

TRAUMATIC BRAIN INJURY

I. DEFINITION

"Traumatic brain injury" means 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. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.

II. POSSIBLE REFERRAL CHARACTERISTICS

The effects of a traumatic brain injury (TBI) can be catastrophic or may lead to only slight damage. Characteristics of individuals with traumatic brain injury may be present to varying degrees, range in severity, and may be influenced by environmental changes, changes in task demands and/or the recovery process. These characteristics may include, but are not limited to, the following:

A. Cognitive Behaviors

1. Difficulty in initiating, organizing and completing tasks
2. Inconsistency in recall of information
3. Difficulty in using appropriate judgment
4. Difficulty with long-term memory
5. Difficulty with short-term memory
6. Difficulty in maintaining attention and concentration
7. Difficulty with flexibility in thinking, reasoning and problem-solving
8. Difficulty with orientation to person, places and/or time
9. Difficulty with speed of processing information
10. Exhibits gaps in task analysis

B. Communicative Behaviors (May range from nonspeaking to subtle difficulty in communication)

1. Difficulty in initiating, maintaining, restructuring and terminating conversation
2. Difficulty in maintaining the topic of conversation
3. Difficulty in discriminating relevant from irrelevant information
4. Difficulty in producing relevant speech
5. Difficulty responding to verbal communication in a timely, accurate, and efficient manner
6. Difficulty in understanding verbal information
7. Difficulty with word retrieval
8. Difficulty with articulation (which may include apraxia and/or dysarthria)
9. Difficulty with voice production (such as intensity, pitch and/or quality)
10. Difficulty in producing fluent speech
11. Difficulty in formulating and sequencing ideas
12. Difficulty with abstract and figurative language
13. Difficulty with perseverated speech (repetition of words, phrases, and topics)
14. Difficulty using appropriate syntax
15. Difficulty using language appropriately (such as requesting information, predicting, debating, and using humor)
16. Difficulty in understanding and producing written communication
17. Difficulty with noise overload

18. Difficulty in interpreting subtle verbal and nonverbal cues during conversation

C. Social-Emotional Behaviors

1. Difficulty in perceiving, evaluating and using social cues and context appropriately
2. Difficulty in initiating and sustaining appropriate peer and family relationships
3. Difficulty in demonstrating age-appropriate behavior
4. Difficulty in coping with over-stimulating environments
5. Denial of deficits affecting performance
6. Difficulty in establishing and maintaining self-esteem
7. Difficulty with using self-control (verbal and physical aggression)
8. Difficulty with speaking and acting impulsively
9. Difficulty in initiating activities
10. Difficulty in adjusting to change
11. Difficulty in compliance with requests
12. Difficulty with hyperactivity
13. Intensification of pre-existent maladaptive behaviors and/or disabilities

D. Physical Impairments

1. Exhibits short-term or long-term physical disabilities
2. Displays seizure activity
3. Difficulty in spatial orientation (visual motor/ perceptual)
4. Difficulty with mobility and independence (to include problems in balance, strength, muscle tone, equilibrium and gross motor skills)

5. Difficulty with vision (which may include tracking, blind spots and/or double vision)
6. Difficulty with dizziness (vertigo)
7. Difficulty with auditory skills (which may include hearing loss and/or processing problems)
8. Difficulty with fine motor skills (dexterity)
9. Difficulty in speed of processing and motor response time
10. Difficulty with skills that affect eating and speaking (voluntary and involuntary)
11. Difficulty with bowel and/or bladder control
12. Displays premature puberty
13. Loss of stamina and/or sense of fatigue
14. Difficulty in administering self-care (such as independent feeding, grooming and toileting)

III. SCREENING INFORMATION

A. Required

1. Hearing
2. Vision

B. Recommended

1. Formal (Not applicable)
2. Informal
 - a. Observation
 - b. Medical history
 - c. Anecdotal records
 - d. School records

- e. Interviews (parents, teachers, peers)

IV. REQUIRED EVALUATION DATA

- A. Social History**
- B. Individual Intelligence (One required)**
- C. Individual Achievement (One required)**
- D. Adaptive Behavior (One required)**
- E. Communicative Abilities (Both receptive and expressive required)**
- F. Other**
 - 1. Neuropsychological assessment **or** appropriate medical statement from a licensed physician confirming presence of a traumatic brain injury (Required)
 - 2. Specific subject areas (Required--each suspected area of deficit must assessed)
 - 3. Medical (Required)
 - a. Physical examination
 - b. Specialized (Neurological, and others as indicated)

V. OPTIONAL EVALUATION DATA

(Suggested for acquiring additional baseline functioning and programming information)

- A. Memory (Long- and short-term)**
 - 1. Auditory
 - 2. Visual
- B. Learning Processes**
 - 1. Visual perception
 - 2. Auditory perception

- 3. Perceptual-motor development
- C. **Behavior Assessment (Including observation across a variety of settings)**
- D. **Vocational Assessment**

Traumatic brain injury often results in diverse impairments that may be either temporary or permanent, contributing to partial or total disability. Unfortunately, the injury often intensifies pre-existent maladaptive behaviors or disabilities. To complicate the situation further, the student with traumatic brain injury may experience erratic changes in behaviors, especially during the first five years after the injury occurred. Since symptoms may change, even disappear, periodic reevaluations are necessary to monitor the progress of the brain-injured student.

