BRAIN INJURY AND THE SCHOOLS

A GUIDE FOR EDUCATORS

Brain Injury Association of Virginia
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Note: The resources provided in this guide have been gathered from a variety of sources, including the Internet. We recognize that the Internet is constantly changing and we apologize if any of the links listed are no longer valid.

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This is a revision of the original document published in 2005. We gratefully acknowledge the following individuals for their contributions to the original publication:
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We would like to thank the following individuals for their assistance with the 2013 revision.
Deborah Pfeiffer, Ed.D., Specialist, Virginia Department of Education
Mona Siddiqui, Staff Attorney, Virginia Office for Protection and Advocacy

This manual was originally developed using funds provided by the Virginia Department for Aging and Rehabilitative Services (DARS), the U.S. Department of Health and Human Services (DHHS) Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB), the National Institute on Disability and Rehabilitation Research (NIDRR), and the Virginia Department of Education (VDOE). The printing of this revised edition is supported by HRSA Grant #H21MC06763-04-00 from the U.S. Department of Health and Human Services (DHHS) Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB) and state contract# 09-251 administered by the Virginia Department for Aging and Rehabilitative Services (DARS). The contents are the sole responsibility of the authors and do not necessarily represent the official views of DHHS. This is in the public domain. Please duplicate and distribute widely.

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Foreword

Traumatic brain injury (TBI) was included for the first time as a special education classification in the 1990 reauthorization for the Individuals with Disabilities Education Act (IDEA). According to the Virginia Department of Health, between 2000 and 2009, there were a total of 1,531 deaths and 7,503 hospitalizations in children under 19 because of TBI. Nearly half of all injury related deaths in 15-19 year olds were due to TBI and children under the age of 1 had the second highest rate of hospitalization because of TBI (Injury in Virginia, 2000-2009; Stephanie Goodman, MPH, Virginia Department of Health).

Not all brain injuries are classified as such in the educational system; traumatic injuries that occur as a result of external force are, but those due to non-traumatic causes (like strokes and brain tumors) are not. Many schools only classify students with TBI if they have extreme injuries that cause obvious physical or speech disabilities, creating an epidemic of unclassified and therefore improperly managed head injuries. "Of 24,021 children who had been hospitalized for TBI, 27 percent left the hospital with some form of functional limitation as determined by hospital staff. Among these children with functional limitations, 75 percent were released to the home. Only 1.8 percent were later referred for special education services despite experiencing limitations with activities of daily living" (Schutz, Rivers, McNamara, Schutz, & Lobato, 2010. International Journal of Special Education, Vol 25; No. 2). So, even though the numbers of students with TBI are likely underreported, the schools are the single largest provider of services to students with brain injury.

Brain injury presents a spectrum of disorder. Not every brain injury is the same and not every person brings the same brain to the accident. A brain injury can leave one with memory problems, emotional dyscontrol, impaired thinking skills, and physical challenges. It confounds those who work with students with brain injury, because it seems to manifest differently from moment to moment and many of these children look so "normal". Students with brain injury are unlikely to achieve optimal outcomes without the support, effort, and commitment of a knowledgeable team of educators and parents. While understanding the unique characteristics of these students is critical to serving them effectively, it is also important to provide caregivers with practical information about how to work with this challenging population.

This guide is primarily written for school personnel, including regular and special education teachers, instructional assistants, psychologists and social workers, guidance counselors, administrators, therapists, and school nurses. The manual is also written to inform hospital staff about the educational system and to educate families to better understand and advocate for their child. The Brain Injury Association of Virginia (BIAV) developed this manual to summarize recent developments in the treatment and education of these students. The manual provides an overview of brain injury and its cognitive, behavioral, and physical consequences. It provides many resources for teaching and non-teaching personnel, strategies for addressing the issues these students may have relative to education and transition and where to find additional information. BIAV utilized the material in the manual to conduct over 20 workshops for teachers, instructional assistants, school nurses, psychologists, social workers, and therapists. We have consulted with school personnel working "in the trenches" and used the feedback from those workshops to create a user friendly manual that, while providing some necessary background information, focuses heavily on strategies.

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The Brain Injury Association of Virginia is the only statewide organization dedicated to providing education, outreach, advocacy, and information and resource services to all persons affected by brain injury, as well as the general public. BIAV encourages the use of the material in this manual and permission is given to copy the information ***as it appears*** for handouts.

Children with brain injury are intelligent, creative, loving, funny, and add greatly to the tapestry of those we serve. Use this manual to guide you in the process of achieving optimal outcomes that provide them with the future to which we all are entitled.

Savage, R. (July, 2001). An analysis of 15, 024 children with traumatic brain injury. Presentation at the 20th Annual Symposium "Building Blocks of Change", Brain Injury Association of America, Atlanta, GA.

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Brain Injury Basics

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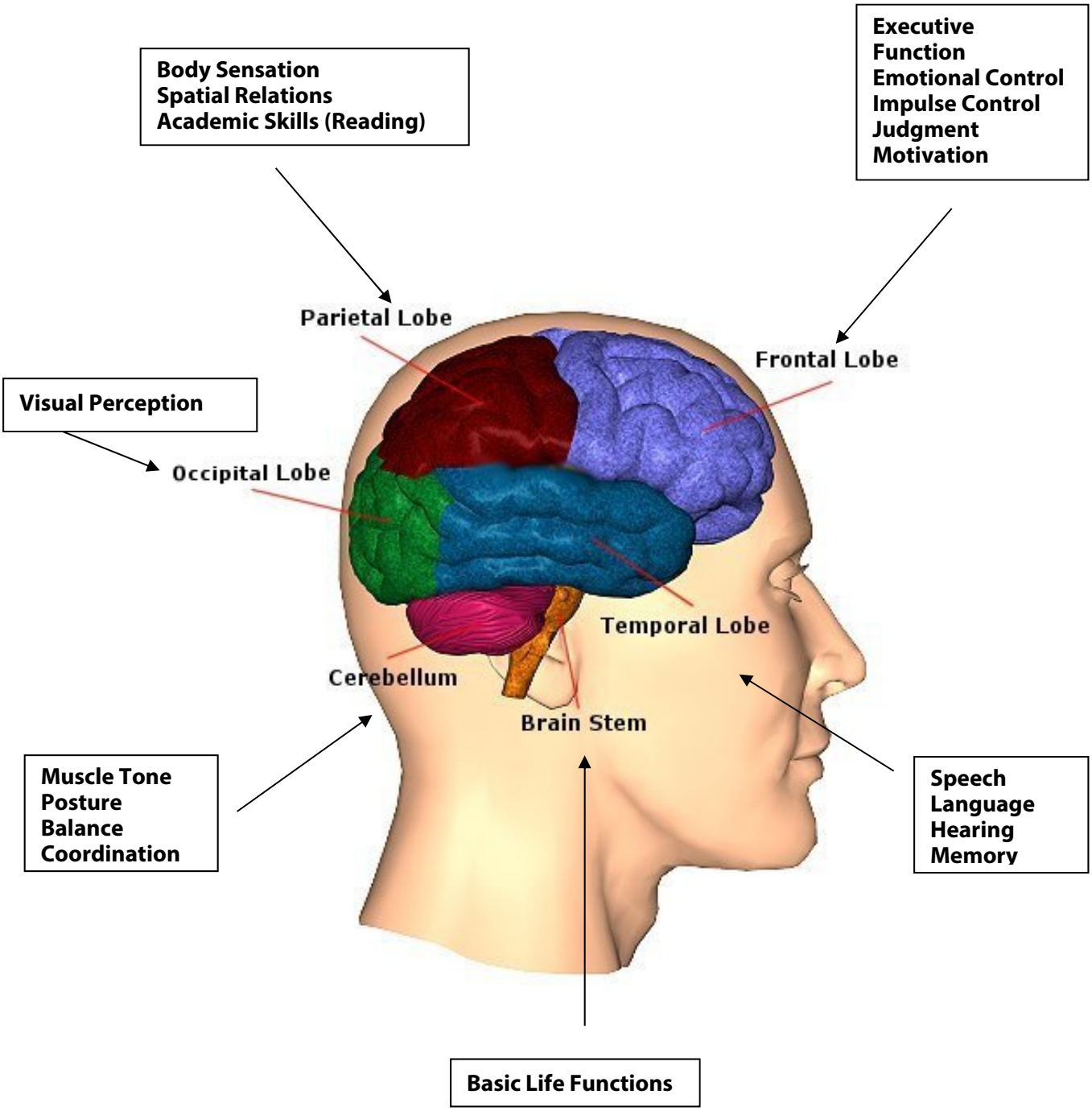

THIS IS YOUR BRAIN

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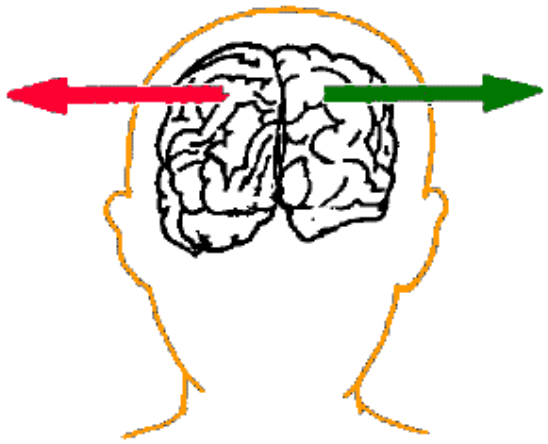
The Brain:

Which Side Are You On?

The Left Brain

The left brain is associated with **verbal, logical, and analytical thinking**. It excels in **naming and categorizing** things, **symbolic abstraction**, **speech, reading, writing, and arithmetic**. The left brain is very **linear**: it places things in **sequential** order -- first things first and then second things second, etc. If you reflect back upon our own educational training, we have been traditionally taught to master the 3 R's: reading, writing, and arithmetic -- the domain and strength of the left brain.



The Right Brain

The right brain, on the other hand, functions in a **non-verbal** manner and **excels in visual, spatial, perceptual, and intuitive information**. The right brain processes information differently than the left brain. For the right brain, processing happens very quickly and the style of processing is **nonlinear and nonsequential**. The right brain **looks at the whole picture** and quickly seeks to determine the **spatial relationships of all the parts as they relate to the whole**. This component of the brain is not concerned with things falling into patterns because of prescribed rules. On the contrary, the right brain seems to **flourish dealing with complexity, ambiguity, and paradox**. At times, right brain thinking is difficult to put into words because of its complexity, its ability to process information quickly, and its non-verbal nature. The right brain has been associated with the realm of **creativity**.

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An Introduction to Brain Injury

There are many different terms that are used interchangeably for brain injury; these may include acquired brain injury (ABI), traumatic brain injury (TBI), head injury, concussion, and shaken baby syndrome, to name just a few.

All brain injuries are acquired, through **traumatic or non-traumatic** mechanisms.

- **Traumatic brain injuries** result from external causes and are divided into 2 categories:
  - Closed Brain Injuries are a result of a non-penetrating blow to the head.
  - Open Brain Injuries are when the skull has been crushed or seriously fractured. They typically require additional treatment such as removal of bone fragments or closure of the wound and often require a long period of rehabilitation.
- **Non-traumatic brain injuries** (also referred to as acquired brain injuries)
  - Result from internal causes such as strokes, brain tumors, meningitis, kidney disease, and drug abuse.

Initial damage to the brain may occur at the time of impact; however, secondary damage is also a concern. The brain may experience bruising or bleeding as it scrapes against the bony ridges of the skull, causing the brain to swell. Since the brain sits in a tightly enclosed space, there is no way to accommodate the swelling. Intracranial pressure increases, leading to diffuse damage throughout the brain.

Another secondary effect of a brain injury is diffuse axonal injury. Neurons are the cells that make up the nervous system. They communicate with each other and transmit information via certain pathways about what we take in and how we act on that information. Information is transmitted electrically via neurotransmitters at the synapse, the point where one cell ends and the next begins. Once the brain is injured violently, these pathways can be torn. This is referred to as diffuse axonal injury and it impedes efficient information processing (McDonnell, 2002).

First Things First

The immediate goals when the child is brought into the hospital are to stabilize vital signs, stop any hemorrhaging, and determine damage to any internal organs. A neurological examination is also typically conducted to determine the level of consciousness and the possibility of any brain swelling. Various assessments and tests will also be conducted. Two of the most commonly used instruments are the Glascow Coma Scale and the Rancho Los Amigos Levels of Cognitive Functioning. The Glascow Coma Scale is typically performed immediately upon admission while the Rancho Los Amigos scale will be used later during the rehabilitation process.

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The **Glascow Coma Scale** is divided into three categories and each one is scored based on the individual's response. The total score equals the sum of the responses in each category and is used to determine the severity of the brain injury: 13 to15 - mild injury; 9 to12 - moderate injury; 3 to 8 - severe injury.

Best Response	**Stimulus**	**Score**
Opens Eyes	Spontaneously In response to voice In response to pain Does not open eyes	4 3 2 1
Moves	In response to commands Examiner's hand away from pain site Body part away from hand site By flexing in response to pain By becoming rigid in response to pain Does not move	6 5 4 3 2 1
Verbalizes	In an oriented manner In a confused or disoriented manner Using inappropriate words or phrases Using incomprehensible sounds Does not verbalize	5 4 3 2 1

Note. Adapted from "The Doctor as Detective," by R. Senelick & K. Dougherty, 2001, in Living with Brain Injury: A Guide for Families (2nd ed), p. 53-54, Birmingham, Alabama: HealthSouth Press.

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The **Rancho Los Amigos Scale of Cognitive Functioning** is divided into eight functional levels. It is typically used to provide a snapshot of the brain injury survivor's ability to interpret and process information and generate a response based on that information. It can be helpful in developing individual interventions and strategies to assist in progressing to the next level. Following is a brief description of each level:

I. No Response	Completely unresponsive to any stimuli.
II. Generalized Response	Reacts inconsistently and without purpose to stimuli. Typically responds with gross motor movements or vocalizations and response time is likely to be delayed.
III. Localized Response	Responds more specifically, but inconsistently, to stimuli. May follow simple commands, although response is inconsistent.
IV. Confused - Agitated	Exhibits agitation and high state of confusion. May exhibit strange behavior (e.g., removing feeding tube). Aggression is common as a reaction to confusion.
V. Confused - Inappropriate	Exhibits less agitation and responds to simple commands fairly consistently. More complex commands can cause confusion and elicit random responses. Memory is severely impaired. Unable to learn new information. Agitation may increase in noisy or "busy" environments.
VI. Confused - Appropriate	Motivated and goal directed but still depends on others for direction. Demonstrates carryover from relearned tasks. Follows simple commands consistently and is more aware of self, family, and basic needs.
VII. Automatic - Appropriate	Acts appropriately within hospital and home settings. Goes through his daily routine automatically but robot-like, with little recall of the day's events. Able to perform most self-care activities independently and demonstrates carryover from new learning. Still needs supervision for safety with most tasks.
VIII. Purposeful - Appropriate	Able to recall and integrate past and recent events. Responds appropriately to environment. Independent at home and in the community. Demonstrates decreased abilities in some areas, especially in high stress or emotional situations.

Note. Adapted from "The Doctor as Detective," by R. Senelick & K. Dougherty, 2001, in Living with Brain Injury: A Guide for Families (2nd ed), p. 56-58, Birmingham, Alabama: HealthSouth Press.

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So, then what happens?

The consequences of a brain injury can be diffuse and will vary depending on the location and the severity of the injury. Complications can include motor, sensory, and cognitive impairments, feeding disorders, and communication issues. After the child is stabilized, the rehabilitation process begins – frequently while the child is still in a coma.

Acute rehabilitation focuses on improving cognitive status and maintaining mobility through positioning, splinting, and moving the limbs; skin care and adequate nutrition are also emphasized. Future rehabilitation goals will aim to relearn lost skills, learn new compensatory strategies, and avoid further complications due to disuse or neurological dysfunction (e.g., muscle contractures or atrophy). This can be a long and frustrating process for both the child and the family and involves many therapists, physicians, and other specialists, including medical professionals, occupational, physical, speech-language, and recreational therapists, social workers, and psychiatrists (Michaud, Semel-Concepcion, Duhaime, & Lazar, 2002).

While the rehabilitation process begins in the hospital, it may continue after discharge in an outpatient setting or in the child's home. Subsequent rehabilitation may also be provided after the student has re-entered the school environment.

