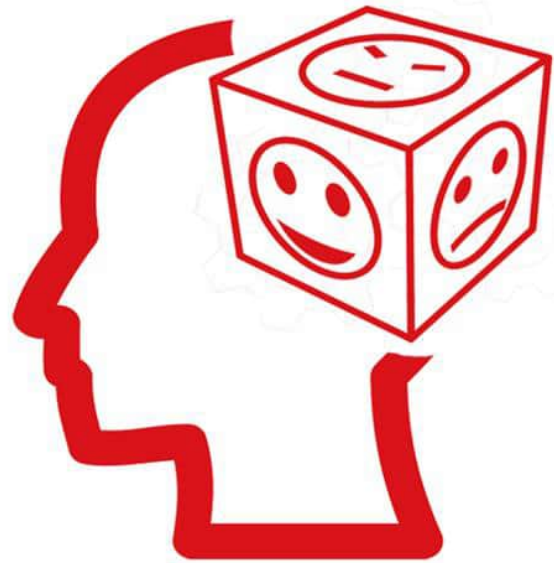


**Cognitive**

- Getting lost in familiar places
- Loss of insight or awareness of deficits
- Communication challenges
- Changes in sleep patterns
- Changes in executive functions – ability to manage life’s challenges

# Emotional/Behavioral Symptoms

- Personality changes
- Irritability
- Frustration
- Rage
- Depression
- Anxiety
- Agitation
- Aggression



**Emotional**

- Disinhibition
- Apathy
- Impulsivity & impulse control
- Narcissism
- Impaired self-awareness
- Poor social skills
- Impaired ability to regulate behavior or use logic to respond

# Behavior/Emotional Facts:



- Sometimes brain injury can result in the development of a mental health condition that may be long lasting. Some symptoms such as emotional lability may be a factor in the early stages of recovery but may improve over time as the brain heals.
- One study reveals that approximately 1 in 5 individuals may experience mental health symptoms up to six months after mild traumatic brain injury (Stein et al, JAMA Psychiatry. 2019)
- Brain Injury may exacerbate pre-existing mental health symptoms or new mental health conditions may develop related to the type of injury, situational factors or adjustment to living with a permanent disability.

# Effective strategies: assessment, accommodation and treatment of individuals with brain injury and mental health issues



# Brain Injury and Mental Health

**After brain injury, traditional mental health assessment and treatment may need to account for fluctuations in cognition or other changes**



## Here's why:

- Sleep disturbance is common after brain injury
- Flat affect or seeming lack of emotion may be a direct result of injury rather than an indicator of mood
- Slow processing doesn't always equal low intelligence, learning disability or drug use
- Memory challenges may not be related to dementia and may be temporary
- Fatigue may be a symptom after brain injury related to an overtaxed brain or other factors

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**DSM-5**

- (1) Depressed mood
- (2) Markedly diminished interest or pleasure
- (3) Significant weight loss
- (4) Insomnia or hypersomnia
- (5) Psychomotor agitation or retardation
- (6) Fatigue or loss of energy
- (7) Feelings of worthlessness or excessive or inappropriate guilt
- (8) Diminished ability to think or concentrate, or indecisiveness
- (9) Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan or a suicide attempt or a specific plan for committing suicide.

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**ICD-10****Typical symptom criteria**

- (1) Depressed mood
- (2) Loss of interest and enjoyment
- (3) Increased fatigability

**Common symptom criteria**

- (4) Reduced concentration and attention
- (5) Reduced self-esteem and self-confidence
- (6) Ideas of guilt and unworthiness (even in a mild type of episode)
- (7) Bleak and pessimistic views of the future
- (8) Ideas or acts of self-harm or suicide
- (9) Disturbed sleep
- (10) Diminished appetite

# Not everyone is aware that they've had a brain injury!

You may have clients who:

- Are forgetful
- Have a hard time paying rent or utilities on time
- Have a hard time keeping a job
- Are never on time
- Say things are always "happening" to them
- Are easily overwhelmed

