What is Project BRAIN?

Project BRAIN is a resource & information network for educators, families & healthcare professionals.
What is **Concussion/Traumatic Brain Injury (TBI)**?

What happens when a **child** sustains a **TBI**?

What is needed for a child to Return to Learn & Play?
What is a Traumatic Brain Injury (TBI)?

... an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child’s educational performance.

Individuals with Disabilities Education Act (IDEA)
What is a concussion?

http://www.cdc.gov/headsup/basics/concussion_whatis.html
Approximately 2.8 million TBIs Reported in 2013

- 2.5 million emergency department visits related to TBI
- 282,000 hospitalizations related to TBI
- 56,000 deaths related to TBI

Traumatic Brain Injury-Related Emergency Department Visits, Hospitalizations, and Deaths — United States, 2007 and 2013
https://www.cdc.gov/mmwr/volumes/66/ss/ss6609a1.htm?s_cid=ss6609a1_w
TBI Can Happen in Many Ways

- Falls
- Car crashes
- Whiplash
- Sports injuries
- Being shaken violently
- Collisions with objects or other people
- Trampolines
- ATVs
- Skateboarding
- Cycling
- Jumping on the bed/playing
Common Symptoms of TBI

Cognitive/Communication
- Feeling dazed or in fog
- Problem Solving
- Slowed information processing

Emotional/Behavioral
- Irritability
- Quick to anger
- Decreased motivation

Physical
- Headaches
- Changes in vision
- Sleep disturbance
- Fatigue
- Balance/Dizziness
- Sensitivity to light/sounds
Simplified Brain Behavior Relationships

**Frontal Lobe**
- Initiation
- Problem solving
- Judgment
- Inhibition of behavior
- Planning/anticipation
- Self-monitoring
- Motor planning
- Personality/emotions
- Awareness of abilities/limitations
- Organization
- Attention/concentration
- Mental flexibility
- Speaking (expressive language)

**Temporal Lobe**
- Memory
- Hearing
- Understanding language (receptive language)
- Organization and sequencing

**Parietal Lobe**
- Sense of touch
- Differentiation: size, shape, color
- Spatial perception
- Visual perception

**Occipital Lobe**
- Vision

**Cerebellum**
- Balance
- Coordination
- Skilled motor activity

**Brain Stem**
- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration
Rates of Development for the Four Regions of the Brain from ages 0-21

5 Distinct Periods of Maturation
- P-O parietal/occipital
- C central (limbic & brainstem)
- T temporal
- F-T frontal/temporal

% of maturation increments

Age increments
TBI/Concussion in Children

The younger the child, the more future/new learning can be affected by the injury.

The child’s brain is in a constant state of development.

We need to prepare for transitions from hospital to home to school and grade to grade. Healing may take longer than expected.
Symptoms are complicated

Do we tend to help those with injuries we can see?

Is a student's concussion viewed the same by everyone at school and at home?

What can we do when we identify signs & symptoms of TBI in a student?
When Your Child's Head Has Been Hurt:

A head injury can happen to anyone in everyday life: at home, at school or in sports. Many children who hurt their heads get well and have no long-term problems.

- You can’t see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days or weeks after the injury.
- "Concussions are caused by a bump or blow to the head. Even a "ding" or "getting your bell rung," or what seems to be a mild bump or blow to the head can be serious.
- If your child reports any symptoms of concussion, or if you notice the symptoms yourself, seek medical attention right away.

(Adapted from the Centers for Disease Control Heads up website: www.cdc.gov/concussion).

HEALTH PROBLEMS

Headaches
- Headache that keeps coming back
- Pain in head
- Pain in the jaw
- Pain in or around the eyes

Balance Problems
- Dizziness
- Trouble with balance

Sensory Changes
- Feels too hot
- Feels too cold
- Doesn’t feel temperature at all

Sleep Problems
- Can’t sleep through the night
- Sleeps too much
- Days and nights get mixed up

Pain Problems
- Neck and shoulder pain that happens a lot
- Other unexplained body pain

A concussion is a type of traumatic brain injury (TBI).
All concussions are serious.