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Traumatic Brain Injury vs. Non-Traumatic Brain Injury

Traumatic brain injury (open, external causes) may result in:	• A crushed or seriously fractured skull. • Prolonged hospitalization and extensive rehabilitation. • Incomplete rehabilitation and poor prognosis for returning to pre-injury status.
Traumatic brain injury (closed, external causes) may:	• Result in severe injury. • Cause shearing, bruising, bleeding of the brain, or even stretching/tearing of axons as the brain scrapes against the bony ridges of the "brain vault". • Include non-penetrating blows to the head or violent shaking as occurs in whiplash or shaken baby.
Non-traumatic brain injury (internal causes) may be caused by:	**Cerebral vascular accidents** (i.e., stroke) • Vascular occlusions (i.e., atherosclerosis) • Hemorrhagic or embolic strokes • Rupture of arteriovenous malformations (AVM) **Brain tumors** **Hypoxia/Anoxia** (i.e., lack of adequate oxygen) **Infections of the brain** • Brain abscesses • Meningitis (outer brain layers) • Encephalitis (inner brain layers) **Metabolic disorders** (e.g., kidney, liver disease) **Ingestion of toxic substances** • Inhalation of organic solvents • Ingestion of heavy metals (e.g., mercury, lead) • Alcohol and drug abuse

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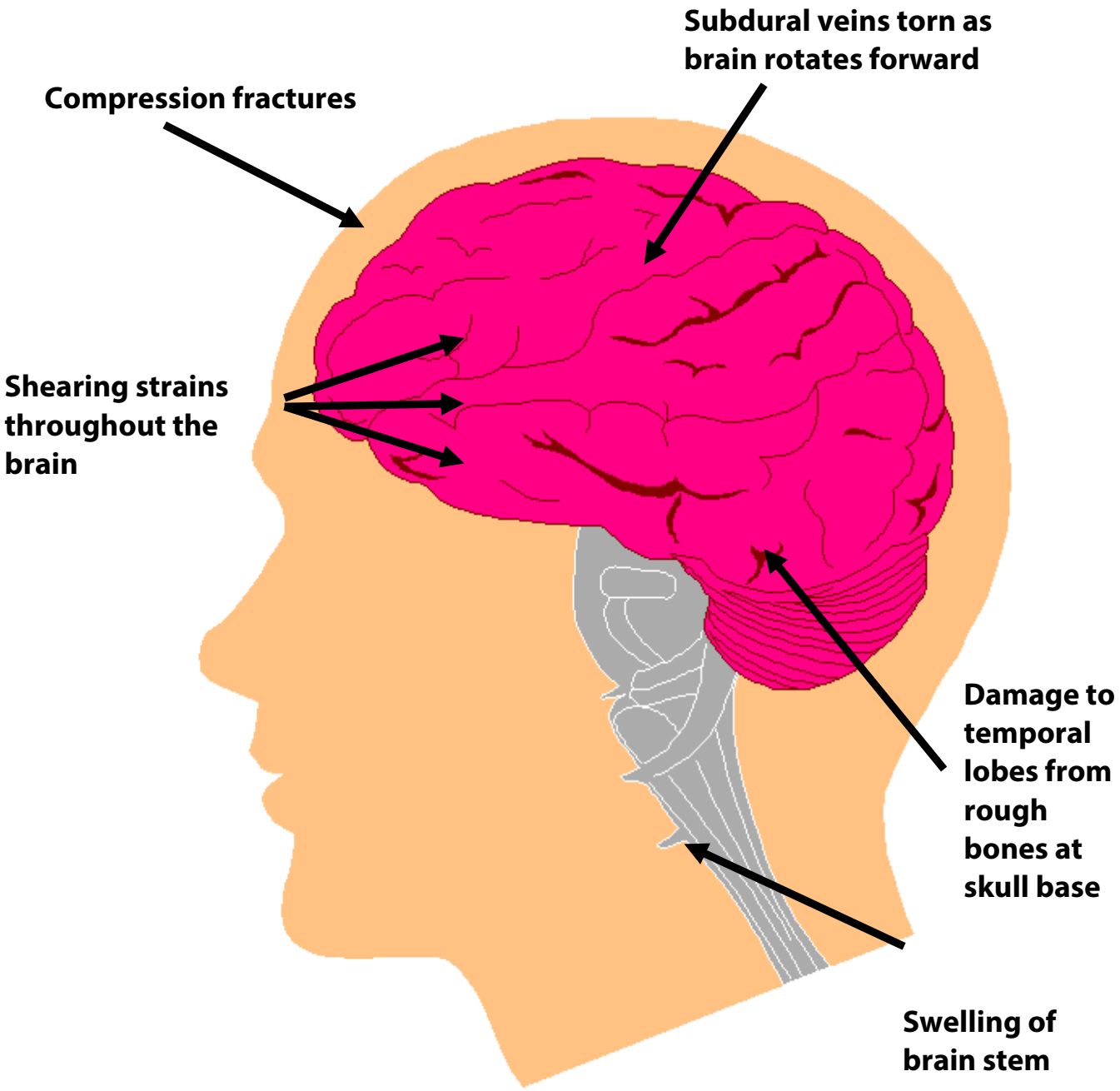
Potential Damage in a Closed Brain Injury



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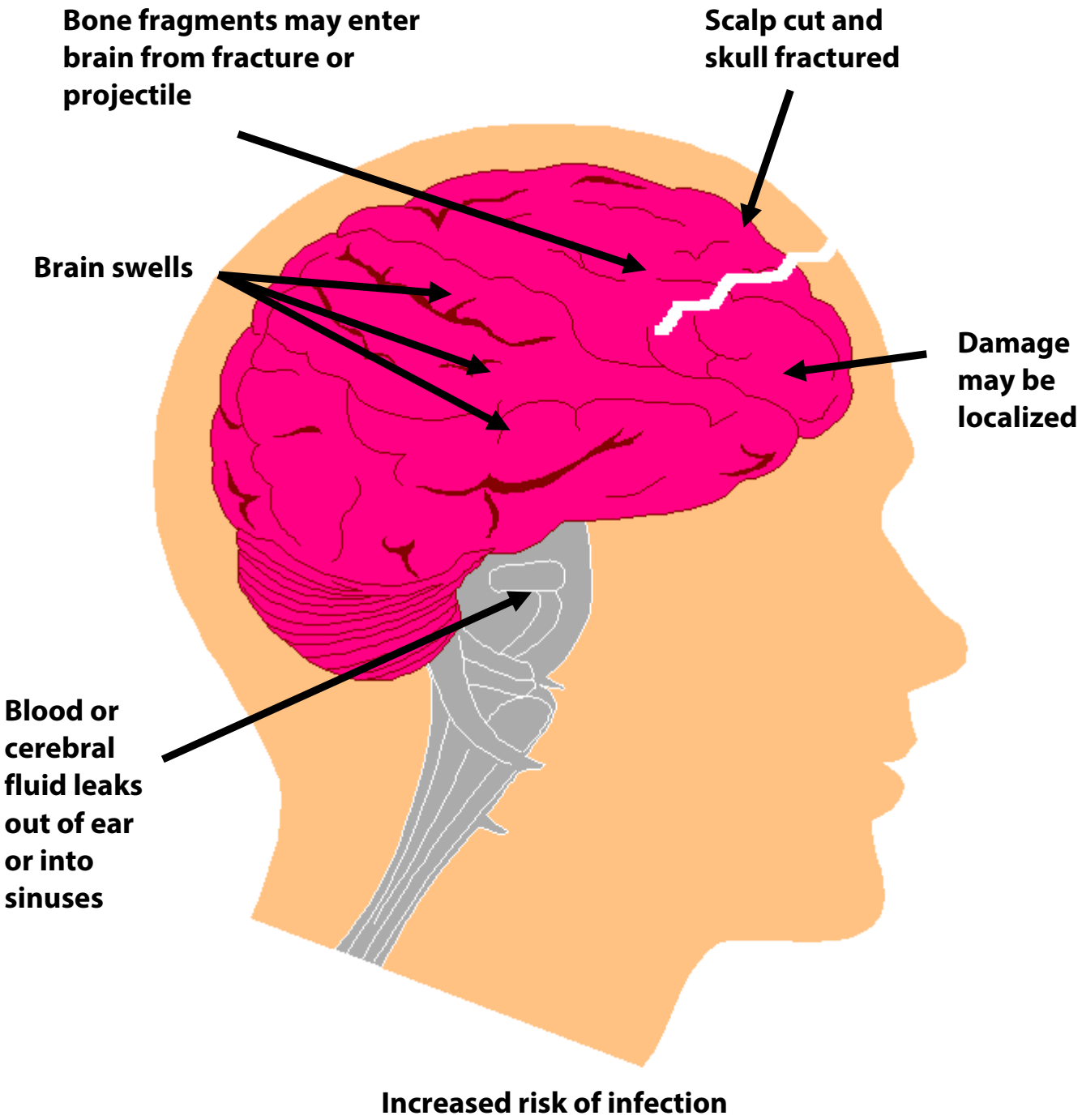
Potential Damage in an Open Brain Injury



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Major Causes of Brain Injury in Children

#1 cause for all ages is Vehicular Accidents

Infants
Accidental dropping
Physical abuse

Toddlers
Vehicular accidents
Falls

Preschoolers
Vehicular accidents
Serious falls
Physical abuse

Elementary School Age
Vehicular accidents
Bicycle accidents
Falls
Injuries during recreation

Adolescents
Vehicular accidents
Sports injuries
Assault

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Sports Injury and Concussion

- An estimated 1.6-3.8 million sports- and recreation-related concussions occur in the United States each year (Langlois, Rutland-Brown, and Wald, 2006).
- During 2001-2005, children and youth ages 5-18 years accounted for 2.4 million sports-related emergency department (ED) visits annually, of which 6% (135,000) involved a concussion. Among children and youth ages 5-18 years, the five leading sports or recreational activities which account for concussions include: bicycling, football, basketball, playground activities, and soccer (Department of Health and Human Services [DHHS], 2007).
- Among high school athletes, concussions are most often caused by contact with an opponent, a team mate, the ground, or a piece of equipment or object in the playing area. High school athletes who sustain a concussion are three times more likely to sustain a second concussion (Guskiewicz, Weaver, Padua, and Garrett, 2000).
- In organized high school sports, concussions occur more often in competitive sports, with football accounting for more than 60% of concussions. For males, the leading cause of high school sports concussion is football; for females the leading cause of high school sports concussion is soccer (Powell and Barber-Foss, 1999).
- High school athletes' recovery times for a sports concussion are longer than college athletes' recovery times (Field, Collins, Lovell, and Maroon, 2003).
- Lack of proper diagnosis and management of concussion may result in serious long-term consequences or risk of coma or death (DHHS, 1997).

An increasing awareness of the long term effect of mild traumatic brain injury, also known as concussion, has led to significant changes in all levels of sports over the last few years. The effects of concussion can include headaches, dizziness, irritability, and difficulty with thinking skills, such as memory and attention. These symptoms can be particularly confusing for a child, as well as his or her family and teachers, if no one realizes he or she has had a concussion.

With proper management, complete recovery from most concussions is possible. However, improper management of the injury can result in life-long and serious effects, even death. Proper management includes physical and cognitive rest and extra care to avoid another concussion; once a child has sustained his or her first concussion, he or she is at a higher risk of sustaining another and the effects of multiple concussions can be cumulative.

Virginia Board of Education Guidelines for Policies on Concussions in Student-Athletes

Introduction

Pursuant to Senate Bill 652, the 2010 General Assembly amended the Code of Virginia to include §22.1-271.5 directing the Board of Education to develop and distribute guidelines for policies dealing with concussions in student-athletes to school divisions by July 1, 2011 and requiring each school division to develop policies and procedures regarding the identification and handling of suspected concussions in student-athletes.

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The goals of the Student-Athlete Protection Act (SB 652) are to ensure that student-athletes who sustain concussions are properly diagnosed, given adequate time to heal, and are comprehensively supported until they are symptom free. According to the Consensus Statement on Concussion in Sport (McCrory, et al., 2009), "the cornerstone of concussion management is physical and cognitive rest until symptoms resolve and then a graded program of exertion prior to medical clearance and return to play."

It is important for all education professionals to be aware of the issues surrounding brain injuries and how they can affect the student's abilities in the educational setting. Resulting impairments can be multifaceted and can include cognitive, behavioral, and/or physical deficits. Impairments can be mild or severe, temporary or permanent, and can result in partial or total loss of function. Because these deficits are so varied and unpredictable, it is difficult to forecast the recovery for a student with a brain injury.

Definitions

A **concussion** is a brain injury that is characterized by an onset of impairment of cognitive and/or physical functioning and is caused by a blow to the head, face, or neck or a blow to the body that causes a sudden jarring of the head (i.e., a helmet to the head, being knocked to the ground). A concussion can occur with or without a loss of consciousness and proper management is essential to the immediate safety and long-term future of the injured individual. A concussion can be difficult to diagnose and failing to recognize the signs and symptoms in a timely fashion can have dire consequences.

Most athletes who experience a concussion can recover completely as long as they do not return to play prematurely. The effects of repeated concussions can be cumulative and after a concussion, there is a period in which the brain is particularly vulnerable to further injury. If an athlete sustains a second concussion during this period, the risk of permanent brain injury increases significantly and the consequences of a seemingly mild second concussion can be very severe and even result in death (i.e., "second impact syndrome").

Appropriate licensed health care provider means a physician, physician assistant, osteopath, or athletic trainer licensed by the Virginia Board of Medicine, a neuropsychologist licensed by the Board of Psychology, or a nurse practitioner licensed by the Virginia State Board of Nursing.

Return to play means participate in a non-medically supervised practice or athletic competition.

Guidelines

A. Policies and procedures

1. Each school division shall develop policies and procedures regarding the identification and handling of suspected concussions in student-athletes. Consideration should also be given to addressing the academic needs and gradual reintroduction of cognitive demands for students who have been determined to have a concussion. The Brain Injury Association of Virginia offers resources on strategies for educators to consider when working with a student with a brain injury.

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2. In order to participate in any extracurricular athletic activity, each student-athlete and the student-athlete's parent or guardian shall review, on an annual basis (every 12 months), information on concussions provided by the school division. After having reviewed materials describing the short- and long-term health effects of concussions, each student-athlete and the student-athlete's parent or guardian shall sign a statement acknowledging receipt, review, and understanding of such information. The local school division will determine procedures for ensuring, annually, that statements are distributed to, and collected from, each student-athlete and his or her parent or guardian with appropriate signatures.
3. A student-athlete suspected by that student-athlete's coach, athletic trainer, or team physician of sustaining a concussion or brain injury in a practice or game shall be removed from the activity at that time. A student-athlete who has been removed from play, evaluated, and suspected to have a concussion or brain injury shall not return to play that same day nor until (i) evaluated by an appropriate licensed health care provider as determined by the Board of Education and (ii) in receipt of written clearance to return to play from such licensed health care provider. The licensed health care provider evaluating student-athletes suspected of having a concussion or brain injury may be a volunteer.
4. Appropriate licensed health care providers or properly trained individuals evaluating student-athletes at the time of injury will utilize a standardized concussion sideline assessment instrument (e.g., SCAT II, SAC, and BESS). Sideline Concussion Assessment Tool (SCAT-II), the Standardized Assessment of Concussion (SAC), and the Balance Error Scoring System (BESS) are examples of sideline concussion assessment tools that test cognitive function and postural stability. A list of assessment tools is included on the resources list at the end of this section.
5. A concussion policy team that includes, at a minimum, a school administrator, athletic administrator, appropriate licensed health care provider, coach, parent, and student shall refine and review local concussion management policies on an annual basis.

B. Protocol for return to play

1. No member of a school athletic team shall participate in any athletic event or practice the same day he or she is injured and:
   a. exhibits signs, symptoms, or behaviors attributable to a concussion; or
   b. has been diagnosed with a concussion.
2. No member of a school athletic team shall return to participate in an athletic event or training on the days after he/she experiences a concussion unless all of the following conditions have been met:
   a. the student no longer exhibits signs, symptoms, or behaviors consistent with a concussion, at rest or with exertion;
   b. the student is asymptomatic during, or following, periods of supervised exercise that is gradually intensifying; and
   c. the student receives a written medical release from a licensed health care provider.

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The Zurich Consensus Statement Return to Play Guidelines (November 2008) and the American Academy of Pediatrics (AAP) Concussion Guidelines (August 2010) are available online to assist healthcare providers, student-athletes and their families, and school divisions.

C. Helmet replacement and reconditions policies and procedures

1. Helmets must be National Operating Committee on Standards for Athletic Equipment (NOCSAE) certified by the manufacturer at the time of purchase.
2. Reconditioned helmets must be NOCSAE recertified by the reconditioner.

D. Training required for personnel and volunteers

1. Each school division shall develop policies and procedures to ensure school staff, coaches, athletic trainers, team physicians, and volunteers receive current training annually on:
   a. how to recognize the signs and symptoms of a concussion,
   b. strategies to reduce the risk of concussions,
   c. how to seek proper medical treatment for a person suspected of having a concussion, and
   d. when the athlete may safely return to the event or training.
2. The concussion policy management team shall ensure training is current and consistent with best practice protocols.
3. School divisions shall maintain a tracking system to document compliance with the annual training requirement.
4. Annual training on concussion management shall use a reputable program such as, but not limited to, the following:
   a. The Centers for Disease Control's (CDC) tools for youth and high school sports coaches, parents, athletes, and health care professionals. These tools provide important information on preventing, recognizing, and responding to a concussion and are available at http://www.cdc.gov/concussion/HeadsUp/online_training.html. These include *Heads Up to Schools: Know Your Concussion ABCs, Heads Up: Concussion in Youth Sports,* and *Heads Up: Concussion in High School Sports*.
   b. The National Federation of State High School Associations' (NFHS) online coach education course *Concussion in Sports – What You Need to Know*. This CDC-endorsed program provides a guide to understanding, recognizing, and properly managing concussions in high school sports. It is available at www.nfhslearn.com.
   c. The Oregon Center for Applied Science (ORCAS) ACTive® course. This course is an online training and certification program that gives sports coaches the tools and information to protect players from sports concussions. The course is available at http://activecoach.orcasinc.com/. ACTive® is funded by the National Institutes of Health, developed by leading researchers, and validated in a clinical trial.