# Social/Emotional/Behavioral Assessment:

**Obtain as much history as you can by asking about**

accidents

domestic violence

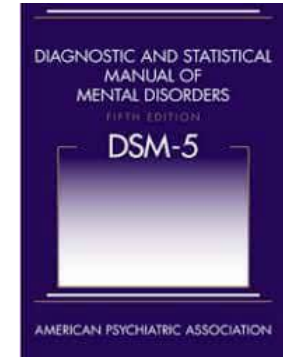
history of stroke or TIAs

viruses

cognitive changes



# Mental Health Diagnosis or Brain Injury?



Brain injury may look like a psychiatric disorder if BI is not factored into assessment

Here's why:

- **Anxiety specific to the incident that caused the brain injury**
  - fear of being in the place where the incident occurred
- **Memory loss related to the incident while still having associated traumatic responses**
  - sirens, flashing lights, sound of a helicopter may trigger an emotional response
- **Avoidance of others due to heightened sensory, memory or communication issues**
  - loud noises or bright lights may trigger a physical or emotional response
- **Labile mood associated with *pseudobulbar effect***



# Pseudobulbar Effect



## According to the Mayo Clinic:

Pseudobulbar affect (PBA) is a condition that's characterized by episodes of sudden uncontrollable and *inappropriate* laughing or crying. Pseudobulbar affect typically occurs in people with certain neurological conditions or injuries, which might affect the way the brain controls emotion

The primary sign of pseudobulbar affect (PBA) is frequent, involuntary and uncontrollable outbursts of crying or laughing that are exaggerated or not connected to your emotional state.

Because pseudobulbar affect often involves crying, the condition is frequently mistaken for depression.

<https://www.mayoclinic.org/diseases-conditions/pseudobulbar-affect/symptoms-causes/syc-20353737>



# Additional emotional and brain injury symptoms that mimic mental health issues



## Mood and other indicators:



Emotional

- Social avoidance or isolation may be due to sensory, word-finding, or processing challenges
- Depression is common due to loss of previous identity, skills, friends, and job or other loss of roles
- Flat affect may be a result of the brain injury and not an indicator of mood

# Physical and cognitive symptoms that could appear to be psychiatric:



Physical



Cognitive

- **Double or other vision issues**  
poor eye contact, issues with completing tasks
- **Vestibular issues**  
poor balance or dizziness
- **Fatigue/"brain fog"**  
poor follow through, focus or mood
- **Slow processing** (auditory or visual)  
impacts response, focus or mood
- **Memory**  
impacts relationships, is different than dementia
- **Speech deficit**  
impacts response, confidence, relationships

# Aphasia

Speech  $\neq$  Intelligence



***expressive aphasia:*** difficulty with word finding/expression, but understand

***receptive aphasia:*** difficulty understanding

aphasia info: [asha.org](http://asha.org)

**Speech does not necessarily reflect understanding. It is often difficult for individuals with aphasia to express themselves, but unless they have receptive aphasia, they most likely understand everything you are saying.**



# Accommodations for behavioral/emotional treatment after brain injury



# Prompting

may be necessary to compensate for lack of initiation or poor memory

visual

verbal

modeling

physical

# Repetition, Repetition, Repetition....

to accommodate focus and short-term  
memory deficits

# Offer options

It may help to offer choices of answers when asking questions

An individual may understand but is unable to find the words needed

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a

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b

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c

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# Change the Modality



## Offer creative options

- Drawing, writing, or using art mediums may be useful for expression.
- Individuals with aphasia may be able to write words or draw concepts they cannot speak.
- Use of images may also encourage communication.