If your child has any of these problems, see a doctor right away.
- Dizziness
- Loss of memory/Amnesia
- Nausea or vomiting that returns
- One pupil larger than the other
- Headache that does not go away or gets better
- Seizures: eyes fluttering, body going stiff, staring and space
- Hands shake, tremors, muscles get weak, loss of muscle tone

For infants and toddlers:
- All items already listed
- Will not stop crying, can’t be consoled
- Will not nurse or eat
Brain Injury in Young Children

Falls are the leading cause of traumatic brain injury in children between 0 and 4 years.

Play safely: Make sure playground equipment is properly designed and maintained, and have a safe, soft landing surface in case a child falls.

Make home safety improvements: Install stair gates, guard rails, and guards on windows above ground level.

Keep sports safe: Make sure your child wears a helmet when bike riding, skating, or playing active sports.

Supervision is key: Always supervise a young child around stairs and playground equipment.

Brain injury looks different in every child. Have a doctor examine your child if any of the following changes persist after a blow to the head:

- decreased strength or coordination
- changes in sucking or swallowing
- decreased appetite
- decreased smiling, vocalizing or talking
- frequent rubbing of the eyes or head
- decreased ability to focus the eyes
- unequal pupil size
- increased sensitivity to light or sound
- extreme irritability

Sustaining multiple concussions is particularly dangerous to young children.

Even when a blow to the head seems minor, a second equally-minor injury can have devastating results. One injury is bad enough; a second can be catastrophic.

Keep a record of any injuries to the head that your child sustains. Symptoms of an early brain injury may not appear until a child reaches late elementary or middle school years.

Knowing how to prevent brain injuries helps keep children safe. Brain injury lasts a lifetime.

For more information:

TN Traumatic Brain Injury Program
http://www tn gov/health/topic/tbi

Brain Injury Association of America
http://www.biausa.org

Project BRAIN
http://www.tndisability.org/brain

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Challenges in the School Setting

• Academic & behavior changes may not immediately be linked to the injury

• Many students with brain injury are not appropriately identified for accommodations

• Challenges that result from a TBI can be similar to those of students with other disabilities
What might have changed for the student since the injury?

- **Cognitive Skills** - Memory, Information Processing, attention, concentration
- **Executive Functions** - Awareness, organization, planning, problem solving
- **Loss of learned skills**
- **Academic performance**
- **Personality**
- **Social skills**
- **Vision**
- **Emotions**
Adjustments can be informal and flexible

- can be provided in the general education classroom
- applied immediately with no paperwork, meeting or delay
- applied generously at first, then gradually decreased

Adapted from: www.GetSchooledOnConcussions.com
“Response to Management (RTM)/Response to Intervention (RTI)”
Returning to School

- Begin with fewer hours spent at school
- Rest periods during the day (quiet place for lunch, study hall in library, etc.)
- Clear expectations
- Accommodations for standardized testing

https://cbirt.org/back-school/return-school-plan
Classroom Adjustments

• Designated “point person” monitors student’s progress regularly throughout recovery
• Reduce assignment load and/or increase time
• Utilize a system to keep track of assignments
• Provide directions in both written and oral formats

Choosing an Adjustment

Depends on **WHY** they are having the problem. There is no one size fit all for brain injury.

Example - **Student has a headache**

*Why? Think about it and dig deeper...*

**Could it be:**
- Injury is resolving
- Too much visual input
- Cognitive overload
- Vestibular problem
- Tired
- Bright lights
- Too much noise

Now you apply the adjustment based on the individual’s needs because you understand why the symptom is causing problems.
Section 504

- Covers qualified students with disabilities who attend schools receiving federal financial assistance.
- To be protected under Section 504, a student must be determined to:

  - have a physical or mental impairment that substantially limits one or more major life activities;
  or

  - have a record of such an impairment;
  or

  - be regarded as having such an impairment.

https://youthbraininjury.obaverse.net
Individualized Education Plan

Individuals with Disabilities Education Act (IDEA)

To determine whether a student is eligible for services, each public agency must conduct a full and individual initial evaluation at no cost to the family.