Community Involvement

Schools should make every effort to provide materials and training opportunities related to concussion management to organizations sponsoring athletic activity for student-athletes on school property. School divisions are not required to enforce compliance with such policies.

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Resources

Organizations and agencies that provide resources related to concussions:

American Academy of Pediatrics
http://www.aap.org

American Medical Society for Sports Medicine
http://www.amssm.org

Brain Injury Association of Virginia
http://www.biav.net

Children's Hospital of the King's Daughters
http://www.chkd.org

Children's National Medical Center
http://www.childrensnational.org

National Academy of Neuropsychology
http://www.nanonline.org

Virginia Athletic Trainers' Association
http://www.vata.us

Virginia College of Emergency Physicians
https://www.acep.org

Virginia Department of Health
http://www.vdh.state.va.us

Virginia High School League
http://www.vhsl.org

Concussion assessment tools:

Sports Concussion Assessment Tool (SCAT, Concussion in Sport Group)
http://www.amssm.org/MemberFiles/SCAT_v13-_Side_2.doc

The Sideline Assessment for Concussions, Brain Injury Association of America
http://www.knowconcussion.org/pdfs/sideline_assessment.pdf
http://www.knowconcussion.org/pdfs/bess.pdf

Sports-Related Concussions in Children and Adolescents, Pediatrics
http://pediatrics.aappublications.org/cgi/content/abstract/peds.2010-2005v1?rss=1

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Other Resources:

Consensus Statement on Concussion in Sport and Return to Play Guidelines
http://www.sportconcussions.com/html/Zurich%20Statement.pdf

American Academy of Pediatrics Concussion Guidelines
http://pediatrics.aappublications.org/cgi/content/abstract/peds.2010-2005v1?rss=1

The Centers for Disease Control's (CDC) Tools
(*Heads Up to Schools: Know Your Concussion ABCs, Heads Up: Concussion in Youth Sports, and Heads Up: Concussion in High School Sports)*
http://www.cdc.gov/concussion/HeadsUp/online_training.html.

The National Federation of State High School Associations' (NFHS) online coach education course (*Concussion in Sports – What You Need to Know*)
http://www.nfhslearn.com

The Oregon Center for Applied Science (ORCAS) ACTive® course
http://activecoach.orcasinc.com/

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U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (1997). Sports-related recurrent brain injuries – United States. Morbidity and Mortality Weekly Report, 46(10), 224-227.

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The Student With TBI: An Overview

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The Student With TBI: An Overview

Since the complications resulting from brain injury are so varied and diffuse, it is often difficult to predict a student's recovery or determine exactly what areas of learning will be affected. Depending on the location and severity of the injury, many areas of learning can be impacted (e.g., memory, fine motor skills). The environment in which a student is learning can also have a significant impact. An encouraging environment that is oriented to best utilize the student's strengths will more likely lead to successful learning.

There are numerous evaluations and tests that can be conducted to help determine at what educational level the student is functioning and which areas or skills have been most affected. Neuropsychological tests are often used with students with brain injury because they focus on how the brain's functioning affects the student's behavior and skills. Reports from these evaluations can be especially helpful in determining methods to maximize the student's successes and rate of progress. While many tests may already have been done before the child returns to school, depending on how long ago they were conducted and the rate of progress, the athlete may need to be re-evaluated.

Some students with brain injury may exhibit similar behaviors as those with other disabilities, which can often lead to an incorrect classification. However, it is important to note the differences so that these students can be properly classified and receive the supports and assistance they need.

This section includes a list of areas that may need to be evaluated as well as some examples of how various subject areas (e.g., science, math) can be impacted. Similarities and differences between brain injury and other disabilities are also illustrated. Lastly, a description of neuropsychological testing is included along with a list of standardized tests that are commonly used.

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Determining Present Level of Educational Performance

The present level of educational performance indicates how the student functions in all applicable education areas. The following is a sample list in which assessments of the student's functioning may be needed.

Academic Pre-academic readiness skills Reading Writing Mathematics Career technical education Other academic subject areas	**Social/Emotional** Distractibility, impulsivity, attention span Aggression, withdrawal Acting out Immaturity, inadequacy Social development Relationship with others
Intellectual Intelligence Learning process Learning style Learning ability	**Adaptive Behavior** History of developmental milestones Dressing Eating Personal hygiene Independent living
Motor Fine motor Gross motor Sensory-motor integration Mobility Muscular control	**Communication** Language development Pragmatic language Speech production Articulation
Sensory Vision Hearing	**Vocational** Criterion referenced skill assessments specific to vocational curriculum
Pre-Vocational Entry level work skills Occupational interest Work attitudes Job seeking skills Job keeping skills	**Other** Medical considerations Unanswered questions

Note. Adapted from Developing Effective IEPs, Mountain Plains Regional Resource Center, Logan, UT.

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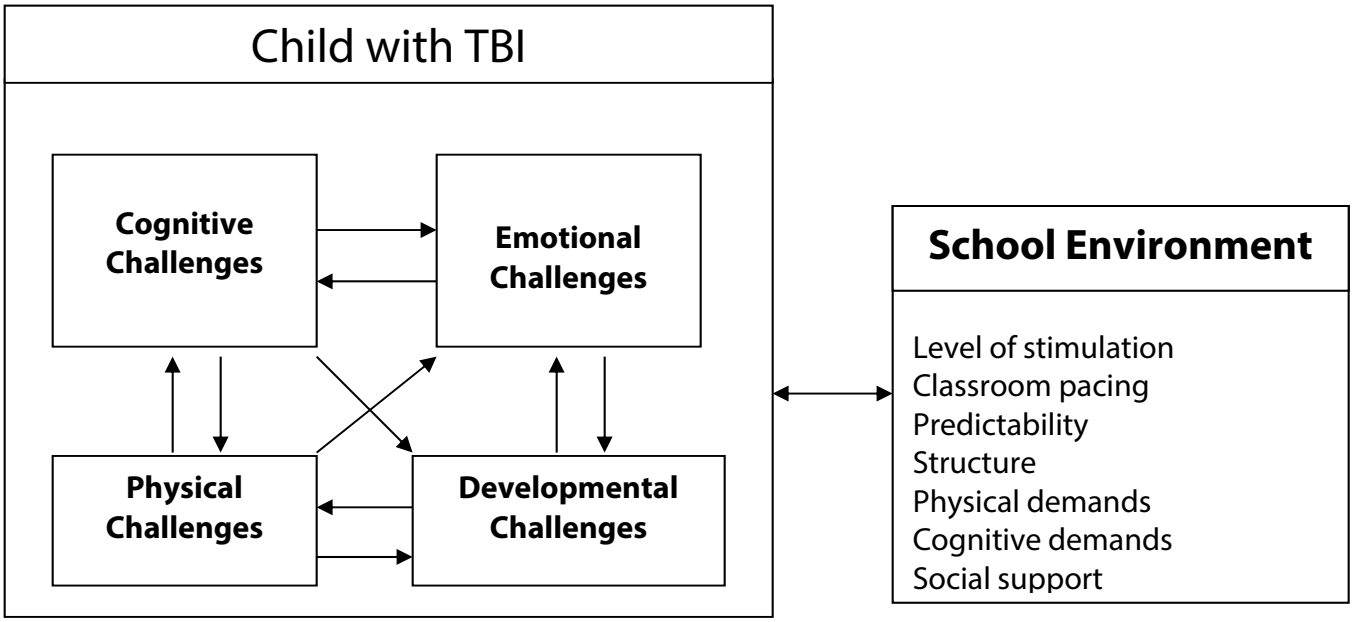
Simple Math

A child's behavior post-TBI (Traumatic Brain Injury) is determined by a number of factors and includes the interaction between the child and the school environment.



A child who:

- Easily **fatigues** and has **headaches**
- Struggles with **depression, anxiety, or emotional dyscontrol**
- **Struggles to remember** what he is learning
- Finds himself **developmentally "stuck"** behind his peers

+

A school environment that is:

- Loud and overstimulating
- Without clear structure
- Unpredictable
- **Full of information being presented too quickly**
- Demanding
- Without **social support or understanding**

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Note. Adapted from Students with Traumatic Brain Injury: Identification, Assessment and Classroom Accommodations by M. Hibbard, W. Gordon, T. Martin, B. Raskin, & M. Brown, (2001), New York: Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury.

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Mathematics

Demands of Curriculum	Challenge to Student with Traumatic Brain Injury (TBI)	Possible Solutions
Ability to use syntactic and semantic components of language to solve verbal math problems.	Difficulty with semantic aspects of word problems.	Aid in finding the main idea of the verbal math problem and what information is needed to solve the problem.
Recall and use "math language" when needed. Many complex concepts are carried in a few words (e.g., divide, multiply, add).	Unable to recall the concept associated with a single word. Misses the instruction to "add".	Teach the meaning of single words that carry considerable intent. Aid in recall of the concepts and processes underlying the single word.
Employ sequencing skills to complete a process.	Sequencing skills are often impaired.	Work on meaningful, functional sequencing skills.
Use language to understand the word problem and then complete the math to solve the problem.	Poor recall, inability to find relevance within the word problem. Oftentimes the student can do the math if he/she can understand the words that formulate the problem.	Develop ability to find the main question within the problem and associate the concepts necessary to solve it.
Ability to perform basic handwriting skills to integrate the visual images of numbers and shapes.	Poor fine motor ability and inability to integrate visual-motor and visual-cognitive processes.	Work with student to proofread own work; provide concrete cues for abstract math concepts.
Ability to align rows and columns of math problems.	Visual-perceptual problems may inhibit student's ability to align columns and rows.	Utilize visual aids, such as colored lines/rows, templates with windows, graph paper, etc.
Use calculator to complete math calculations.	Students with poor visual memory have difficulty using a calculator.	Utilize repetition and organize information into small units; list steps of process.

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Science

Demands of Curriculum	Challenge to Student with Traumatic Brain Injury (TBI)	Possible Solutions
Ability to handle and manipulate small objects.	Decreased ability to pick up or manipulate small objects.	Build up handles, smaller objects with tape/padding; make handles/knobs longer for easier handling.
Awareness of safety concepts.	Inability to recognize safety issues.	Draw attention to safety issues with bold colors/signs, pair student with a partner to increase awareness.
Ability to maintain attention.	Decreased attention span.	Break projects into smaller steps to hold attention.
Demonstration of sequencing skills.	Difficulty sequencing.	Utilize memory aids (e.g., written cues) to assist with sequencing multiple steps.
Ability to remember instructions.	Decreased short term memory.	Repeat steps often; provide written instructions.
Knowledge of concepts such as more than/less than; before/after; when/then.	Inability to recognize relationships and concepts that are not concrete in nature.	Use visual aids and concrete objects to demonstrate relationships.
Recognition of cause and effect.	Inability to understand the relevance of cause and effects.	Devise activities which utilize concrete objects to assist in the understanding of abstract concepts.
Recall of specific terms and processes.	Difficulty recalling newly learned words.	Devise memory strategies and compensatory aids for new vocabulary.

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Reading

Demands of Curriculum	Challenge to Student with Traumatic Brain Injury (TBI)	Possible Solutions
Ability to understand the sound and meaning of words and letters.	Problems remembering the shape of letters and words; unable to recall sounds and/or meanings associated with letters/words.	Incorporate memory games.
Ability to discriminate between letters and numbers.	Confusion between visually similar letters and numbers may lead to delays of sight vocabulary.	Utilize different colors and repetition.
Ability to understand context and syntax of written words.	Visual perceptual problems, problems decoding and processing words.	Utilize books on tape and read along.
Ability to understand the spatial characteristics of words.	Visual spatial problems, delays in sight vocabulary; words need to be analyzed each time they appear; problems reading graphs, charts and diagrams.	Utilize repetition with visual/spatial tasks.
Ability to comprehend what is read.	Problems recalling the beginning of a sentence while reading the end of the sentence.	Use shorter sentences and stop to summarize what was just read.
Visual discrimination.	Difficulty distinguishing words from page.	Reduce the amount of print on a page; color paper or ink; increase contrast.
Ability to read aloud.	Speech and processing difficulties.	Read alone or in small group; read shorter portions at a given time.

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Writing

Demands of Curriculum	Challenge to Student with Traumatic Brain Injury (TBI)	Possible Solutions
Ability to maintain attention.	Difficulty with correct letter formation, spelling and punctuation; also difficulty with proper sequence of written ideas.	Eliminate as much environmental stimuli as possible; use cues such as a finger to point or marker to underline the important information.
Ability to remember the shapes of letters and numbers.	Difficulty with forming letters and numbers, mixing small and capital letters, and difficulty printing the alphabet from memory.	Constant repetition at home and in the classroom; tracing; breaking units into small "chunks"; use songs or rhymes to help with information retrieval.
Ability to discriminate letters and numbers in various forms.	Difficulty recognizing errors in own handwriting; difficulty recognizing letters or numbers that appear in a different print.	Reduce the amount of print on a page; cover the area of the paper that is not being worked on; utilize color contrasts.
Ability to distinguish between right and left.	Problems with progression of formation of words and/or sentences; student may show reversal of letter formation.	Use green lines on the left side of the paper for "go" and red lines on the right for "stop"; student can utilize cue cards for common reversal letters.
Ability to use appropriate spacing and size with letter and number formation.	Difficulty placing letters on a line or adapting the letter size to the space provided.	Use colored lines on the paper; various size templates with windows for various size letters can also be used.
Ability to manipulate small objects (e.g., pencils, erasers).	Difficulty holding writing utensil and stabilizing paper.	Use grips, paperweights, clipboards, oversized writing utensils.

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Traumatic Brain Injury (TBI) vs. Specific Learning Disability (SLD)

Similarities

Both may demonstrate:

- Difficulties with impulse control.
- Difficulties with generalizing and integrating skills.
- Inappropriate behavior due to poor social judgment.
- Difficulty with sustained attention.
- A need for memory aids due to difficulties with short term memory.

Students with TBI:

- May have problems that are more exaggerated and severe.
- May demonstrate more extreme discrepancies among abilities.
- May demonstrate more uneven and unpredictable progress.
- Have been conditioned to rely on old strategies for learning.
- Have ability to relearn old material therefore they may learn faster at times.
- Have potential to improve and regain function.
- Have deficits that are not developmental.

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Distinguishing Traumatic Brain Injury (TBI) from Specific Learning Disability (SLD)

TBI	SLD
Onset sudden due to external event; precipitated by period of normal, uncompromised development.	Congenital or early onset.
Follows loss of consciousness, hence, clear evidence of neurological damage.	No coma.
Marked pre-post-injury contrast in cognitive, behavioral, physical capabilities.	Intrinsic to individual.
Requires emergency medical care or extended hospitalization.	Hospitalization not required.
Paresis, paralysis, spasticity may result requiring specialized treatment.	Physical problems generally limited to poor coordination.
Distractibility is provoked by internal and external stimuli.	Distractibility provoked by external stimuli.
Moderate to severe problems with memory and new learning.	Mild memory problems.
Mild to severe speech/language problems.	Mild to moderate speech/language problems.
Difficulty with peer relationships due to behavioral changes and/or social withdrawal.	Difficulty with peer relationships due to "odd" behavior and poor academic and/or athletic performance.
Complex array of neurobehavioral complications require modified and intensive application of instructional and management techniques.	Responsive to traditional instructional techniques and behavioral management strategies.
Pronounced problems with reasoning, organization of thoughts, cause-effect relationships, and problem solving.	Capable of independent thinking.

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TBI (continued)	SLD (continued)
Prone to fatigue and overstimulation; may require shortened school day or modified schedule.	Capable of withstanding facets of typical school day and full course load.
May require intensive vocational training program and supervised employment, particularly those with an injury before 8 years of age.	Capable of achieving vocational self-sufficiency, especially with early career education and intervention.

Note. Adapted from "Learning Disabilities: Information, Strategies, and Resources", LD Online, Retrieved April 7, 2005 from http://www.ldonline.org/ccldinfo/index.html; "Specific Learning Disabilities" (pp. 417-442) by Shapiro, B., Church, R., & Lewis, M. in Children with Disabilities, 5th ed. (2002), Batshaw, M. (Ed.), Baltimore: Paul H. Brooks Publishing Co; "Traumatic Brain Injury" (pp. 525-545) by Michaud, L. Semul-Concepcion, J., Duhaime, A., & Lazar, M. in Children with Disabilities, 5th ed. (2002). Batshaw, M. (Ed.), Baltimore: Paul H. Brooks Publishing Co.