# Behavioral Concerns after BI

# Interrupting



may be a memory concern

**In groups or individually** encourage use of a place to "park" thoughts until a more appropriate time to share

# Resistance?

**Not doing assignments or using tools** may be a memory or visual processing issue rather than resistance

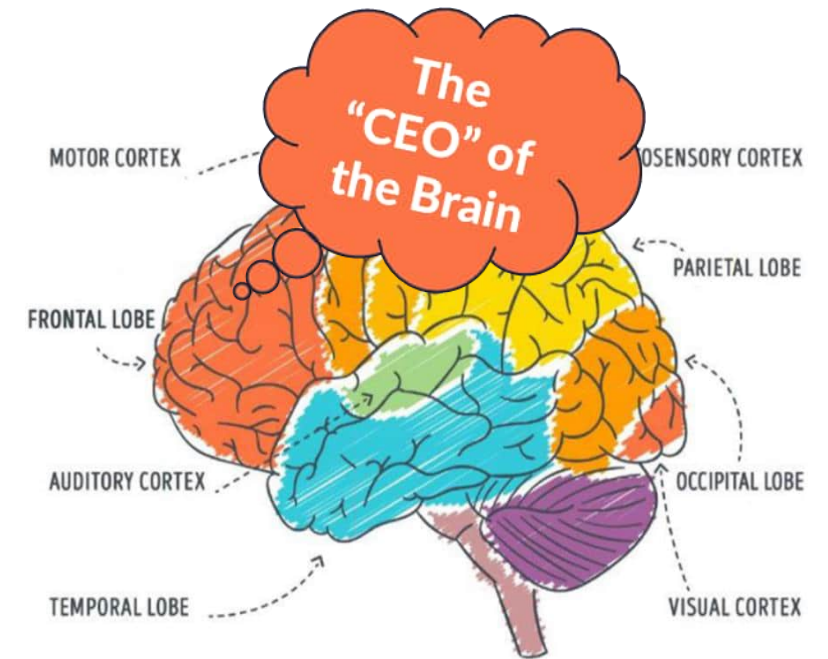
**Teach and rehearse** a strategy or tool during sessions rather than expecting them to do so while they are not with you

**Ask what is difficult** about the assignment; sometimes visual processing or auditory processing may be the issue

# Poor follow through

may be a result of damage to the frontal lobe

- It might not improve with training and may need to be accommodated
- Use reminders
- Offer shorter, more frequent sessions at the same time/on same day
- Break up tasks into smaller steps

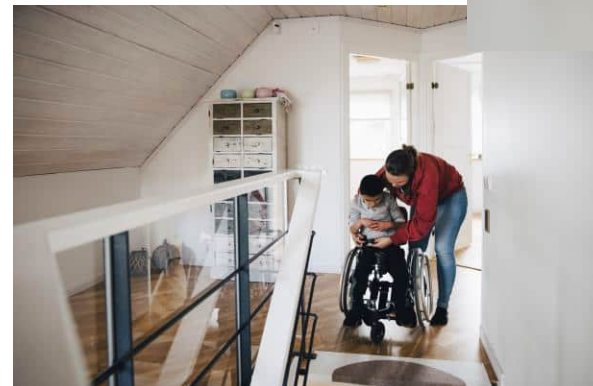




# Grief and loss associated with brain injury

# Roles/Responsibilities/Relationships/Identity

- Loss of job, career, primary role in family
- Loss of confidence
- Loss of relationships
- Loss of abilities



# Response to Grief and Loss

Denial, Anger, Bargaining, Depression, Acceptance, Finding Meaning



# Denial

Denies changes

Ignores recommendations

Maintains that nothing has changed

*Denial versus anosognosia*

# Anger

- Anger at person who caused injury
- Frustration with self or others
- Anger at disability
- Anger at medical personnel
- Anger at insurance company



# Bargaining

## False hope

Belief that grief can be avoided through negotiation

## Struggling to find meaning

Why did this happen?

How can I make sense of this?





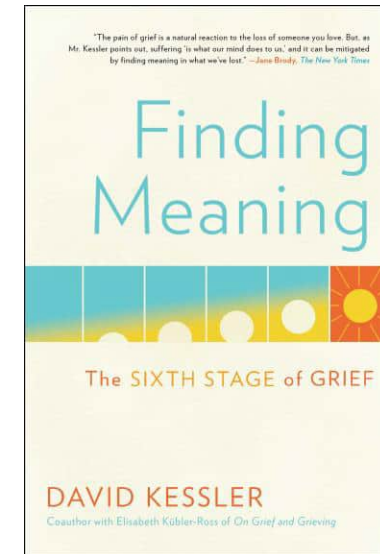
# Acceptance

- Emotions begin to stabilize
- Come to terms with new reality
- Exploring options
- Making new plans
- Moving forward



# Finding Meaning

- Giving back
- Advocacy
- Supporting others
- Speaking out
- Focusing on gains



# Caring for the caregiver impacted by brain injury



# Caring for the caregiver impacted by brain injury

“The thing that’s true about every brain injury is that it happens without warning. There is no preparation, no “easing in” to the idea. Families are not given time to gather their resources or ready their minds for the challenges ahead. Rather, TBI is an explosion – transforming the lives we expected to lead indefinitely into something hardly recognizable. It is shock, on a scale few can imagine”.