The evaluation has two purposes:

• To determine whether the child has a disability, as defined by IDEA; and

• To determine the educational needs of the child.

https://youthbraininjury.obaverse.net
Return to Learn & Play

Guidelines for the student's return to the classroom and activity after TBI
Tennessee became the 44th state to pass a **sports** concussion law in April 2013.

- Covers all sports
- All Public and private schools
- Community recreational leagues for children under 18 that require a fee
Three main components

1. Inform and educate
2. Remove athlete immediately
3. Obtain medical clearance
Do you have a concussion management policy?

Online Samples:

TN Dept. of Health


CDC Heads Up to Schools

https://www.cdc.gov/headsup/schools/index.html
Return to Learn/Return to Play: Concussion Management Guidelines

What are these guidelines?

• A collection of best practices for students recovering from TBI

• Designed to assist a student’s support network (parents, teachers, coaches, etc.) in re-integrating the student into their classroom/sports environment

• Provides specific classroom strategies and examples of accommodations

# Classroom Strategies for Concussion Recovery

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>School Setting Adjustments</th>
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</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>- Frequent Breaks&lt;br&gt;- Reduced Exposure to aggravators: Bright lights, computers,&lt;br&gt;- Rest periods if needed in the nurses office or quiet space</td>
</tr>
<tr>
<td>Dizziness</td>
<td>- Allow students to put their head down on desk&lt;br&gt;- Give students early dismissal from class to avoid crowded hallways</td>
</tr>
<tr>
<td>Visual Problems: Light sensitivity, double vision, blurry vision</td>
<td>- Reduce exposure to computers, lights, boards, videos&lt;br&gt;- Reduce brightness on screens&lt;br&gt;- Seat student closer to the center of the classroom</td>
</tr>
<tr>
<td>Noise Sensitivity</td>
<td>- Allow student to have lunch in a quiet area with one classmate&lt;br&gt;- Allow early dismissal from class&lt;br&gt;- Avoid noisy gyms/sporting events</td>
</tr>
<tr>
<td>Difficulty Concentrating or Remembering</td>
<td>- Avoid testing or competing in major projects&lt;br&gt;- Allow extra time to complete non-standardized tests&lt;br&gt;- Postpone standardized testing</td>
</tr>
<tr>
<td>Sleep Disturbance</td>
<td>- Allow for late start or short days to catch up on sleep&lt;br&gt;- Allow rest breaks in a quiet area</td>
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Adjustments - Handwriting

School setting adjustments for Handwriting (slower, tiring)

• note taker so student can listen
• teacher provides outline for student to highlight
• allow use of laptop
• no essay answers or verbal answer with extra time to process
• weighted pen
• special grip
Adjustments - Headaches

School setting adjustments for headaches/cognitive overload

• Rest Breaks (could be 5 minutes every 30 minutes)
• Put head down on desk and close eyes
• Leave the room (nurse’s office, library, quiet space)
• Medication or leave school for the day
School-wide Concussion Management

http://brain101.orcasinc.com/1000

Oregon Center for Applied Science
CDC website materials

- Online Training
- Fact Sheets
- Survivor Stories
- Heads up for parents
- Heads up for coaches
- Heads up for clinicians
- ABCs of Concussion
  - School Nurses
  - School Professionals

https://www.cdc.gov/headsup/schools/index.html
Oregon Center for Applied Science
http://brain101.orcasinc.com/1000

The Center on Brain Injury Research and Training
http://cbirt.org
Additional resources

Brainline.org
https://www.brainline.org/

TN Department of Health
https://www.tn.gov/health/health-program-areas/fhw/vipp/tbi.html

ESPN E60 - Preston Plevretes
https://www.youtube.com/watch?v=F4foY1EtmKo

Centers For Disease Control and Prevention

CDC Heads Up TBI and Concussion
https://www.cdc.gov/headsup/youthsports/index.html

CDC Heads Up for Schools: Know Your Concussion ABCs
https://www.cdc.gov/headsup/schools/index.html
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