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Traumatic Brain Injury (TBI) vs. Emotional Disability (ED)

Similarities

Both may demonstrate:

- Inappropriate behaviors in social settings.
- An inability to maintain relationships with peers and teachers.
- A general pervasive mood of unhappiness or depression.
- Difficulties that are sometimes unseen and unanticipated.

Students with TBI:

- May have a pre-morbid self-concept of being "normal".
- Have an ability to relearn old information; new learning is more difficult.
- Often have a combination of conditions which do not fall easily into categories of disability.
- Have potential to improve/regain function.

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Distinguishing Traumatic Brain Injury (TBI) from Emotional Disability (ED)

TBI	ED
Sudden onset.	Gradual onset.
Marked contrast between pre-and post-onset capabilities; reduced processing speed, memory loss, impaired executive functions.	Changes emerge slowly and gradually.
May include weakness, loss of balance, paralysis, visual/ sensory changes, headaches.	Physical disabilities unlikely.
Labile mood, depression, and anxiety are common.	Emotional reactions attributable to distortions of reality.
Behavior unpredictable: agitation, aggressiveness, restlessness, impulsivity possible.	Behavior variable, depending on diagnosis.
Limited-to-full awareness of deficits.	Awareness varies.
Pre-injury learning is largely intact.	Acquisition may be limited by emotional difficulties.
Old information is easier to recall than new.	New learning can be linked with past learning.
Peer interactions affected by cognitive difficulties, behavioral difficulties, and reduced social skills.	Peer interactions affected by behavioral difficulties.

Note. Adapted from Students with Traumatic Brain Injury: Identification, Assessment, and Accommodations, by M. Hibbard, W. A. Gordon, T. Martin, B. Raskin, & M. Brown, 2001, New York: Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury.

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Traumatic Brain Injury (TBI) vs. Attention Deficit Disorder (ADD)

Similarities

Both may demonstrate:

- Difficulty with sustained attention.
- Difficulty paying attention to the right thing when in a complex environment.
- Difficulty shifting attentional focus from one task to the next.
- A need for additional structure and cues in the environment.
- A need for self monitoring of on-task behavior and task completion.
- A need for classroom placement in the least distracting area.

Students with TBI

- May pay attention easily when well rested but may lose this ability when fatigued.
- May be extremely aware of the change in ability to pay attention.
- May be emotionally overwhelmed by the awareness of being unable to do something that was once second nature.
- May be able to improve attention problem over a very short period of time.
- May require frequent adaptation in school based expectations and programming.

(Adapted from submission by Ann Deaton, Ph.D.)

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Distinguishing Traumatic Brain Injury (TBI) from Attention Deficit Disorder (ADD)

TBI	ADD
Onset sudden due to external event.	Symptoms gradually begin to appear prior to age 7.
Follows loss of consciousness, hence, clear evidence of neurological damage.	No coma or loss of consciousness.
Marked pre/post injury contrast in cognitive, behavioral, physical capabilities.	Gradual onset, therefore no dramatic before/after contrast.
Requires emergency medical care or extended hospitalization.	Hospitalization not required.
Paresis, paralysis, spasticity may result requiring specialized treatment.	Significant physical deficits not typical, may demonstrate lack of coordination or clumsiness.
Mild to severe sensory perceptual impairment.	Sensory deficits not typical.
May require intensive vocational training program and supervised employment.	Capable of achieving vocational self-sufficiency.
Deficits may not able to be controlled with medication.	Medication can often control many symptoms.
Environmental supports can be gradually withdrawn and off-medication trials instituted to evaluate whether these are still needed.	Typically need to maintain environmental supports and medication regimen.
Degree of impairment dependent on severity and location of injury.	Not associated with injury or isolated to particular part of the brain.

Note. Adapted from "A Diagnosis of ADHD? Don't Overlook the Probability of Comorbidity!" by A. Adesman, 2003, Contemporary Pediatrics, 20 (12), pp. 91-99; "Language Characteristics of Children with ADHD," by O. H. Kim & A. P. Kaiser, 2000, Communications Disorders Quarterly, 21 (3), p. 154; "Recognizing LD, ADHD, and TBI in Adults," by C. A. Plotts, 2001, Adult Learning, 12 (2), p. 5.

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Neuropsychological Testing

By Ann Deaton, Ph.D.

Neuropsychological testing is a specific type of psychological testing which focuses on the ways in which the brain's functioning impacts behavior or skills. It differs from traditional school psychological evaluations in its complexity and in the training of the evaluator in neurological functioning and brain impairments. Neuropsychological testing is characterized by the depth of attention paid to basic brain functions that may impact more complex skills. Typically, a neuropsychological evaluation includes measures of attention, memory, expressive and receptive language, fine motor skills, perceptual-motor skills, problem solving, and abstract reasoning. A neuropsychological evaluation also includes assessment of a child's non-test specific behavior, approach to testing, and social skills. Each of these areas is evaluated in multiple ways and with attention paid to both the child's strengths and his or her weaknesses. An area such as memory, for example, is broken down into the ability to:

- Remember visual vs. verbal information.
- Recall information immediately after it is presented vs. after 30 minutes or more.
- Remember material presented only once as compared to that presented multiple times.
- Remember personally relevant information vs. other material.
- Recall isolated pieces of information (e.g., a list) as compared to material presented in a context (e.g., a story).
- Remember information without cues vs. with cues.

When a report of neuropsychological testing is made available to the schools, there are several important aspects on which to focus:

- The date of the evaluation
- How long after the brain injury the evaluation occurred
- How long it has been since the testing

Improvements in a child's functioning are typically most rapid in the first weeks and months after an injury. They continue at a slower pace in subsequent months and years. Thus, an evaluation done two weeks after a moderately severe brain injury and received by the school two months later may be a very inaccurate reflection of the child's current capabilities. Consider doing a brief reevaluation of this child or making a referral for reevaluation. The second thing to focus on is the recommendations made and the basis for these recommendations. In many cases, several of the recommendations are readily implemented and of obvious value to the child. This includes suggestions such as providing a lesson outline to the middle-schooler experiencing memory problems. The lesson outline provides an organizational cue to the child and his/her parent in knowing what's important, and being able to listen or read for the essential information. It also enables organized note taking so that the child can review the material more effectively later. Other recommendations may be less easily implemented but nonetheless critical. For example, the child who is unable to write because of severe motor impairment may require specialized software (e.g., Dragon Dictate or IBM Via Voice) to dictate his assignments into the computer rather than hand writing them or using a standard keyboard. He or she may also require a modified testing format such as oral or multiple-choice exams. Finally, pay attention to recommendations that will

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maximize a child's feeling of success. Adapting to changes in one's abilities and recovering from a brain injury is extraordinarily difficult. To maintain the child's effort and energy for the recovery process and to prevent depression, it is important to provide daily successes. Repeated failure can result in a child who stops trying and is then incapable of being successful even after his or her abilities have improved.

Specific Tests

Child neuropsychological testing has received increasing attention in recent years and, as such, there are new instruments and measures being created all the time. One of the most impressive areas of development is with respect to assessing a child's memory functioning. There are several excellent measures available that provide multiple subtests to differentiate the various components of memory. These include the Wide Range Assessment of Memory and Learning, the Children's Memory Scale, and the Test of Memory and Learning. In addition, more comprehensive tests such as the NEPSY (Neuropsychological) include several subtests specific to memory. When choosing a measure, consider the following:

- Do staff have the necessary training and credentials to do a valid administration? This can be answered by the test manufacturer via phone, catalog, or web site.
- How long will it take to administer? Be careful not to overwhelm the child with too many hours of testing by limiting the measures in areas that are less critical.
- Is the child able to complete this measure? Be aware of a child's strengths and impairments and choose measures where he/she will experience some success. Do not give a measure at which the child cannot even begin to succeed (e.g., don't do tests like finger tapping or completing a paper and pencil maze with a child who is unable to move his dominant hand).
- Is this the most recent revision of the measure? How dated are the norms provided? If dated measures are used, the results will not reflect how the child compares to his peer group. Most well-used, standardized measures are revised every several years.
- What is the age range covered by the test? Is it appropriate for this child's cognitive level? If needed, will it be able to be readministered in a year's time to evaluate changes in his or her capabilities? Consider how the test is being used and what information is needed. If a test that is appropriate for 6-16 year olds is used with a 6 year old with a severe brain injury, it's possible he/she will be unable to complete enough items to get a reliable score. By the same token, try not to use measures that will be unavailable for retesting such as the above 6-16 year old measure with a 16 year old who may need reevaluation in a year.

While neuropsychological testing differs from the typical school psychological evaluation, it should be noted that school-based testing can often serve a function in providing a foundation for the neuropsychological evaluation. Tests such as the WISC-III (Wechsler Intelligence Scale for Children) administered by the school can be used by the neuropsychologist to establish a baseline and to assist in test selection. The availability of previous, recent testing can also enable a neuropsychologist to answer more specific questions posed by the school or the parent.

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Standardized Evaluations Appropriate for Children with Traumatic Brain Injury

ACHIEVEMENT

- Differential Abilities Scale (DAS, The Psychological Corporation, 1990)
- Wechsler Individual Achievement Test, 2nd ed. (WAIT, The Psychological Corp. 2001)
- Wide Range Achievement Test-Revised (WRAT, Riverside Publishing, 1993)
- Woodcock-Johnson Test of Academic Achievement-Revised (Riverside Publishing, 1977)

These tests can be complimented by an instruction-based assessment that focuses on identifying what skills in the curriculum have been mastered by the student.

ADAPTIVE BEHAVIOR

- Adaptive Behavior Assessment System, 2nd ed. (ABAS, The Psychological Corp. 2003)
- Vineland Adaptive Behavior Scale (American Guidance Service, 1984)

ATTENTION

- Connors Parent Rating Scale (Western Psychological Services, 1997)
- Connors Teacher Rating Scale (Western Psychological Services, 1997)
- Continuous Performance Test (The Psychological Corporation, 1995)
- Test of Variables of Attention, Version 7.03 (TOVA, Universal Attention Disorders, 2004)

INTELLIGENCE

- Differential Ability Scales (The Psychological Corporation, 1990)
- Kaufman Adolescent & Adult Intelligence Test (KAIT, American Guidance Service, 1993)
- Stanford-Binet, 5th Edition (Riverside Publishing, 2003)
- Test of Nonverbal Intelligence, 3rd ed. (TONI-3, American Guidance Service, 1997)
- Wechsler Intelligence Scale for Children, 4th ed (WISC-IV; The Psychological Corporation)
- Woodcock-Johnson Tests of Cognitive Ability (Riverside Publishing)

LANGUAGE ABILITIES

- Aphasia Screening Test (The Psychological Corporation, 1996)
- Boston Diagnostic Aphasia Examination (The Psychological Corporation, 2000)
- Clinical Evaluation of Language Fundamentals (CELF; The Psychological Corp., 2000)
- Comprehensive Test of Phonological Processing (CTOPP; Pro-Ed., Inc., 1999)
- Detroit Tests of Learning Aptitude (The Psychological Corporation, 1998)
- Expressive One Word Vocabulary Test (EOWVT, Western Psychological Services, 2000)
- NEPSY Language subtests (The Psychological Corporation, 1998)
- Peabody Picture Vocabulary Test-Revised (American Guidance Services, 1997)
- Test of Auditory Comprehension of Language (TACL; Western Psychological Services, 1985)
- Test of Language Competence-Expanded Edition (The Psychological Corporation, 1989)
- Token Test for Children (Western Psychological Services, 1978)

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MEMORY

- California Verbal Learning Tests (CVLT; The Psychological Corporation, 1994)
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- Children's Memory Scale (1997)
- NEPSY Memory subtests (The Psychological Corporation, 1998)
- Rivermead Behavioral Memory Test (Western Psychological Services, 1985)
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- Behavior Rating Inventory of Executive Function (BRIEF, Psychological Assessment Resources)
- British Ability Scales (Nfer Nelson, 1996)
- Children's Category Test (The Psychological Corporation, 1993)
- Delis Kaplan Executive Functions System (D-KEFS, The Psychological Corp., 2001)
- NEPSY Executive Function subtests (The Psychological Corporation, 1998)
- Tactual Performance Test (Psychological Assessment Resources, 1984)
- Trail Making Test (Psychological Assessment Resources, 1992)
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SOCIAL-EMOTIONAL FUNCTIONING

- Achenbach Child Behavior Checklist (Research Center for Children, Youth, & Families 1991)
- Beck Youth Inventories (The Psychological Corporation, 2001)
- Behavior Assessment System for Children (BASC; American Guidance Service, 2002)
- Children's Depression Inventory (The Psychological Corporation, 1992)
- Connors Parent Rating Scale (Western Psychological Services, 1997)
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- Devereux Scales of Mental Disorders (DSMD; The Psychological Corporation. 1994)
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- Bruininks-Osteretsky Test of Motor Proficiency (American Guidance Services, 1978)
- Digital Finger Tapping Test Western Psychological Services, 1995)
- Grooved Pegboard (Psychological Assessment Resources, 1989)
- Grip Strength (Dynamometer, Pro-Med Products)
- NEPSY Sensorimotor subtests (The Psychological Corporation, 1998)
- Purdue Pegboard (Psychological Assessment Resources, 1987)

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- Bender Visual Motor Gestalt (The Psychological Corporation, 1978)
- Developmental Test of Visual-Motor Integration (Western Psychological Services, 1997)
- Hooper Visual Organization Test (Western Psychological Services, 1983)
- Motor-Free Visual Perceptual Test-Revised (Western Psychological Services, 2003)
- NEPSY Visuospatial subtests (The Psychological Corporation, 1998)
- Rey-Osterrieth Complex Figure Test (The Psychological Corporation, 1995)
- Visual-Motor Integration Test (Psychological Assessment Resources, 1989)

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Educational Implications

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Educational Implications of Brain Injury

The effects of a brain injury are dependent on the location and severity of the injury. Resulting impairments can be multi-faceted and can include cognitive, behavioral, and/or physical deficits. Impairments can be mild or severe, temporary or permanent, resulting in partial or total loss of function. Because these deficits are so varied and unpredictable, it is difficult to forecast the recovery for a student with a brain injury.

Brain injury is often referred to as a "silent epidemic" because many children have no visible impairment after a head injury.
-Brain Injury Association of America

Most students with brain injury will return to school. However, many education professionals are unaware of the issues surrounding brain injury and how they can affect the student's abilities in the school setting. Many times, these students are wrongly classified (e.g., learning disability or mental retardation) and may not receive the services and supports that are needed. The educational implications of brain injury are many and varied; therefore it is essential that all staff who work with the student with a brain injury become aware of the issues and strategies for success.

This section provides an in-depth overview of the potential cognitive, behavioral, and physical impairments resulting from a brain injury and outlines several strategies to consider when working with a student with a brain injury.

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Cognitive Deficits Following Traumatic Brain Injury

- **Difficulty focusing & sustaining attention**
- **Delayed response time**
- **Decreased ability to organize information**
- **Difficulty with simultaneous processing**
- **Limited ability to generalize**
- **Rigid/concrete problem solving**
- **Decreased concept formation**
- **Altered perceptual/spatial function**
- **Decreased judgment**

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Executive Functioning and Cognitive Issues

The cognitive consequences of brain injury often surface after discharge from rehabilitation and/or upon return home, when additional demands are made of the child with a brain injury. Most want to return to their home and school activities as soon as possible, expecting to resume 'normal' roles. However, as they resume these social and daily living activities, the difficulties and changes surface and become apparent to the child and those around him/her (McKinlay & Watkiss, 1999). Things may not be what they seem, as cognitive skills may manifest themselves in any number of ways. The most common of the cognitive impairments include attention/concentration, memory, loss of language function, and learning. Organization and planning, thinking and reasoning, judgment and problem solving, intelligence, academic achievement, and new learning may also be impacted and are often referred to as executive functioning.

The following serves to illustrate the interrelationship of executive function relative to typical classroom instruction. Reflective of efficient working memory, it involves the ability to understand a concept while it is read or heard, while simultaneously keeping in mind background information provided in previous sentences, calling up relevant knowledge to increase understanding, and inhibiting distractions in the surrounding environment. It reflects focused and simultaneous attention, language comprehension, planning, problem solving, decision-making and reason.

Attention and Concentration

Attention is defined as the ability to receive incoming information. Concentration is the ability to perform mental work while attending. Without attention, information cannot be processed. Attention deficits can impair learning and daily living functions. Persons who have sustained a brain injury often exhibit poor concentration and divided attention. They may also display "mental slowing" and often can't continue what they have started or focus on the problem at hand.

There are various subcategories of attention, including:

- Sustained attention-the ability to maintain attention for a long time;
- Selective attention-the ability to filter stimuli and pay attention to what is important ;
- Divided attention-the ability to respond to several things at one time;
- Alternating attention-the ability to switch back and forth between tasks (Senelick & Dougherty, 2001).