An individual should be designated as responsible for the coordination of periodic reviews of progress and reevaluation of functional levels and status of needs.

VI. EVALUATION DATA ANALYSIS

Formal assessment of the student with traumatic brain injury should include a baseline evaluation. Because of the dynamic nature of TBI, it is recommended that the testing format include informal assessment and diagnostic teaching to complement formal testing. It is important to consider the student's pre-injury learning styles and knowledge base. Previous history may serve as a baseline to compare pre-injury skills with post-injury performance. Once baseline levels are obtained, periodic and frequent review/ evaluation should occur to document progress and changes in the student's needs.

It is important to note that symptoms following the traumatic brain injury are dependent upon the state of brain function in relation to the environmental demands upon the student. Therefore, while standardized tests are important, one cannot necessarily rely upon their interpretation to guide teachers toward effective teaching, particularly if that interpretation is used as a predictor of classroom abilities.

The scores derived on psychological and academic evaluations administered to students with TBI must be interpreted differently from scores of other students, in that these test results reflect only that the students could perform the task demanded by the specific test items. However, these results do not predict future performance. For example, it is not uncommon for a student to score average or above on standardized tests of intelligence in a clinical setting. The student's overt appearances may indicate everything is intact, but upon return to school or shortly

thereafter, the student exhibits a variety of problems. This may include changes in social/conduct behaviors and the ability to work independently; to initiate, sustain and complete mental operations; or to work and learn at the rate that material is presented. The problems are not necessarily in learning academic content, but pertain to social-emotional changes in addition to the learning and communication processes involved.

The more informative assessments will measure social and conduct behaviors and communication skills, as well as the student's ability to learn and to execute or remember a variety of tasks under imposed time limits. Observational and anecdotal data may provide additional information for programming.

A. To be eligible for special education and related services as a student with traumatic brain injury, the following must be present:

- 1.** A written statement from a physician to include:
 - a.** Diagnosis of traumatic brain injury consistent with the federal definition;
 - b.** Physical and school limitations;
 - c.** Medication needs;
 - d.** Seizure management (if applicable)
- 2.** Justification of the adverse affect on educational performance which is attributed to the traumatic brain injury resulting in the corresponding need for special education and related services.

VII. PROGRAMMING CONSIDERATIONS

It is critical to consider each student's needs and environment carefully in order to provide effective services and to develop programming tailored to the student. The nature of TBI is one of change and unpredictability. No two students with traumatic brain injury function alike, because each has a unique profile depending on the location and extent of brain damage and environmental factors. For example, a student with an injury that affects his/her vision will have a very different set of problems and needs than one with an injury that primarily affects the speech areas of the brain. The effects of a brain injury may lead to only slight damage in one or a few areas or it can be catastrophic in nature.

Depending on the effects of the brain injury, students with TBI may require monitoring or direct care for immediate and long-term medical and physical

needs. Physical care and support may be the most crucial consideration for some students with brain injuries.

When there are physical needs, careful planning and coordination are essential. Oversight management of the medical/health care needs of the student remains with the student's primary physician. However, other health care providers, including those at the school, most likely will be part of the team involved in developing and implementing a health care plan which addresses both crisis situations and long-term interventions.

Programming considerations will vary among students with TBI due to the effects of the brain injury. They may change for any one student due to fluctuations in recovery rate, and students may perform various academic skills with different levels of proficiency. TBI may cause problems with all, some or none of the academic skills that the student possessed before the injury. The student may need to continue to develop skills that are intact and to relearn those which are affected.

Students with TBI have specific, sometimes intense, additional needs and often require more time and intensive instruction in order to learn. Thus, modifications in the existing school environment, curriculum, instruction and schedule may be necessary for the student who has sustained a traumatic brain injury to be successful in school. An expanded curriculum may be necessary for effective instruction, including strands such as differentiated academics, life skills and developmental/compensatory skills. In addition, personnel working with this population should be aware that some adjustments in typical outcomes, expectations and instructional activities may be necessary.