

Traumatic Brain Injury

The frequency of traumatic brain injury (TBI) in children and teens is staggering. Each year in the United States as many as one million children and youth will sustain traumatic brain injuries from motor vehicle accidents, falls, sports, and abuse. The largest group of traumatic brain injured individuals fall within the 15-24 year old age group, but the frequency is nearly as high for children and youth under 15 years of age.

Mild brain injury, the most common brain injury, may occur with no loss of consciousness or noticeable physical injury. Persons with mild brain injury may experience symptoms and impairments that are temporary or permanent. A concussion is a mild form of brain injury. Unfortunately, many mild brain injuries go undiagnosed for weeks, months or even years after the injury.

Some people believe that when the brain is injured, it can mend completely – like a broken arm. Unfortunately, brain cells do not regenerate like skin or bone cells. Rehabilitating from a brain injury takes time because damaged cells need to relearn how to do things while the brain uses healthy cells to compensate.

Definition

Minnesota Rule 3525.1348 defines Traumatic Brain Injury as an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability and/or psycho-social impairment that may adversely affect a child's educational performance and result in the need for special education and related services. The term applies to open or closed head injuries resulting in impairments in one or more of the following areas: cognition, speech/language, memory, attention, reasoning, abstract thinking, judgment, problem-solving, perception, motor, and sensory abilities, psycho-social behavior, physical functions, and information processing. *The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.*

Characteristics/Educational Implications

Generally speaking, traumatic brain injuries in children are often diffuse and can affect many areas and functions within the brain. Since areas of the brain are interconnected, damage to any part of the system can often result in cognitive, motor, sensory, emotional, and behavioral changes. Frontal and temporal lobe damage can often occur in a traumatic brain injury, and may result in possible changes in personality and behavior, as well as deficits in memory, judgment, reasoning, problem solving, and inhibition. Difficulties with perceptual skills and expressive language may also result. When damage occurs in additional parts of the brain, there may be changes in motor or sensory functioning.

Myths/Common Misconceptions

A common misconception suggests that the degree of impairment generally correlates with the force of the impact. Although it is often true that symptoms from a mild brain injury (e.g. post-concussive syndrome) might improve quickly, this may not always be the case. Diffuse damage to the brain can result from a mild brain injury, even when there

is no loss of consciousness. In some situations, an injury that is considered 'mild' may result in long-term cognitive and/or behavioral problems and the student may require special education services. Another misconception centers on the idea that young children's brains are more adaptable and pliant, therefore more resilient to the damaging effects of a brain injury. While young children may physically recover more quickly from serious accidents as compared to older youth and adults, the long-term cognitive deficits are often more profound. Generally speaking, the younger the child, the more profound the long-term effects will be. In addition, some deficits may not be apparent until later in childhood when specific developmental skills are required.

Possible Cognitive Changes From Brain Injury:

- Short-term or long-term memory loss
- Slowed processing of information
- Impaired judgment
- Trouble concentrating or paying attention
- Difficulty keeping up with conversation; trouble finding words
- Spatial disorientation
- Difficulty organizing or problem solving
- Inability to do more than one thing at a time
- Difficulty with language or speech production

Possible Physical Changes From Brain Injury:

- Seizures
- Fatigue, increased need for sleep
- Insomnia
- Sensory loss or impairment
- Blurred or double vision
- Headaches or migraines
- Trouble with balance and dizziness
- Decreased motor abilities
- Sexual dysfunction
- Muscle control and balance problems
- Ringing in the ears
- Hormonal changes

Possible Emotional Changes From Brain Injury:

- Depression, grief over loss of ability, or chemical changes caused by the injury
- Anxiety, restlessness, agitation
- Lower tolerance for stress
- Irritability, frustration, impatience
- Mood swings
- Impulsiveness and lack of inhibition

- Emotional flatness and passivity

Possible Behavior Changes From Brain Injury:

Small Children

- Increased restlessness
- Increased fussiness
- Quieter than usual
- Becomes upset more easily than before
- Needs extra sleep
- Less energy
- Less interest in playing
- Clumsier than normal
- Loses speech or uses fewer words
- Less able to do physical tasks than before, i.e., self-feeding or toileting

- Adolescents/Young Adults

- Forgets learned or new information; needs frequent repetitions
- Slowed performance in the classroom, i.e., problems with reading, writing, or math
- Disorganized, has problems with staying on task, remembering daily routine, keeping track of time and/or belongings, daydreams
- More easily upset, agitated, or irritable
- Increased tiredness or fatigue
- Headaches, dizziness or visual disturbances
- Difficulty dealing with peers and adults
- Increased impulsivity and/or poor judgment
- Onset of seizure activity/epilepsy
- Reduced interest in activities

After brain injury, individuals vary on how they define or adjust to the changes in their life. Persons who survive brain injury often find that things will never be the same. Fortunately, many rehabilitation and treatment programs can help persons with brain injury rebuild their lives and achieve more independence.

Accommodations/Modifications

Educational programming, accommodations, and modifications to curriculum, methodology, materials and equipment are individualized to meet the unique needs of students with traumatic brain injury. Evaluation results will assist the team in identifying these accommodations and modifications. Some examples include: environmental changes, use of technology to access the environment or complete written work, a modified grading system, support for transitions and organizational tasks, modified assignments, tests, memory aids, alternate response methods, opportunities for re-

teaching and/or review, a behavior intervention plan, special transportation, accessible classrooms/restrooms, doorways, etc.

Resources:

<http://www.mnlowincidenceprojects.org/documents/tbibrifadmin.pdf>

<http://www.mnlowincidenceprojects.org/documents/TBIShortBooklet.pdf>

<http://www.mnlowincidenceprojects.org/tbi.html>

<http://www.braininjurymn.org/>