Memory and Learning

A study by Levy (2001) proposes that incoming information passes through the sensory-perceptual system, where it is processed and registered. The piece of information to be stored then moves into short-term, or active memory. This is where information is manipulated; it is limited in terms of amount. Information that can be processed by our mind at one time is 7 items +/- 2 and duration is 3-30 seconds. It is divided into primary and working memory. Primary memory is where the

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information is stored. Working memory is where it is given meaning; it encompasses things like staying oriented to a schedule, process, or activity, and taking lecture notes. Long term memory includes information stored for recall and is composed of episodic (i.e., personally relevant facts), semantic (i.e., beliefs and principles), and procedural (i.e., automatic behaviors). Episodic long-term memory has 3 subsets; these are recent (i.e., events that just occurred), remote (i.e., memory of important dates and events), and prospective (i.e., remembering to do something in the future). Recall is the ability to retrieve a particular piece of information by means of a deliberate conscious search of long term memory stores, without the assistance of externally provided associational cues. Recognition is a form of retrieval that is reflected in the ability to match information presented to us with information in our memory stores.

Deficits in memory skills can significantly impact learning; information that is learned one day may be forgotten by the next. In a study by Hawley, Ward, Magnay, and Mychalkiw (2003), half the students studied with either mild or moderate brain injuries had problems with memory, attention, and subsequently, schoolwork. The study revealed a significant relationship between memory problems and difficulties with schoolwork, with 94.4% of the students with memory problems demonstrating difficulty with school assignments. Using the Children's Memory Scale (CMS), the study also found that approximately one third of students with severe brain injury were impaired or borderline for both immediate and delayed recall of verbal information and over one quarter were impaired or borderline for recall of visually presented information.

Organization and Planning

The ability to order and act on information is critical for task achievement. It consists of the abilities to break a task into its component parts or categories, to sequence the steps of the task, and determine the course of future action. It may manifest in decreased initiation for task performance, which may be due to the lack of a plan to tackle the problem.

Thinking and Reasoning

One of the most integrated areas of cognition, the ability to reason requires concept formation, categorization and a grasp of the relationships between objects and themes, understanding abstracted levels of meaning, and drawing conclusions from facts presented. It involves the analysis and synthesis of information and generalization of information from one situation to another. Understanding of the application of various rules (e.g., grammar, math) and perceiving one's own strengths and needs in an objective manner are dependent upon these functions. With damage to the frontal lobes in particular, the ability to be aware of, monitor, and evaluate one's behavior may be impaired. This leaves the student with an unawareness of the effect of his or her behavior on others, thus creating a propensity for inappropriate social behavior, offensive comments, and miscommunication of intentions.

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Judgment and Problem Solving

Problem solving is one of the most difficult executive functions and is the one that generally requires intervention. Effective problem solving requires many cognitive functions including independent thinking and cognitive flexibility to generate a solution. It also requires the ability to transfer learning and to change solutions based on changing situations. A student with a brain injury may find these skills particularly challenging. It is important that the student develop planning, organization, and prioritization skills (Semrud-Clikeman, 2001).

Judgment is a critical component of self awareness and is a necessary skill in analyzing situations, interpreting the actions and intentions of others, and monitoring and correcting behavior. It is critical for the student with a brain injury to develop good judgment; if they are unable to judge their situation they may be unaware they have a problem (Senelick & Dougherty, 2001).

Language

Topical and social conversation problems often present themselves as behavioral issues. Expression and comprehension of language is an area of difficulty for many children with brain injuries. An inability to find the right word and fluency disorders are the most common of the expressive disorders. Aphasia refers to the impairment in the ability to use or comprehend written or spoken language. Anomia is impairment in word finding, particularly in naming objects. Bucco-facial apraxia, which is not a language disorder, but a deficit in motor planning, may impair the student's ability to form words. Comprehension deficits include the student's ability to understand verbally presented information and the rate at which they are able process that data. Written language may also be affected because of apraxias (see perception section) or poor understanding of syntax.

New Learning and Intelligence

Learning new information can be very challenging to a student with a brain injury, while previously learned information remains intact and is easier to recall. A student with a brain injury is often challenged to re-learn information they lost due to the injury, while trying to keep up with peers to learn new information. He or she is faced with the dilemma of re-learning and new learning all at the same time.

Frontal lobe development continues in a child until around 16 years of age. Disturbances to growth in this area can cause problems, some of which do not become apparent until later stages of development. The student may encounter increased challenges in math, difficulty with higher level learning in high school, and trouble in college.

It is important to understand that grades attained in school in the early years are not a good indicator for the future as parts of the brain that were damaged may not be called upon until later years. These issues may be very confusing to classroom teachers as student test scores may be not be an accurate reflection of classroom performance.

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Cognitive Treatment Strategies

Direct retraining of underlying neuropsychological weaknesses is a meta-cognitive approach, in which the student has to think about the thinking process, making the student more aware of his/her deficits. However, this approach is time consuming, results are inconsistent, and it is not appropriate for all students.

In order to achieve optimal results in a timely manner, compensatory training is the preferred approach. Compensatory training is the functional restoration of an activity via the development of systematic strategies to substitute for impaired skills. These include the use of external aids, such as checklists, timers, beeping watches, memory books, and calculators. Internal strategies, such as mnemonics, decision making, behavioral control, and meta-cognitive analysis, can be used as well.

The Process-Specific Approach of Sohlberg and Mateer (2001) integrates direct retraining and the compensatory approaches. Hierarchically arranged cognitive skills are addressed via repetitive direct skill retraining. When functional restoration is not possible, compensatory strategies are then developed and the student is trained in their use.

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Cognitive Processing Hierarchy

Basic cognitive functions are critical to successful academic learning. A student must be able to perform basic cognitive skills, the foundations of learning, in order to respond to academic requests.

The cognitive processing hierarchy that follows breaks down the cognitive components of learning from the simpler (bottom) to the increasingly complex (top). It is important to note that a student must master the simpler cognitive components before moving up the hierarchy to the more complex.

Modification of Response	Ability to produce a modified response, if necessary
Assessment of the Need for Change	Ability to determine need for modification
Comparison of Output to Intention	Ability to compare product to intention
Attention to Output	Ability to attend to product
Execution	Ability to transmit the sequence as planned
Analysis and Synthesis	Ability to determine the appropriate sequence of behavioral events
Integration	Ability to integrate newly acquired knowledge with other information
Association and Memory	Ability to relate new information to old information
Temporal Order, Retention, and Categorization	Ability to determine the whole on the basis of its parts
Discrimination	Ability to recognize the differences between stimuli
Selective Attention	Ability to repress irrelevant stimuli
Attention Span	Ability to attend for increasing spans of time
Attention	Ability to attend to a stimulus

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Common Behavioral Issues with Students with a Brain Injury

It is important to note the transient nature of many of these behavioral issues in students with traumatic brain injury. Some students will demonstrate some of these behaviors…some of the time. Unlike other disorders, traumatic brain injury manifests itself most predictably in unpredictability.

- **Poor self control, impulsivity**
- **Limited insight into deficits**
- **Lack of initiative**
- **Non-compliance**
- **Depression**
- **Decreased understanding of social rules**
- **Irritability, agitation, aggression**
- **Low threshold for overstimulation**
- **Emotional lability (i.e., shifts in emotional state)**
- **Low frustration tolerance**

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Things to Keep in Mind When Addressing Behavioral Issues

- The very nature of brain injury creates disordered thinking which may lead to challenges that don't become evident for some time post injury.
- Behavioral characteristics are one of the most significant determinants to successful role re-entry relative to school, work, family, and peer relationships.
- Environments and circumstances in which learning occurs make all the difference as to whether learning takes place or not.

At any given time, a person is doing the best they can, given their unique skills, personality, environment, and circumstances.
-Ann Deaton

Why do students experience behavioral issues after a brain injury?

The Neuroanatomy Factor: Damage to the frontal and temporal lobes is common with traumatic brain injury.
Damage to the frontal lobe may cause:

- **Disinhibition** (i.e., inability to inhibit their behavior)
- **Impulsivity** (i.e., tendency to act without considering consequences)
- **Perseveration** (i.e., inability to discontinue a particular thought or action)
- **Amotivation** (i.e., lack of motivation or initiation),
- **Difficulty with initiating and terminating activities**
- **Emotional dyscontrol** (i.e., poor control over emotions).

Damage to the temporal lobe may result in:

- **Lower frustration tolerance**
- **Altered mood states**, usually depression.

Lack of Awareness: These traits, when combined with lack of insight and ability to self-monitor, leave the student unable to see the effects of their behavior on others or to make judgment as to the appropriateness of their behavior. This is NOT denial; to deny the existence of something means that one is aware of what it is that is being denied.

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Sensory Issues: Sensory dysfunction can lead to behavior issues when:

- Students are overwhelmed by too much stimulation and withdraw or explode to protect themselves.
- Students receive stimulation differently and try to modulate the stimuli they receive in both usual and unusual ways.
- Students have difficulty getting enough stimulation and seek more extreme input.

Cognitive Issues: Cognitive dysfunction can lead to behavior issues when:

- Students cannot do the work, so they may engage in maladaptive behavior.
- Students cannot understand what is expected of them or cannot remember long enough to carry out what is expected.
- Students cannot attend to what's important in their environment.

The greater the mismatch between a student's strengths and the demands of the environments, the more frustration and/or feelings of low self-esteem.

Opportunities for success are DECREASED by:

- Decreased expectations.
- Isolation from peers.
- Lack of recognition for effort.
- Lack of support.

Opportunities for success are INCREASED by:

- High expectations.
- Adequate structure and feedback.
- Collaboration with peers.
- Collaboration with teachers.
- Self-esteem enhancement.
- Academic skill enhancement.
- Competency based curriculum.

Any child would rather be viewed as BAD rather than DUMB.

Richard LaVoie

There is nothing more unequal than the equal treatment of unequals. It is the squeaky wheel that *needs* the grease.

Richard LaVoie

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Behavioral Issues

Behavioral problems can create barriers to growth in academic and cognitive skills and are often the most worrisome to educators and family members (Semrud-Clikeman, 2001). While behavior is a function of maturity, and adolescents are known to have their own issues, problems are generally more profound in those who are recovering after a brain injury. The very nature of brain injury creates disordered thinking and this may lead to behavioral disorders that do not become evident for quite some time some post-injury, regardless of the age of the child.

Behavioral difficulties often are not resolved as quickly as other deficits and may continue to disrupt the student's progress for an extended period of time (Semrud-Clikeman, 2001). Also, some of the consequences of brain injury, such as memory problems, poor insight into deficits, apathy and tiredness, depression, language and non-verbal communication difficulties, and planning and organization deficits may be interpreted as behavioral difficulties which can lead to frustration for both the student and educators (McKinlay & Watkiss, 1999).

Knowledge of the anatomy of the brain, as well as a review of pre-morbid behavior and coping styles can help understand the consequences of brain injury. This can also assist in distinguishing whether current behaviors are organically or environmentally generated, or a combination of the two. For example, damage to the frontal lobe may cause disinhibition, impulsivity, perseveration, apathy, and impaired judgment (Semrud-Clikeman, 2001) These traits, when combined with lowered frustration tolerance and a lack of insight and ability to self-monitor, leave the student unable to see the effects of his/her behavior on others or to make judgments as to the appropriateness of his/her behavior.

While sustaining a brain injury doesn't create new behaviors, it may present a more intense set of behaviors. Another factor in the expression of behavioral activity is age. Preschool and primary school aged students are more likely to demonstrate hyperactivity, distractibility, and emotional dyscontrol. Older students are more likely to have somatic complaints (e.g., headache, fatigue), exhibit irritability and agitation, and have difficulty inhibiting verbal responses. According to Semrud-Clikeman (2001), in addition to the previously mentioned manifestations, substance abuse tends to be more common with adolescents.

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Common Strategies to Promote Adaptive Behavior

The most effective behavioral management strategy is one that addresses not only specific goals but also incorporates a student's individual motivators. A comprehensive program that is uniformly reinforced by everyone involved is most beneficial to the student's progress (Deaton, 1999). Behavioral intervention can be a wonderful chance to learn, teach, and treat, and if viewed as opportunities to seek solutions, can create a positive experience for all involved. The following is a brief listing of some topical issues.

Antecedent-Behavior-Consequence

It's important to understand the context and environment in which behavior occurs. On a short-term basis we can work to identify events that occur immediately prior to the behavior (i.e., antecedents) that may make it more or less likely to occur. For example, the student may be more likely to begin his or her school assignment when he or she enters a quiet classroom rather than a noisy classroom. Similarly, events that occur immediately following a behavior (i.e., consequences) may increase or decrease the future likelihood of that behavior. For example, how likely are you to give up your free time to help someone with a problem if they subsequently blame you for the problem? Alternatively, a student who becomes easily frustrated with an assignment is likely to continue to work if he or she receives very frequent positive feedback as their work progresses.

On a longer term basis, understanding the context of a student's environment will create a higher probability of success in serving them; issues occurring prior to or after interventions may be affecting their mood, performance, and general behavior. Similarly, the student may really strive to do well in class, but their efforts do not carry over at home because the family does not value the education. Understanding these factors can help educators be more successful in programming the environment and in approaching people to help improve each student's chances for success. It is critical to work with both the immediate and long term factors that affect behavior.

Communication

Words have a powerful influence over our perceptions of, and reactions to, people and situations. The first and most important tool for facilitating improved behavior is improved communication, as many times communication problems can lead to behavior issues. Communication is more than verbally expressed language; it encompasses the ability to express thoughts and ideas and to comprehend what others are saying. Communication disorders can involve both verbal and non-verbal skills. An individual may be able to understand what is being said but may not be able to respond in an appropriate manner or may be capable of reading but unable to write down his or her thoughts. They may be able to follow a conversation but may say whatever comes to mind, even if it is not socially appropriate because they have lost their "social censor" (Senelick & Dougherty, 2001).

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Verbal and non-verbal communication has to deliver the same message. Be very specific with praise or requests for improved behavior. It is important to respond to all undesirable behaviors with a specific statement as to what is and is not desired. Without specific examples of the desired behavior, the student may not know how to respond, adding to his/her frustration.

Neuropsychology

Another tool for addressing behavioral issues is the involvement of a pediatric neuropsychologist. Neuropsychology is an extension of clinical and educational psychology, as it applies the science of psychology to the study of brain-behavior relationships. These professionals can help determine specific weaknesses that might affect educational approaches, help determine whether an academic or vocational track is the most appropriate course, assist with the development of compensatory strategies, and give suggestions as to how best teach the student. Very often, neuropsychological assessments will be done when the child is involved in a formal rehabilitation program, and these should be accessed when the child is returning to school.

Positive Supports

Most problem behaviors can be avoided and each student helped by focusing on what he or she does well and building on his or her abilities. This requires an honest evaluation of each student's abilities and limitations and development of a successful program utilizing these skills. With time and patience, as the student's abilities further develop, so can the curriculum. This is very different from programming that emphasizes a student's deficits as a means of "improving" these problem areas. Such approaches often lead to high frustration and failure. Instead, work with each student to help him or her find their strengths and build from these areas. Use collaborative and mentoring models of teaching to directly involve each student in their work. With help, each student can communicate how to better recognize their opportunities for achievement, meet their goals, and build their self-esteem.

Re-direction

When faced with frequent frustration and failure, it is often better to redirect the student to another task or behavior than to directly confront the issue. The issue can always be revisited when the teacher and the student are refreshed. If a student has been working on a topic area unsuccessfully for some period of time, switch to another topic, or at least to another teaching technique. If a student begins to engage in socially undesirable behavior, ignore that behavior and focus on socially appropriate behaviors in which they are engaged. This process is called differential reinforcement of other behavior (DRO) and it is very effective in redirecting individuals to more productive forms of engagement.

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Reinforcement

Reinforcement is the process of presenting a consequence following a selected behavior which results in its increased future likelihood of occurrence. Most frequently positive reinforcement is used to strengthen behavior. The reinforcer does not have to be large or cumbersome; social praise and approval are two highly effective reinforcers. In other situations, access to preferred activities, being able to choose the sequence of events, brief periods of free time for work well done, or time with someone of special value are often effective. For people who are more concrete, simple point or token systems may work as long as they are backed up with more tangible reinforcers.

The key to successful reinforcement is that the selected reinforcers are of value to the student, that reinforcement occurs consistently and immediately following the behavior of interest, and that reinforcement occurs frequently. When using positive reinforcement always remember to "catch them being good!"

Structure, consistency, and repetition

Everyone needs structure and consistency to be successful, but different people need different levels of support. Oftentimes a problem or inappropriate behavior is a response to a lack of structure and consistency that the individual needs and not the other way around. In effect, it's not the "bad" behavior that establishes the need for structure, but the lack of structure that causes the problem behavior. Think about the levels of support and structure needed in different situations. It may be very little for familiar tasks or situations, but support needs may be much higher when attempting a new skill, when under pressure, or experiencing emotional duress.

Consistency and structure begin with the way that staff plan for the school day. Does the staff have effective curricular materials? Are the school and classroom policies reasonable and comprehendible? Does staff share a similar mission and philosophy? Is staff consistently assigned to the same students in order to build positive rapport and provide continuity of instruction? Are practical outcome measures used to evaluate progress on an ongoing basis? Structuring an educational program around these key practices will help staff focus on success rather than problem behaviors.