Abby Maslin, blogger, author of *Love You Hard*

Brainline 2017 <https://www.brainline.org/blog/reinventing-our-family/youre-survivor-too>



# Caring for the caregiver impacted by brain injury



## Caregivers experience:

- Grief/Loss and its stages
- Fear
- Social isolation
- Guilt
- Exhaustion
- Physical, cognitive & emotional symptoms
- Burn out

# Assisting the Caregiver



- Support (groups via state BI associations)
- Self-compassion ([self-compassion.org](https://self-compassion.org))
- Back-up plans (address fear)
- Education (BIAA, CDC, Brainline)
- Resources (financial, medical, mental health)

# Case Scenarios



# Case Scenario #1

## Steve

*50-year-old male presenting with increasingly depressed mood. Steve had a stroke approximately 5 years prior and was diagnosed with expressive aphasia. Increased depression was noted by day program staff which client has indicated is due to not being able to return to the job he had prior to his stroke as well as the relationship with his ex-wife (who also helps manage his affairs) who has indicated she does not feel the same about the relationship as he does.*

# Case Scenario #1

## Steve

1. How would you accommodate this client's disability?
2. What interventions would you use to communicate with the client about his symptoms and gather additional information?
3. What interventions would you use to treat this client's symptoms?

# Case Scenario #2

## Nelson

*Nelson is a male in his early 40s. He sustained his traumatic brain injury when he was 17 years old. He had plans to attend college but struggled and did not end up obtaining a degree. He attends a day program where staff were noticing symptoms of anxiety and depression and referred him for counseling. When he meets with you, he frequently reiterates his story of attending and failing to do well in college as well as his failure to get a job. Though always friendly and polite, he is often anxious and self-deprecating as he laments repeatedly that he cannot find the work he wants and is concerned about his family having to take care of him. Nelson mentions the same story and needs at each session as if the previous session did not occur.*

# Case Scenario #2

## Nelson

1. **What questions would you ask to identify whether the cause of the client's symptoms is brain injury, mental health or both?**
2. **How would you accommodate this client's disability?**
3. **What interventions would you use to treat this client's symptoms?**

# Case Scenario #3

## Rachel

*Rachel is a 60-year-old mother of one adult daughter. She presents with anxiety specifically related to her daughter's health. Her daughter sustained a severe TBI from which she is still recovering approximately two years prior to Rachel beginning therapy. Her daughter can communicate, has learned to walk with assistance and is coping relatively well with her post-injury life. However, her daughter has what doctors have stated are likely permanent physical and cognitive disabilities that Rachel is not convinced are permanent. Her daughter is in a long-term relationship that Rachel does not feel comfortable with and often blames her daughter's partner for her daughter's lack of progress and frequently argues with her daughter's partner causing conflict with her daughter.*



# Case Scenario #3

## Rachel

1. How would you assess the client's symptoms and needs?
2. What interventions would you use to treat this client's symptoms
3. What resources might you offer?

# Sources

Centers for Disease Control (2024) <https://www.cdc.gov/traumatic-brain-injury/data-research/index.html>

Centers for Disease Control (2024)

[https://www.cdc.gov/traumaticbraininjury/pubs/tbi\\_report\\_to\\_congress.html](https://www.cdc.gov/traumaticbraininjury/pubs/tbi_report_to_congress.html)

International Brain Injury Association (2024) <https://www.internationalbrain.org/resources/brain-injury-facts>

Brain Injury Association of America (2024)

<https://www.biausa.org/brain-injury/about-brain-injury/basics/overview>

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# QUESTIONS?



BRAIN INJURY  
SERVICES