

## Brain Injury Basics: Behaviors & Symptoms

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### Alliance Mission:

To raise awareness and  
enhance the quality of life for  
all people affected by brain  
injury



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### Introductions and Preliminary Questions



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Outline

- Introductory brain injury facts
- Possible post-injury changes
- Practice navigating symptoms
- Tools for professionals



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- **Introductory brain injury facts**
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Acquired Brain Injury

- An injury to the brain that is:
  - Not inherited
  - Not present at birth
  - Not caused by birth trauma
  - Is not degenerative/progressively worsening

-Brain Injury Association of America (n.d.)



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**Acquired Brain Injury**

<p><b>Traumatic (TBI)</b></p> <ul style="list-style-type: none"><li>▪ Falls</li><li>▪ Assault</li><li>▪ Motor Vehicle Accidents</li><li>▪ Incidental Contact</li></ul>	<p><b>Non-Traumatic</b></p> <ul style="list-style-type: none"><li>▪ Oxygen deprivation</li><li>▪ Surgery</li><li>▪ Infectious Diseases</li><li>▪ Toxic Exposure</li><li>▪ Stroke</li></ul>
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**How do we talk about Brain Injury?**

- **What's in a label?**
  - Mild vs. Moderate vs. Severe
- **Terminology matters. You may hear:**
  - "I've never had a TBI, but I have....
    - ...gotten a concussion
    - ...had my bell rung
    - ...been knocked out
    - ..."



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**Pediatric TBI**

Unintentional injuries leading cause of death in children ages 0-14

- 475,000 sustain TBI each year
- 90% return home with mild injury
- **Age/gender discrepancies:**
  - *Boys more likely than girls* to undergo emergency consultation
  - *Higher rate of death* among children under 4 (Araki, Yokota, & Morita 2017)
- Most brain maturation occurs from birth to age 5



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### Abusive Head Trauma

- **Generic term for any trauma to the head**
  - Includes primary injury as well as secondary injury, making it broader than diagnosis of shaken-baby syndrome
- **Incidence**
  - Estimated to occur in between 14 to 40 in 100,000 children aged less than 1 year
  - 75-80% of children affected by AHT will have long-term disability
  - Deficits may not appear until later in development



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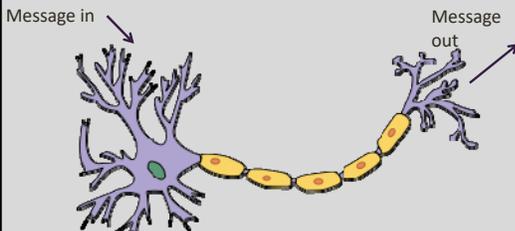
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### Brain Function Basics



Message in

Message out

By Dhp1080, sig adaptation by Actam - Image:neuron.svg, CC BY-SA 3.0, Text added to original. <https://commons.wikimedia.org/wiki/File:neuron.svg?curid=628758>



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### Brain Function Basics



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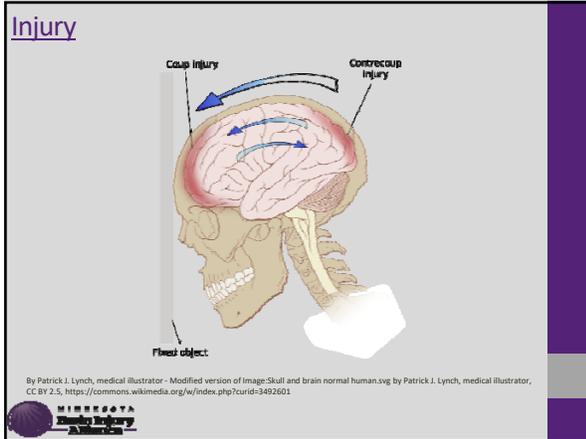
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• 'Once you have seen one TBI, you have seen *one TBI*'

MINNESOTA  
Head Injury  
Alliance

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- **Possible post-injury changes**
- Practice navigating symptoms
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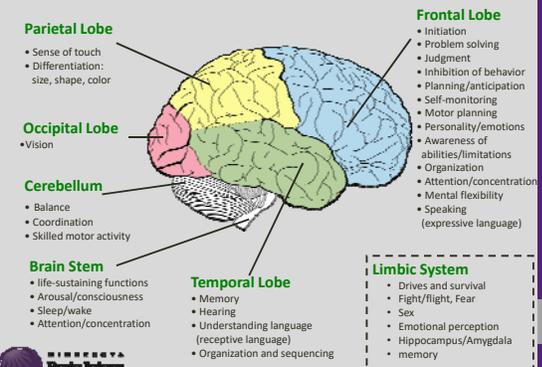
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### Simplified brain structure/function



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### Changes to thinking

- Speed of processing information
- Language



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RED	BLACK	GREEN	GREEN
BLACK	BLUE	RED	GREEN
BLUE	BLACK	GREEN	BLUE
BLUE	BLUE	BLACK	RED
BLACK	GREEN	RED	RED



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practice in  
Basketball is  
at 9:30am  
the small  
gymnasium



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Wahsk pur  
Jooz jo  
ot Yala  
merk oura  
fsha



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### Changes to thinking

- Spatial reasoning
- Organization and sequencing
- Memory



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### Changes to thinking: executive functions



- Controlling and directing thought processes
- Checks and balances
  - emotion and behavior
- Beginning/energizing actions

\*BodyParts3D, © The Database Center for Life Science licensed under CC Attribution-Share Alike 2.1 Japan. background and color changed from original. <http://lifesciencedb.jp/body3d/info/userguide/bodycredit.html>



Cicerone, K., Levin, H., Malec, J., Stuss, D., & Whyte, J. (2006)

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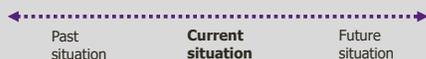
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### Changes to thinking: metacognition

- Awareness of abilities
- Ability to “time travel”

Cicerone, K., Levin, H., Malec, J., Stuss, D., & Whyte, J. (2006)



*How well can the individual connect the dots?*



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### Changes to thinking: Confabulation

- Unintentionally giving false information without awareness.