Finally, day to day recognition of people and events can be impeded by memory deficits. Confusion often leads to anxiety, which may be expressed through misbehavior. In order to facilitate memory and decrease anxiety, daily repetition of names, events, schedules, and other information should be a matter of course. Many different strategies can be used to improve a student's ability to remember, but frequent reminders to utilize these compensatory strategies are absolutely necessary to diminish anxiety. When possible, use collaborative techniques to engage the student in this process. This will make the compensatory strategies more relevant and increase the student's motivation to participate.

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Time-Out

Time out can help students remove themselves from a problem situation in order to regain focus and then successfully return to the setting. Everybody uses time out. For example, during a heated conversation, stepping away for a few minutes to calm down, taking a deep breath, and refocusing before returning to the discussion. When a student is upset, divert their attention to something else for a while to help them calm down and then deal with the problem more effectively.

Time out can occur in many different settings. Sometimes the student leaves the room. Sometimes the student simply moves away from the group. At other times the student may stay in the situation but use "self-talk" (i.e. internal dialogue, talking to yourself) to mentally remove themselves from the situation while being physically present. Learning how to step away from a problem situation, refocus, and then successfully return to address an issue are important skills.

Important Considerations Regarding Time Out

- Time out is not designed to be a punishment, a consequence for "bad behavior" that students don't like. It is solely to help the student remove themselves from situations where they are losing control so they can regain personal stability, confidence, and follow verbal direction.
- Time out does not need to occur in a time out room. It can occur in most any situation where the student can disengage themselves from the problem, refocus, and then successfully reengage in a positive and productive manner. This sometimes includes staying in the situation if the student can remain calm.
- Time out doesn't have to be long-only long enough for the student to regain self control and consistently follow verbal direction.
- Time out is only successful if the student returns and positively engages in their daily activities. We do not measure the success of time out by the fact that a student is removed from a specific setting or that they have to go to a specific room.
- Time out is used to disengage a student from a problem situation. Placing and keeping a student in a room for a set amount of time after they misbehaved, especially when they are now positively engaged in other activities, is not time out.

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The Four E's of Responding to Negative Behaviors

Event: When you (kick the desk in front of you, tap your pencil, talk out loud…)

Effect: It (distracts your classmates, violates the rules, interferes with someone else's efforts…)

Emotion: And it makes me feel (frustrated, confused, angry…) *(share label for feelings but don't show rejection)*

Expectation: I like it better when you (ask to be excused, raise your hand, sit quietly and work on your assignment…)*(emphasize alternative, positive behavior)*

If the four E's are not sufficient after several efforts, consider the fifth E:

or Else: If you continue to … instead of…, then (you'll be moved to the front of the room, asked to stay after school, your parents will be called…)

The "or else" contingency needs to be:

- Fair
- Reasonable
- Proportional
- Firm
- Enforceable
- Related to the behavior

Don't try to handle behaviors alone. Use available resources.

- Fellow teachers
- Student
- Guidance counselor
- School psychologist
- Parents
- Peers

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The Disadvantages of Punishment – "The Stick"

Punishment refers to an event or consequence intended to temporarily decrease or weaken a behavior. Some punishments are naturally occurring (e.g., getting sick after eating too much junk food). Other forms of punishment are those arranged by others (e.g., verbal reprimands, restrictions, disapproval, time-out, or isolation).

When improperly used, punishment is an ineffective method for modifying behavior because it:

- Can produce social withdrawal.
- Can produce aggressiveness.
- Can produce emotional side effects (e.g., shyness, anger, withdrawal).
- Can become addictive to the punisher because it often has immediate, short-term effects.
- Does not eliminate behavior; it only suppresses it, particularly when a replacement behavior is not taught.
- Does not teach the individual what they should do.
- Leads to results that are usually temporary. When the punishment stops, the behavior returns, often in worse form than before.
- Can inhibit behaviors other than those targeted.
- Leads to situation and student -specific behavior (e.g., once the punishment or punisher is away, the behavior returns) rather than generalized effects.

When the goal is to help individuals develop pro-social, productive, and long lasting behavioral changes,

USE THE "CARROT", NOT THE "STICK".

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Try Praise Instead
99 Ways to Say "Good Job!"

- You're on the right track now!
- You've got it made.
- SUPER!
- That's right!
- That's good.
- You're really working hard today.
- You are very good at that.
- That's coming along nicely.
- GOOD WORK!
- I'm happy to see you working like that.
- That's much, much better!
- Exactly right.
- I'm proud of the way you worked today.
- You're doing that much better today.
- You've just about got it.
- That's the best you've ever done.
- You're doing a good job.
- THAT'S IT!
- Now you've figured it out.
- That's quite an improvement.
- GREAT!
- I knew you could do it.
- Congratulations!
- Not bad.
- Keep working on it.
- You're improving.
- Now you have it!
- You are learning fast.
- Good for you!
- Couldn't have done it better myself.
- Aren't you proud of yourself?
- One more time and you'll have it.
- You really make my job fun.
- That's the right way to do it.
- You're getting better every day.
- That's the best ever.
- You've just about mastered it.
- PERFECT!
- That's better than ever.
- Much better!
- WONDERFUL!
- You must have been practicing.
- You did that very well.
- FINE!
- Nice going.
- You're really going to town.
- OUTSTANDING!
- FANTASTIC!
- TREMENDOUS!
- That's how to handle that.
- Now that's what I call a fine job.
- That's great.
- Right on!
- You're really improving.
- You're doing beautifully!
- SUPERB!
- Good remembering.
- You've got that down pat.
- You certainly did well today.
- Keep it up!
- Congratulations. You got it right!
- You did a lot of work today.
- Well look at you go.
- That's it.
- I'm very proud of you.
- MARVELOUS!
- I like that.
- Way to go!
- Now you have the hang of it.
- You're doing fine.

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• You did it that time! • That's not half bad. • Nice going. • You haven't missed a thing! • WOW! • That's the way! • Keep up the good work. • TERRIFIC! • Nothing can stop you now. • That's the way to do it. • SENSATIONAL! • You've got your brain in gear today. • That's better. • That was first class work. • EXCELLENT! • I think you're doing the right thing.	• Good thinking. • You are really learning a lot. • Good going. • I've never seen anyone do it better. • Keep on trying. • You outdid yourself today! • Good for you! • I think you've got it now. • That's a good (boy/girl). • Good job, (student's name). • You figured that out fast. • You remembered! • That's really nice. • That kind of work makes me happy. • It's such a pleasure to teach when you work like that!

Note. Adapted from "99 Ways To Say Very Good: For Those Days When You Can't Think of What To Say", Career Lab, Englewood, CO, www.careerlab.com/99ways.htm.

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Negotiating a Behavioral Contract

A contract is negotiated. Imposing a contract on a person will not work. Imposed agreements are not contracts if one party has not had the freedom to determine the terms.

The exact form of a contract is not important as long as the following components have been included:

- Date the agreement begins, ends, and is renegotiated
- Behavior targeted for change (must be clear, honest, and positively phrased)
- Amount and kind of rewards or reinforcers to be used
- Schedule of the delivery of reinforcers
- Responsibilities of other parties and consequences for their action or inaction (recommended addition by Harvey Jacobs, Ph.D.)
- Signatures of all parties involved
- Bonus clause for sustained or exceptional performance
- Statement of the penalties that will be imposed if the specific behavior is not performed

If your contract is not producing the desired results, check the following:

- Was the contract comprehendible to all parties, according to their abilities? (recommended addition by Harvey Jacobs, Ph.D.)
- Was the target behavior clearly specified?
- Did the contract provide for immediate reinforcement?
- Did it ask for small increments toward the desired behavior?
- Was the reinforcement frequent and in small amounts?
- Did the contract call for and reward accomplishment rather than mere obedience?
- Was the performance rewarded after its occurrence?
- Were the terms of the contract fair, honest, and realistic?
- Was the contract worded in a positive way?
- Was the contract, as a method, being used consistently?
- Was the contract mutually negotiated?
- Was the penalty clause too punitive?
- Was the bonus clause motivational, reasonable, and attainable?

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Temper Tantrums

A temper tantrum is an expression of frustration or anger. It is often displayed as an outburst or a violent expression ranging from crying, to screaming, to throwing oneself on the ground. Temper tantrums are a normal part of growing up, happen at different times and for different reasons, and are used to get attention. The important thing to remember is that while there are no cures for temper tantrums, there are different techniques that can be used to effectively handle them.

There are three basic categories of temper tantrums:

- **Child is unable to contain emotions -** These may include anger, frustration, or disappointment. Many times this tantrum may occur when the child is overtired or over stimulated and is not able to cope with their feelings. The tantrum is not used to manipulate, but as a means for the child to release all the tension that has built up inside him/her.
  Intervention suggestion: Maintain contact with the child and help him/her feel safe. Support the child by sitting with them or holding them while they are going through the tantrum.
- **Child is not allowed to show feelings -** Children naturally have strong emotions and, unlike most adults, are not yet able to control these emotions. Children must be allowed to express these feelings appropriately. If not allowed, they will need to release these bottled-up feelings and this may be in the form of a tantrum.
  Intervention suggestion: Allow child to express feelings appropriately so they can learn from them.
- **Child is attempting to control a situation or a person -** Children are learning how to best have their needs met. Sometimes children will have a tantrum to test the limits of their behavior and see if they can get what they want.
  Intervention suggestion: Utilize a firm approach and acknowledge the child's feelings, but do not give into their demands. Guide the child on the most appropriate way to get what they want.
  Note: Adapted from Smart Medicine for a Healthier Child: A Practical A-Z Reference to Natural and Conventional Treatments for Infants and Children, (2nd ed.), (p. 282), by J. Zand, R. Rountree, R. Walton, B. Rountree, 2003, Garden City Park, NY: Avery Publishing Group.

Other suggestions for dealing with temper tantrums:

- Remain calm.
- Distract the child's attention.
- Ignore the tantrum when possible.
- Remove the child from the situation.
- Wait until the child calms down to discuss the situation and behaviors.
- Comfort and reassure the child.
- Help the child learn appropriate, acceptable strategies and behaviors (Iowa State University, 2003).

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Intervention Plan: the ABCs

This form can be helpful in identifying what triggers certain behaviors and how to handle them when they arise.

A. **Antecedent Behavior (Causes):** What happened before the behavior started? There is always some sort of trigger, and it may not be readily apparent. It can be something that happened hours before the demonstration of behavior, but something in the immediate environment has caused it to appear. It can identify what kinds of things may cause the behavior to occur in the future.

B. **Behavior:** How exactly did the behavior manifest itself? How long did it last? Document everything that will help describe what happened.

C. **Consequences:** This refers to the consequence of the behavior. What happened as a result of the behavior? What worked to de-escalate it?

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General Strategies for Managing Behavior for Students with TBI

√ **Establish cooperative relationship.** Behavioral challenges often result from the interaction between the child and the school environment. It is important to determine how the student with TBI and the school can work together.

√ **Provide feedback to the student.** The teacher is encouraged to provide direct, immediate feedback (in private) about the impact of the student's behavior.

√ **Encourage alternative behaviors.** Teachers can utilize a number of effective methods such as modeling, cueing, and rehearsing appropriate behaviors.

√ **Provide clear structure and predictable routines.** Students with brain injury need consistency class to class, school to home, and school to school.

√ **Pace instruction accordingly.** Be cautious not to overload the student with cognitive demands as this may lead to frustration.

√ **Set reasonable expectations.** Be specific about the expectations, communicating them in writing and in class discussion.

√ **Allow rest periods.** Students with TBI often experience fatigue, headaches, and dizziness. The student is often unable to meet the challenges of school which may contribute to behavioral problems.

√ **Consider modification of school environment.** Several environmental factors, such as noisy hallways and crowded classes, can lead to over stimulation and trigger negative behaviors.

√ **Include peers in the process.** Others in the school, such as peers and teachers, are encouraged to be part of the solution. They can be encouraged to speak slowly, provide social support, and assist by taking notes for the student.

√ **Involve the family in any behavior management plan.**

Note: Adapted from Students with Traumatic Brain Injury: Identification, Assessment and Classroom Accommodations by M. Hibbard, W. Gordon, T. Martin, B. Raskin, & M. Brown, (2001), New York: Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury.

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Physical Conditions That May Result From a Brain Injury

Vision & Hearing Loss

Loss of or change in motor, sensory and/or perceptual abilities

Seizures

Headache

Reduced Stamina

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Motor-Sensory Deficits

Although there have been advances in recent years in the medical care for survivors of brain injury, neurological conditions are statistically unchanged. Depending on the location and extent of brain damage, motor and sensory deficits are possible and can be quite debilitating. Typically, motor problems resolve to a greater extent than do sensory ones. Motor abilities can be improved through a variety of means, usually involving therapeutic intervention and durable medical and adaptive equipment. Sensory deficits are not often as amenable to external aids and usually require the use of compensatory strategies to ameliorate the functional impairments (McDonnell, 2003). The descriptions that follow below are very simplistic in nature and do not fully cover the neuroanatomic basis of the problems.

Motor Deficits

Brain injury can result in a variety of motor disorders, such as gait disturbance, incoordination, and imbalance (Katz & Black, 1999). Ataxia is the most often observed motor deficit following brain injury in children; persistent spasticity is also common (Ylvisaker, Chroazy, Feeney, & Russell, 1999). A mix of motor disorders may be present, especially with injuries that cause disturbances in multiple motor systems. The severity of deficits is affected by the depth of the anatomical lesions sustained as well as the location and severity of injury. Recovery of the deficits tends to be variable but typically occurs quicker than recovery of cognitive function (Katz & Black, 1999).

Lower limb functions tend to recover to a greater extent than do upper limb functions for a variety of reasons. There are several theoretical models for why this occurs; the most simplistic explanation and readily apparent reason is that upper extremity musculature is smaller than those of the lower extremities and that the motions performed by the upper extremities are more complex than those of the lower extremities (McDonnell, 2004).

Common motor deficits following brain injury include the following:

- **Apraxia** is often referred to as motor planning. Praxis is the ability to determine the appropriate type and sequence of movement needed to complete a particular task. Apraxia is the inability to carry out learned volitional movement or skilled and complex movements; it is not due to paralysis, ataxia, sensory changes, or confusion. Prior to voluntary motion, action is conceptualized and the motor sequence is planned; apraxia is a breakdown in this process, and often manifests itself in object-use confusion. It may affect different movements of the structures of the mouth and face (i.e., bucco-facial), unilateral or bilateral limbs, or the whole body. It may manifest itself in different ways:
  - Ideational- inability to carry out complex sequential motor acts. Students may understand the use of an object in isolation, but may display deficits in planning more complex motor acts with the object.
  - Ideomotor-inability to imitate gestures or perform purposeful motor acts.

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  - Constructional-inability to copy, draw, or construct two or three dimensional designs, either spontaneously or upon command.
- **Ataxia** causes incoordination and affects balance, fine motor skills, and dexterity.
- **Dysarthria** is lack of control over the muscles that control articulation, creating slurred speech.
- **Dysphagia** is lack of control over muscles that control swallowing. This also includes the muscles that control the lips and tongue, which affect the ability to keep and move food and liquids inside the mouth. Dysphagia also has a sensory component, in that persons with decreased sensation often are unaware of aspiration and do not cough.
- **Fatigue** is a common problem with this population. There is often a prolonged period of inactivity in the early phases of injury, followed by activity focused on improving functional abilities. Strength and cardiovascular status beyond what is required for daily tasks can be of secondary concern. Inadequate physical conditioning, deviated movement patterns, and negative changes in body composition will limit endurance. Pain from musculature and orthopedic deformities can also severely impact energy reserves.
- **Hemiplegia** (i.e., paralysis of one side of the body) and **hemiparesis** (i.e., weakness of one side of the body) are often associated with a range of motion deficits or contractures.
- **Hypertonicity** is increased muscle tone. There are 2 types: rigidity, which is high tone of groups of muscles that perform opposite motions (i.e., flexors and extensors), and spasticity, which is increased tone of one of the muscle groups, usually flexors. This abnormality of muscle tone affects volitional movement and balance. Contractures can be quite painful for the child and may affect attention and learning. Oral medications, injections, or nerve blocks are often used to treat the impairment.
- **Hypotonicity** is decreased muscle tone. The lack of response in the muscle creates instability of the trunk and extremities. Joint protection and prevention of deformity are the primary concerns in managing this problem.
- **Spasticity** is an involuntary increase in muscle tone (i.e., tension) that occurs following injury to the brain or spinal cord, causing the muscles to resist being moved. Characteristics may include increase in deep tendon reflexes, resistance to passive stretch, clasp knife phenomenon, and clonus.

Sensory Deficits

- **Seizures**-Few of the after effects of brain injury are as unpredictable and embarrassing as seizures. Typically, seizures will happen within the first week after injury, however, they may not begin occurring until a year or two after the injury. For those prone to seizures, once two or three years have passed since the last seizure, the individual may be declared free of symptoms. But even then, there is still a chance of one occurring at a later time. This is all part of the unpredictability of seizures (Senelick & Dougherty, 2001). Factors associated with increased propensity for post-traumatic epilepsy include penetrating injuries and intracranial bleeds and infections (Evans, 2002).

