Traumatic Brain Injury (TBI) Information Sheet

Incidence

The frequency of traumatic brain injury (TBI) in children and teens is staggering. Each year in the United States, approximately 40% of all traumatic brain injuries (TBI) happen to children.

- More than 60,000 children and adolescents are hospitalized annually with moderate to severe brain injuries.
- More than 630,000 children are seen for TBIs in hospital emergency rooms and released.
- Approximately 145,000 children aged 0–19 are currently living with long-lasting, significant alterations in social, behavioral, physical, and cognitive functioning following a TBI.

Because of shortened hospital stays and the chronic problems arising from childhood TBI, the primary service provider for children and adolescents with TBI has become schools. In 1990, TBI was added to federal special education law (IDEA) as an educational disability. Since then, local, regional, and state Department of Education (DOE) personnel have designed services attempting to meet these students' needs.

For children and youth, most traumatic brain injuries result from motor vehicle crashes, falls, sports, and abuse. Most injuries occur within the 15-24 year old age group, but the frequency is nearly as high for children 15 years of age.

Mild TBI or concussion, the most common of brain injuries, may occur with no loss of consciousness or noticeable physical injury. Persons with mild brain injuries/concussion may experience symptoms and impairments that are temporary or permanent. Unfortunately, many mild brain injuries go undiagnosed for weeks, months or even years after the injury, with symptoms ranging from mild to chronic or severe.

Moderate or severe TBI can result in long term impairment in one or more areas of functioning, and can be impacted by a number of variables, including age at the time of injury, type of injury, and location of the injury.
Appendix A: Information Sheets

State 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 ‘traumatic brain injury’ 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 other 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 or concussion 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- particularly if there is a history of past concussions. Chronic, long term impairment may result in the student requiring 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
Appendix A: Information Sheets

deficits are often more pronounced. 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, such as executive function skills.

Possible Cognitive Changes Resulting from TBI:

- 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, speech difficulties
- Spatial disorientation
- Difficulty organizing or problem solving
- Inability to do more than one thing at a time

Possible Physical Changes Resulting from TBI:

- Seizures
- Fatigue, increased need for sleep
- Insomnia
- Sensory loss or impairment
- Blurred or double vision
- Headaches or migraines
Appendix A: Information Sheets

- Trouble with balance and dizziness
- Decreased motor abilities
- Muscle control and balance problems
- Ringing in the ears
- Hormonal changes

Possible Emotional Changes Resulting from TBI:

- Depression, grief over loss of ability
- Anxiety, restlessness, agitation
- Lower tolerance for stress
- Irritability, frustration, impatience
- Mood swings
- Impulsiveness and lack of inhibition
- Emotional flatness and passivity

Possible Behavioral Changes Resulting from TBI:

Small Children

- Increased restlessness or fussiness
- Quieter than usual
- Becomes upset more easily than before
Appendix A: Information Sheets

- 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, math
- Problems with organization, staying on task, remembering routine
- Difficulty with keeping track of time and/or belongings
  More easily upset, agitated, or irritable
- Increased tiredness or fatigue, reduced interest in activities
- Headaches, dizziness or visual disturbances
- Difficulty dealing with peers and adults
- Increased impulsivity and/or poor judgment
- Onset of seizure activity/epilepsy
Appendix A: Information Sheets

Following a Traumatic Brain Injury

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

Accommodations and Modifications in the School Setting

Educational programming, accommodations, and modifications to curriculum, instruction, materials and equipment are individualized to meet the unique needs of students with TBI. Evaluation results will assist the team in identifying appropriate services, 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.

Sources:

Minnesota Low Incidence Projects: http://www.mnlowincidenceprojects.org/tbi.html

Minnesota Brain Injury Alliance: http://www.braininjurymn.org

National Institutes of Health: http://nih.gov