(Hebscher et al. 2016)



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### Emotional changes

- PTSD
- Depression
  - Biological and psychological factors
  - Comparison of pre vs post injury self
    - loss of self esteem
- Anxiety
- Increased risk for suicidal thoughts or actions

(Carroll & Coetzer, 2011)

(Mackelprang et al., 2014)



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### Physical/sensory changes

- Fatigue
- Pain
- Seizures
- Bladder/bowel
- Hormonal changes
- Sleep
- Physical movement
- Sense of touch
- Balance and coordination



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### It's Harder Than You Think

1. Slightly lift your dominant foot off the floor



2. Begin circling that foot clockwise



3. With your dominant hand, write your whole name in cursive

*Cursive*



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### Physical/sensory changes

- Sensitivity
  - Light
  - Sound
- Other changes to vision/hearing



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### Outline

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**Visible behavior**

Has emotional 'melt down' or becomes agitated

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Does not follow directions




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Visible behavior	Possible Symptom of BI	Try
Has emotional 'melt down' or becomes agitated	Sensory overload, emotional regulation, information overwhelm, frustrated by difficulties, fatigue	Low sensory break, simplification of task, scheduled rest periods
Does not follow directions	Communication, vision, memory difficulty, attention, slow processing speed	Picture, slower communication, repetition, post rule, check for comprehension




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### “How do I know if someone has a TBI?”

- There is no “TBI detector”
- TBI is often invisible
- Can be hard to recognize in children
  
- Possible signs:
  - Reporting of significant crashes or hospitalizations
  - Discussion of being “knocked out”
  - Scars or hair line changes
  - Difficulties that get worse throughout the day or with fatigue



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### Screening for brain injury

- Ask about:
  - **possible causes** of injury in individual’s history
  - +
  - **symptoms** after the possible injury
  
- HELPS:
  - Acronym and tool for identifying brain injury:
  - <https://www.nashia.org/pdf/hotopics/pa-helps-screening-tool.pdf>

Originally developed by M. Pricard, D. Scarisbrick, R. Paluck (International Center for the Disabled, TBH-NET, U.S. Department of Education, Rehabilitation Services Administration, Grant #H128A00022)

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### De-escalation techniques

- Use individual’s name or introduce yourself
- Establish that your role is to understand so you can help
- Give the individual physical space
- Steady, calm communication
- Have a singular person speak
- Short sentences, simple vocabulary
- Repetition of information with time to process
- Show you’re listening: rephrase and clarify their statements
- Ask the individual what has worked for them in the past in these situations



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### Communication

- Slow it down
- Simple, direct, concrete statements
- Check for comprehension
- Alternative communication
- Ask if they'd like assistance with word finding
- Play "catchphrase" if needed



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### Memory

- Create check lists
- Ensure important info is written down in easily visible location
- Reminders
- Routine
- Repetition, repetition, repetition
- Facilitate PRACTICE of strategies



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### Concentration

- Minimize distractions
- Avoid multi-tasking
- Break down tasks, work sequentially
- Checklists



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### Impulsivity

- Encourage practice of Stop, think, act
- Nonverbal cue
- Deep-breathing techniques –learn and use during any sudden urges
  
- Rao and Vaishnavi (2015): The Traumatized Brain



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### Anger/agitation

- Discuss consequences of aggression during later, calm time
  - Rao and Vaishnavi (2015): The Traumatized Brain
- Provide a low-sensory break and try again later



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### General “behaviors”

- What’s the reason for the negative behavior?
- Look for triggers
- ABCs: Antecedents, behaviors, consequences



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Antecedent: An event that happens before a challenging behavior

Behavior: How the offender reacts

Consequence: An event that immediately follows the challenging behavior



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<u>A</u>	<u>B</u>	<u>C</u>
Individual is in the dining area. Lights are bright and the area is noisy.	Individual becomes upset and verbally aggressive.	Individual is sent back to his cell alone.



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Think an individual has a TBI?

- Be on the lookout for how symptoms may show up as day-to-day difficulties
- Try symptom navigation strategies
- Inform co-workers of possible symptoms/strategies
- Talk to transition team



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**Resources**

- Strategies for navigating symptoms:
  - TBI A to Z
    - <https://www.traumaticbraininjuryatoz.org/The-Caregivers-Journey/Session-One/Starting-Your-Caregiving-Journey>
  - Ohio State University:
    - <http://ohiovalley.org/informationeducation/accommodatingtbi/accommodationpresentation/>
  - TBI model systems
    - <https://msktc.org/tbi/tbi-resources>



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**MINNESOTA  
Brain Injury  
Alliance**

- ❖ **Support**
  - ❖ Survivors, caregivers, professionals
  - ❖ Case management, care coordination, Resource Facilitation
- ❖ **Education**
  - ❖ Workshops, conferences, trainings
- ❖ **Advocacy**
  - ❖ Personal, legislative



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**Resource Facilitation**

- **Phone based support program provides:**
  - *Education* about brain injury and recovery
  - *Personalized information*
  - *A listening ear* for concerns
  - *Assistance* with solutions
  - *Referrals* to supportive services and people



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Thank you for your time  
and attention!

Questions?  
kaylar@braininjurymn.org



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