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- *Generalized (or Grand Mal)* seizures will involve a loss of consciousness, usually without warning. These are accompanied by muscle contractions of the entire body, occasional urinary and bowel incontinence, and changes in breathing patterns.
- *Partial complex* seizures involve rhythmic twitching of the face, hand/arm, and/or leg on one side of the body. The child may not be aware of the environment, but there is usually no collapse or loss of consciousness. They may walk around, as if with purpose; repetitive, non-purposeful acts may be seen.
- *Temporal lobe* seizures are another type and are often the easiest to misinterpret, as their manifestations can be atypical of usual seizure activity.
- *Petit mal or absence* seizures are characterized by loss of flow of speech and conversation and a blank stare.
- *Psychic phenomena* seizures do not have external signs, but the child may feel a sense of fear or detachment, or have some type of sensory confusion (e.g., odd smells and sounds, nausea).
- *Automatism* seizures are characterized by stereotypical motions that are generally purposeless and inappropriate to circumstances.

The duration of any seizure may be several minutes, after which the child may be sleepy, confused, fatigued, or agitated. Some children may experience some type of warning or "aura".

- **Taste/smell-**The cranial nerve that is responsible for olfactory and gustatory sensation is one of the most commonly injured, thus reducing the ability to perceive smell and taste.

- **Vision-** Vision may be the most intricately woven motor sensory system, as motor output is highly reliant on the interpretation of sensory information. With traumatic brain injury, the cranial nerves that are among the most frequently injured are those that control muscles that move the eyes. This diminished function affects the child's ability to follow moving objects (pursuits) and read (saccades) and may create diplopia or double vision due to a muscular imbalance.

  Injuries to the eyes themselves can create blindness or blind spots. **Hemianopsia**, which is blindness in half of the visual field of each eye, is often due to damage to the visual pathways. Disorders of visual perception not due to actual visual system damage will be discussed in the section on perception.

- **Hearing-** Auditory imperception, which involves difficulty using what is heard, may be experienced by children with brain injury. Children may experience difficulty with auditory processing, auditory discrimination, and sound-symbol relationships.

- **Tactile**- Reduction in the ability to perceive touch and temperature sensations may be seen in children with neurologic damage as a result of brain injury. Disorders of muscle tone often exacerbate the problem. The most significant concern with these children is the potential for injury due to aperception of hazards.

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Perception

Perception is the interpretation of stimuli, a process by which distinctive features and patterns in stimuli are analyzed and synthesized into a meaningful whole. With experience, recognition of salient features becomes automatic. When stimuli are unfamiliar or complex, one attends to it in detail until distinctive features and patterns emerge. Persons with perceptual losses often demonstrate attentional and visual deficits that impair these skills, leading to an inability to get around in the world and manipulate components of the environment.

Developmental studies of perception in children three years of age and older indicate that as attentional control and knowledge develop, it becomes increasingly inappropriate and misleading to isolate perception from other aspects of cognition, such as memory and organization (Flavell, Miller, & Miller, 2002).

Depending on the location and severity of the injury, deficits may include perceptual, visual, and/or perceptual-motor skills. Manifestations of these deficits vary widely and tend to be more apparent when the student is under a time limit (Semrud-Clikeman, 2001).

The most common perceptual deficits are:

- **Body Scheme** - Inability to perceive the location and relationship of body parts
- **Figure Ground** - Difficulty distinguishing the foreground from the background
- **Visual Closure** - Lack of recognition of an object when only part of it is visualized
- **Topographical Orientation** - Impairment in the ability to find one's route with or without the use of maps
- **Spatial Relations** - Inability to perceive the position of objects in relation to self or other objects
- **Agnosia** - Difficulty recognizing familiar objects by touch (i.e., tactile), by sight (i.e., visual), or by words or sounds (i.e., auditory)
- **Neglect** - A tendency to ignore stimuli from the affected side; usually associated with right brain damage
- **Right/Left Discrimination** - Difficulty differentiating right and left on self, others, and objects

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Strategies for Educators Serving Students with Brain Injury

Often it is difficult for teachers not to focus directly on academic progress. However, for students with brain injury, it is typically more effective to use academic materials to develop general cognitive skills such as flexible thinking, expressive organization, and on-topic responses than to focus on academic content. These students must have cognitive ability in place before academic progress can be made. Previously learned skills are usually superior to current abilities to learn and integrate new information.

General Strategies

- Arrange for preferential seating
- Use small group instruction
- Increase structure and predictability of learning environment
- Allow increased response time
- Repeat and simplify verbal instructions
- Pair verbal instruction with visual cues
- Minimize distractions
- Impose individualized behavioral management system
- Chart daily progress
- Modify test delivery
- Provide peer tutors
- Require memory log to record facts that may be forgotten
- Highlight key points in content reading
- Shorten school day or reduce course load
- Communicate with student's other teachers
- Assign a note taker
- Solicit consultation from expert in traumatic brain injury (TBI)
- Seek services of resource teacher
- Use self-paced instruction or computer assisted learning
- Provide word processor and computer access
- Offer use of suitable software programs
- Permit use of calculators and tape recorders
- Reduce complicated tasks into smaller steps
- Refer for vocational assessment and training
- Refer for counseling services
- Maintain contact with parents
- Redirect inappropriate behavior

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Strategies for Serving Students with Cognitive Deficits

Poor Attention/Concentration

- Cue student to pay attention with both written and verbal cues.
- Reduce distractions in area; use earplugs to help eliminate external noise.
- Seat student near instructor.
- Teach in small groups.

Poor Memory

- Provide information through multiple sensory modalities; utilize modalities that capitalize on student's strengths.
- Frequently repeat and summarize information; have student repeat information as well to ensure understanding.
- Use an assignment sheet; have student bring to each class and check to see that it is completed correctly.
- Teach compensatory strategies such as use of highlighters, post-it notes, calendars/day planners, mnemonics, mental rehearsal, and visual imagery.
- Allow the student to tape record lectures; seat near electrical outlet.

Decreased Organization

- Color code material for each different class.
- Use checklists done via task analysis, with place to check off steps as completed.
- Use daily schedules that specify routine, times of activities; review with student daily; display classroom activities schedule.
- Provide outline for class lectures.
- Help the student make a "to do" list, use daily organizer.
- Designate a specific location to return homework; develop system to show that work has been turned in.

Decreased ability to follow directions/process information

- Slow pace of direction.
- Allow extra time for test/in-class assignment completion.
- Limit amount of information presented at one time; break complex directions down into smaller steps.
- Reinforce key points; repeat frequently.
- Give student more time to respond to questions; do not rush.

Note. Adapted from Special Needs Opportunities Windows (SNOW), Acquired Brain Injury: Integrating Students in the Classroom, (1999), Online Workshop, Retrieved April 21, 2005 from http://snow.utoronto.ca/prof_dev/tht/abi/abigroup/abidraft/a4_3.htm; Students with Traumatic Brain Injury: Identification, Assessment and Classroom Accommodations by M. Hibbard, W. Gordon, T. Martin, B. Raskin, & M. Brown, (2001), New York: Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury.

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Strategies for Carryover at Home

- Work with the family to determine how appropriate programming for the student is selected.
- Work with the student's family to determine family expectations, anxieties, and concerns regarding school placement.
- At planning meetings, educators should provide family members with test results and ideas for instructional strategies.
- Make sure that all instructors are using the same strategies in the same manner.
- Teach family members the strategies and techniques for implantation at home.
- Make sure the family feels welcome to the team and understands the important role they can play in the student's education (DePompei & Blosser, 1999).

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Strategies for Behavioral Issues

Behavior problems following brain injury often have a neurological basis. These students are often unable to plan their behaviors; they also may be unable to foresee the consequences of their actions. They may have memory problems, increased impulsivity, and impaired judgment leading others to see their behavior as aggressive or belligerent (Special Education Service Agency, 2005). The following suggestions can assist the student as well their peers and teachers to deal with the student's behavior.

- Avoid fatiguing student – be aware of their physical limits.
- Limit distractions.
- Allow student ample time to adjust to new situations or activities.
- Avoid surprises.
- Be clear and consistent with behavior expectations.
- Provide frequent positive feedback and avoid criticism.
- React to aggression with a neutral approach.
- Provide an explicit explanation of expectations prior to an activity.
- Model appropriate behavior.
- Assist peers in understanding and supporting student.
- Provide a social coach who can help prepare the student for various social events and situations.
- Modify activities to decrease frustration.
- Be flexible.
- Limit choices – some students may be overwhelmed with too many choices.
- Teach and model acceptable alternate behaviors (e.g., verbally expressing anger instead of hitting).
- Schedule preferred activities after non-preferred to give the student something to work towards.
- Limit the number of students in an activity – some students do no react well to overcrowded situations.
- Reduce distraction and clutter.
- Establish routines and follow them.
- Provide verbal or visual prompts or warnings.
- Help student define personal space by using hula hoops or tape on the floor.

Note. Adapted from "Considerations When Including Students Who Have Experienced Traumatic Brain Injury (TBI)", Special Education Service Agency (SESA), Anchorage, AK, Retrieved April 7, 2005 from http://www.sesa.org/sesa/agency/docs/incltbi.html; "Strategies for Challenging Behaviors" by M. Rush, 2000, Inclusion... Yours, Mine, Ours, Jacksonville, FL, www.rushservices.com/Inclusion/strategies_for_challenging_behav.htm.

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Strategies for Cognitive Retraining

Cognitive retraining refers to the recovery of thinking, reasoning, and perceptual functions following a brain injury. This approach is based on the theory that the parts of the brain that were not injured reorganize to carry out the affected functions in a new way. This approach should be outcome based, utilizing a progress monitor to determine the success of the student.

Memory Strategies

- Repeat information frequently and provide a summary.
- Have the student take written notes and assure the notes are accurate and complete.
- Provide a connection between new material and the student's prior knowledge.
- Teach the student to use items such as post-it notes, daily planners, daily assignment sheets, and calendars.
- Have the student use a tape-recorder for lengthy materials/conversations.
- Teach the use of association, visualization, and categorization to aid with retention.

Attention Strategies

- Reduce distractions in the classroom and at the student's desk.
- Avoid fatigue; allow student to take mental breaks.
- Teach student to use self-talking to stay on track.
- Divide work into manageable pieces; make checklists for lengthy tasks.
- Teach student to double check all work.
- Develop a non-verbal system to alert the student to pay attention (e.g., "look", "listen").

Organizational Strategies

- Have the student use checklists.
- Provide additional time to review material.
- Prepare the work area with necessary materials and eliminate clutter.
- Have the student prepare a written plan of daily activities.
- Assign someone to review the schedule and organize materials prior to class.
- Encourage student to prioritize tasks and pace work according to energy level.

Note. Adapted from "Becoming Well Again Though Cognitive Retraining" by L. Muller, J. Brown, A. Halfman, K. Kaminky, & S. Porter, 2005, American Brain Tumor Association, Chicago, IL, www.abta.org/wellagain2.php; "Teaching Strategies for Students With Brain Injuries," by M. Lash, 2000, TBI Challenge, 4(2).

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Tips for Inclusion of Youth with TBI in Regular Classrooms

Receptive language

- Limit the amount of information presented at one time.
- Provide simple instructions for only one activity at a time and use concrete language.
- Have the student repeat instructions.

Expressive language

- Teach the student to rehearse silently before verbally replying.
- Teach the student to look for cues from listeners.

Maintaining attention

- Provide a study carrel or preferential seating.
- After giving instructions, check for proper attention and understanding by having the student repeat them.
- Teach the student to use self-regulating techniques to maintain attention.

Impulsiveness

- Teach the student to mentally rehearse steps before beginning activity.
- Reduce potential distractions.
- Frequently restate and reinforce rules.

Memory

- Teach the student to use external aids such as notes, memos, daily schedule, and assignment sheets.
- Provide repetition and frequent review of instructional materials.
- Provide immediate and frequent feedback to enable the student to interpret success or failure.

Following Directions

- Provide the student with both visual and auditory directions.
- Model task whenever possible.
- Break multi-step directions into small parts and list them so that the student can refer back when needed.

Motor Skills

- Have the student use a word processor to complete assignments.
- Allow extra time for completing tasks requiring fine motor skills.
- Allow the student to audiotape the lecture or assign someone to take notes for the student during lectures.

Note. From Traumatic Brain Injury in Children and Adolescents: Sourcebook for Teachers and Other School Personnel by M. P. Mira & J. S. Tyler, 1999, Austin, TX: Pro-Ed Publishing.

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Ask the Child…

Solicit the child's opinion about needed changes in the school environment.

"You are the best judge of how other people can cause problems for you or help you do better. Answer these 10 questions and let's work together to think of some helpful solutions."

1. What problems are you experiencing in class (at home, at work)? Briefly describe the problems you are having since you returned to school (your home, work, etc.). _____

_____

2. How do you usually act when you are experiencing problems or frustrations in class (at home, at work)? List some of the ways you act when you are having problems. _____

_____

3. What classroom (home or work) situations cause you the most problems? ❑*Noise* ❑*Temperature* ❑*Other people in the room* ❑*Pictures and wall decorations*
❑ *Other things:* _____

4. List several ways your teachers (family, classmates, co-workers) help you when you experience trouble in class (at home, at work). _____

_____

5. What do you think people should do to help you? _____

_____

6. List several things that your teachers (classmates, co-workers) do to frustrate you or cause you more problems. _____

_____

7. What do you think people should stop doing when they are around you? _____

_____

8. At what time of day do you do your best? Why do you feel this is your best time of day?

_____

9. If you could choose 3 skills to improve, what would they be? _____

_____

10. Tell 5 things that are great about you that you wish other people would know. _____

_____

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Inclusive PPP Adaptation Checklist

Student _____ D.O.B. _____ Date_____

Completed by _____

The following adaptations are appropriate and necessary for this student. Check all that apply.

Pacing

____ Extend time requirements
____ Allow breaks
____ Vary activity often
____ Omit times assignments
____ School texts sent home for summer preview
____ Home set of materials for preview/review
____ Other_____

Environment

____ Preferential seating
____ Planned seating: ____ Bus ____ Classroom ____ Lunchroom ____ Auditorium
____ Alter physical room arrangement
____ Defines areas concretely
____ Reduce/minimize distractions:
____ Visual ____ Auditory ____ Spatial
____ Movement
____ Teach positive rules for use of space
____ Other _____

Presentation of Subject Matter

____ Teach to student's learning style:
____ Linguistic ____ Logical/Math
____ Musical ____ Spatial
____ Bodily/Kinesthetic ____ Interpersonal
____ Intrapersonal
____ Model experiential learning
____ Utilize specialized curriculum
____ Teacher tape lectures/discussions for replay ____ Provide notes
____ NCR paper for peer to provide notes
____ Functional application of academic skills
____ Present demonstrations (model)
____ Utilize manipulatives
____ Emphasize critical information
____ Pre-teach vocabulary
____ Make/use vocabulary files
____ Reduce language level/reading level of assignment

Assignments

____ Give directions in small, distinct steps (written/picture/verbal)
____ Use written backup for oral directions
____ Lower difficulty level
____ Shorten assignment
____ Reduce paper-and-pencil tasks
____ Read or tape-record directions to student
____ Use pictorial directions
____ Give extra cues or prompts
____ Allow student to record or type assignment
____ Adapt worksheets, packets
____ Utilize compensatory procedures by providing alternate assignment/strategy when demands of class conflict with student's capabilities
____ Avoid penalizing for spelling errors/sloppiness/penmanship
____ Other_____

Self-Management/Follow Through

____ Visual daily schedule ____ Calendars
____ Check often for understanding/review
____ Request parent reinforcement
____ Have student repeat directions
____ Teach study skills
____ Use study sheets to organize material
____ Design/use long-term assignment time lines
____ Review and practice in real life situations
____ Teach skill in several settings/environments
____ Other_____

Testing Adaptations

____ Oral ____ Short Answer ____ Taped
____ Multiple choice ____ Pictures
____ Modify format ____ Read test to student
____ Applications in real setting
____ Preview language of test questions
____ Extend time frame ____ Shorten length
____ Test administered by resource person

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____ Use total communication
____ Use facilitated communication
____ Sharing activities
____ Use visual sequences
____ Other _____

Materials

____ Arrangement of material on page
____ Taped texts and/or other classroom materials
____ Highlighted texts/study guides
____ Use supplementary materials
____ Note-taking assistance: carbonless or photocopy of other students notes
____ Type teacher material
____ Large print
____ Special equipment:
____ Augmentative communication device
____ Electric typewriter ____ Calculator
____ Telephone adaptation ____ Computer
____ Electronic devices ____ Homemade material ____Video recorder ____
Other:_____

____ Other_____

Social Interaction Support

____ Peer Advocacy ____ Peer tutoring
____ Create activities to promote social interactions
____ Focus on social process, not than end product
____ Structure shared experiences
____ Cooperative learning groups

Teach social communication skills

____ Greetings ____ Conversation turn taking
____ Sharing ____ Negotiation
____ Other_____

Motivation and Reinforcement

____ Positive verbal reinforcement
____ Concrete reinforcement (e.g., tokens, stickers)
____ Planned motivating sequences of activities
____ Reinforce initiation ____ Offer choice
____ Use strengths/interest often
____ Other _____

Note. Adapted from "The Evolution of Secondary Education", by V.S. Thousand, R.L. Rosenberg, K. D. Bishop, & R. A. Villa, 1997, Remedial and Special Education, 18 (3), p. 282, Austin, TX: PRO-ED, Inc.

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Transition

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Transition

Transition means:

- **Transition from home/hospital into school.**
- **Transition from grade to grade or school to school.**
- **Transition from school into the adult world.**

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General Principles of Transition

Transition is defined as "life changes, adjustments, and cumulative experiences that occur in the lives of young adults as they move from school environments to more independent living and work environments" (Wehman, 2001, p.7). It is the "bridge between the security and structure offered by the school, and the opportunities and risks of adult life" (Will, 1984, p.1). Transition is not a single point in time, but an ongoing process.

Students with brain injuries face many transitions throughout the course of the their educational experience: movement from the hospital to school, teacher to teacher, therapist to therapist, grade to grade, and school to school. All of these require advocacy, planning, preparation, and knowledge of resources, yet it is the transition from high school to adult life that needs special attention. The need for transition services for secondary students is evidenced by the fact that the highest number of drop outs and disciplinary actions, including suspension and expulsion, are seen during the first two years of high school. School experiences significantly influence a student's future and for adolescents with disabilities, they are especially critical (deFur, 2001). For students returning to work after sustaining a brain injury, behavioral and cognitive issues can create challenges (McKinlay & Watkiss, 1999). In addition, lack of experience and limited job skills also contribute to low employment rates (National Center for Secondary Education and Transition, 2003).

As a result of the long term needs for services for a student with a brain injury, it is essential that the transition process begin as early as possible, and no later than 14 years of age. Transition planning requires timely, coordinated efforts of educators, rehabilitation personnel, parents, and students. The Individuals with Disabilities Education Act of 1997 mandates that every eligible student has individualized and outcome oriented transition services incorporated into the IEP (Individualized Education Program). These include post-secondary education, vocational training, supported and competitive employment, independent living, and community participation.

The consequences of brain injury, such as cognitive impairments and psychosocial issues, can create obstacles to a student's successful transition into society. Adjusting to change can be tough for anyone but particularly difficult when a student faces the additional challenge of having a brain injury.

Life-Span Approach to Transition Planning

For students to develop skills necessary for a successful adult life, a comprehensive program that contains academic support and community based instruction is vital. While academic instruction alone may be sufficient for other students, for those with disabilities, it is inadequate preparation for post-school life. This is evidenced by higher drop out rates, lower academic performance levels, poorer employment rates and wages, and less residential independence when compared to students without disabilities. Educational programs that incorporate a student's post-school goals are vital for smoother transition and a higher level of independence.

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Curricula that emphasize functional skills and community based instruction are the most constructive for students with disabilities, including those with a brain injury. Functional skills, also called life skills, are critical for successful functioning in the community and in post-school life. These include social, leisure, occupational and independent living skills as well as personal hygiene and grooming, financial management, and self-awareness.

Since one of the challenges facing students with brain injury is the ability to generalize something learned in the classroom to the "real world", community based learning is key. Although classroom simulations of certain skills such as conducting mock-interviews, preparing a meal, or role-playing various situations can be helpful, they are not sufficient to gain a thorough experience in community living. Trips to various locations, such as banks, restaurants, stores, and businesses where skills can be practiced, are a critical component to the student's overall program (Greene, 2003).

Transition from Home/Hospital into School

Successful reentry into school requires a lot of planning and an early start is a key component. All participants in planning should be informed of which skills the student is proficient in as well as those with which he/she is experiencing difficulties. Continuous contact with the medical staff and the family can help ensure a smooth transition (Semrud-Clikeman, 2001).

The following suggestions may facilitate an easier hospital-to-school transition:

- Begin communication between medical staff, family, and school personnel early in the student's hospital stay.
- If homebound instruction is necessary, keep the period as short as possible.
- Plan for sufficient education and social supports from the beginning. Also have a plan for reducing supports as the student progresses.
- Make sure the student's program is monitored frequently, especially during the first few months.
- Provide for case management, so that services will be coordinated both within the school and between the school and medical staff.
- Make sure the student's needs have been thoroughly investigated before deciding on placement (Ylvisaker, et al. (2001).

Before the student's discharge, planning meetings should be held with everyone involved with the student's care attending. School personnel that should be involved in planning include the school nurse, school psychologist, special education and regular education teachers, and related service therapists (occupational, physical, and speech and language). A school case manager should be appointed to coordinate services. Medical staff, family members, and if appropriate, the student, should also be involved in these meetings. School staff should take this opportunity to ask questions regarding the student's functioning, recommendations for continued care and any other topics (e.g., the need for physical accommodations, medications and their side effects, recommendations for full or half day) that may assist in providing a smooth transition.

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The student's IEP may be written during one the planning meetings; however, it can also be done at a separate meeting at the school. The IEP specifies the type and extent of the services the student will receive and is based on assessment of the student in various areas including cognition, behavior, physical abilities, and language skills. Depending on the student's progress, the program may need modification and should be reviewed frequently. Therefore, sharing information across the school's team is essential to the student's success (Semrud-Clikeman, 2001).

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Transition Planning Worksheet

This document is to be filled out by both the hospital and school teams to begin a discussion on the student's needs, reviewed by members of both teams in a meeting held prior to the student's return, and used as a basis for creating a transition IEP. It can also be filled out by a school nurse and teachers at the end of each academic year and provided to the next team involved in that student's instruction.

School:_____ Date:_____

Student Name:_____ Grade:_____

Parent Name:_____

Address:_____

MEDICAL HISTORY:

Date of Injury:_____Age of injury:_____Date of eligibility:_____

Cause/Type of Injury:_____

_____

_____

Hospital/Rehabilitation history:_____

_____

_____

PRESENT MEDICAL CONCERNS:

Primary Physicians:_____

Medications:_____

_____

Ongoing medical issues:_____

_____

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CURRENT FUNCTIONAL STATUS:

Physical (e.g., ambulation, coordination, dexterity, endurance):_____

_____

_____

Self-Care:_____

_____

_____

Communication:_____

_____

_____

Behavioral/Psychological:_____

_____

_____

EDUCATIONAL STATUS:

Pre-injury academic history:_____

_____

_____

Past services/supports:_____

_____

_____

Most current assessment information:_____

_____

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IEP:

Date of last IEP:_____

Areas of concern not addressed in current IEP:_____

_____

Anticipated school based placement and supports:_____

_____

Anticipated community based services:_____

_____

Graduation concerns:_____

_____

INSTRUCTIONAL and COMPENSATORY STRATEGIES:

Recommended curriculum:_____

_____

Physical Accommodations:_____

_____

Testing Accommodations:_____

_____

Equipment Needs:_____

Instructional Strategies:_____

_____

Behavioral Strategies:_____

_____

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INDIVIDUALIZED HEALTH CARE PLAN
Traumatic Brain Injury (TBI)

Name:_____ **Effective Date:**_____

Parent:_____ **Revised Date:** _____

Doctor:_____ **School:**_____

Special Ed:_____ **504**____ **School Nurse:**_____

Bus:___**Yes** ____**No** **Student DOB:**_____

Personal data: i.e. onset, brief history, etc.
What was the student's pre-injury level of functioning?
What is the nature of the injury and medical diagnosis?

Nursing Assessment:
(Because the concerns and individual needs of the student are so complex following an acquired brain injury, many professionals will be involved in assessment and service provision for the student. Therefore, these areas are for nursing assessment).

1. Review of healthcare records. It will be necessary for the school nurse to gather medical and other healthcare records for review by the educational team.
2. Safety: Observe student for ability to function safely in the school environments where they will be present.
3. Vision: Assess for vision loss in all or part of a visual field. Observe for double vision. Observe for tracking ability.
4. Hearing: Screen for hearing acuity. Both sensorineural and conductive losses are seen.
5. Seizures: If seizures occur as a result of brain injury, a full assessment will need to be conducted. (i.e., frequency, date, time, duration, etc., medications, activity restrictions)
6. Hydrocephalus: If the student has developed hydrocephalus and a shunt has been placed, a full assessment will need to be conducted (i.e., emergency care information in case of shunt malfunction, observation of typical behavior to determine changes as sign of increased intracranial pressure, observe site of shunt placement)
7. Medications.
8. Self-Care abilities.
9. Family's understanding of needs their child may have and their ability to provide care and support.

(School, school nurse, other professionals, and parents must communicate to prevent service gaps and to ensure continuity in programming and appropriate health management in school.)

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Recovery from a brain injury is not totally predictable and has no exact time frame. Recovery is ongoing and progressive.
Common characteristics often shared by students with TBI include:

- Can be impulsive and more hyperactive.
- Skills may return at different levels and rates.
- Some students may have more severe problems generalizing and integrating skills.
- Markedly uneven and unpredictable progress can occur because of continuing recovery. Programs must remain flexible so that possibly sharp and frequent changes can be accommodated.

Problem: Educational and behavioral deficits	**Goal:** Assist (student's name) in attaining his/her academic potential	**Action:** Recognize how this **Frontal Lobe** injury has affected (student's name). • **Attention: (**add child specific information) 1. Short attention 2. Inability to focus attention • **Memory:** (add child specific information) 1. Short term recall impaired 2. Memory gaps 3. Time-space perception impaired 4. Confabulation • **Thinking:** (add child specific information) 1. Processing lag 2. Confusion 3. Impaired ability to anticipate and plan 4. Inability to generalize 5. Cognitive fatigue • **Behavior:** (add child specific information) 1. Labiality-unstable or changeable 2. Limited impulse 3. Limited frustration tolerance 4. Over reaction to environmental stimuli 5. Poor self concept
Problem: Educational and behavioral deficits	**Goal:** Assist (student's name) in attaining his/her academic potential	**Action:** Recognize how this **Pariental Lobe** injury has affected (student's name). • **Attention:** (add child specific information) 1. Limited attention to written material 2. Limited attention to math material 3. Limited attention in large groups where information is presented on a black board or via verbal description

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		• **Memory:** (add child specific information) 1. Impaired recall for written material 2. Impaired recall for directions and finding location 3. Impaired recall for tactile memory • **Thinking:** (add child specific information) 1. Acquired dyslexia 2. Processing lag for written material 3. Inability to complete arithmetic problems 4. Misperception and misorganization of visual material • **Behaviors:** (add child specific information) 1. Decreased perception of emotional cues 2. Lack of depth perception 3. Inability to find places 4. Low frustration tolerance
Problem: Educational and behavioral deficits	**Goal:** Assist (student's name) in attaining his/her academic potential	**Action:** Recognize how this **Occipital Lobe** injury has affected (Student's name). • **Attention:** (add child specific information) 1. Limited attention to visual information • **Memory:** (add child specific information) 1. Limited Visual memory • **Thinking:** (add child specific information) 1. Impaired ability to utilize visual information • **Behavior:** (add child specific information) 1. Cortical blindness

Add child specific information such as Asthma, Diabetes, mobility, vision, and speech.

_____ _____

Physician Signature Parent Signature

_____ _____

School Nurse Signature Date:

Note: Adapted from The School Nurses' Sourcebook of Individualized Health Care Plans (pp.160-161, 387, 426) by M. B. Haas, 1993, North Branch, MN: Sunrise River Press.

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Transition from Grade to Grade or School to School

Research documents that students with brain injuries often have more behavior problems that their peers; these behavioral problems often are more likely to occur during periods of great stress, such as changes in school, routines, teachers, and classmates. The move from one setting to another should be included in the student's plan and requires preparation by school personnel and the student's family. The strategies that follow are adapted from Deaton (2001) and suggest ways to facilitate the process:

- Invite the new teacher to visit and observe the student in the current setting. If this is not possible, provide a videotape of the student performing academic and functional skills.
- Have the student visit the new setting. Doing so with family members or other persons familiar with the student is often helpful. Use the opportunity to assist the student with locating lockers, the cafeteria, and restrooms. Have him or her navigate routes between classrooms and determine the length of time needed to do so. Obtain 2 sets of textbooks early, so that one set can remain at school and one set can stay at home.
- Working with the family and student, use team members from both locations to develop the new Individualized Education Program (IEP) or 504 plan.
- Expect behavior to worsen initially after the change and address this in the plan.
- Build in early and regular meetings for reassessment and revision of the IEP or 504 plan. Adjust the meeting schedule as needed as the semester progresses.
- Have realistic expectations. Do not expect everybody to get it right the first few times.
- Provide written documentation to the new teacher; include information on the student's preferred learning style, strengths and weaknesses, likes and dislikes, assistive equipment, communication methods, descriptions of problem areas in academics and independent living skills, and behavioral issues. Information relative to compensatory strategies should also be noted.

Post-Secondary Transition

Post-secondary transition includes opportunities for continuing education, vocational training, supported and competitive employment, independent living, and community integration. While an IEP generally addresses services to be provided during a school year, when transition services are being considered, the team needs to think and plan many years ahead. Early transition planning, involving both students and their families, can help alleviate challenges and promote success and independence both during school and after graduation (deFur, 2001). The IEP should allow the student to focus on areas such as independent living, occupational goals, post-secondary education, and self-advocacy. Vocational testing, career exploration, and educational testing can help students explore both their occupational and academic options (DePompei & Blosser, 1999).

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Student participation in the transition planning process is crucial; specifically with decisions regarding post-school goals to make certain that they are not only attainable but also of value to the student. The extent to which the student participates will depend on his or her abilities and level of interest. The following suggestions may help to involve the student, giving them a sense of empowerment:

- **Begin working on skills as soon as possible**. Instruction in some skills, such as self-determination, can begin as early as elementary school.

- **Be sure to set aside time to work on IEP participation skills on a regular basis**. It is easy to let other areas take priority but it is important to realize the necessity of self-advocacy, planning, and self-determination skills for long-term success. One suggestion is to teach IEP participation skills as a semester course, giving ample time for practice and mastery.

- **Be prepared to assist the student with sensitive issues.** This may the first time he or she has seen their IEP and it may be disturbing to read about themselves or their disability. Take time to work through any issues with the student.

- **Ensure the student realizes what their disability means.** Assist the student in learning about their disability and in talking to others about it. Encourage the student to become comfortable letting others know what he or she does or does not need.

- **Utilize motivational techniques to increase interest**. Bringing in individuals with disabilities who can be "role models" (e.g., college graduate, business owner, vocational education center student) can provide motivation as well as a realistic look at the post-school world.

- **Communicate with the family**. Make sure the parents know what the student is doing and why. Explain the process and obtain their input. Note: From ERIC/OSEP Special Project, 2000, Spring, "New ideas for planning transitions to the adult world", Research Connections, 6, Reston, VA as cited in "Planning Student-Directed Transitions to Adult Life", ERIC/OSEP Digest E593 by C. Warger & J. Burnette.

Wehmen, Everson, and Reid have developed a procedure to be used during transition planning. The following steps, as cited in Greene (2003), are derived from their outline. They also emphasize the importance of self-determination and student participation during the process.

1. Convene IEP teams. Identify appropriate school and adult service personnel; identify members of the student's support network.
2. Review transition assessment data. Conduct additional assessments if necessary. Use not only standardized assessments, but also non-standardized assessments and procedures (e.g., learning style inventories, observation, interviews, self-determination checklists, situational assessments).
3. Schedule an IEP meeting to develop both the transitional portion and the related academic portion of the IEP.

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4. Implement all portions of the IEP.
5. Evaluate and update the IEP at least annually. Implement follow up procedures.
6. Conduct an exit meeting. This should be done close to the end of the final year in school and allows the IEP team to determine whether the student has completed the transition goals set forth in the IEP and has mastered the necessary skills to function in his or her post secondary environment and whether linkages have been made to all appropriate post school transition service agencies.

Transition Resources

Virginia Resources

Virginia Department of Education
800-292-3820
http://www.doe.virginia.gov/

Virginia Department for Aging and Rehabilitative Services
800-552-5019
www.vadrs.org

Association for Persons in Supported Employment
804-365-6626
www.apse.org

Brain Injury Resources

Brain Injury Association of America
(703) 761-0750
www.biausa.org

Brain Injury Association of Virginia
800-444-6443
www.biav.net

Parent Resources

National Information Clearinghouse for Children and Youth with Disability
800-695-0285
http://nichcy.org/
Parent Education Advocacy Training Center
800-869-6782
www.peatc.org

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School Resources

Education Resource Organizations Directory
http://wdcrobcolp01.ed.gov/Programs/EROD/

Internet Special Education Resources
www.iser.com

Work Resources

Job Seeking Skills for Persons with Disabilities
www.csun.edu/~sp20558/dis/sh.html

Virginia Commonwealth University
804-828-1851
www.worksupport.com

Training Resource Network
866-823-9800
www.trninc.com

Transition Planning Assessments

Life Centered Career Education Knowledge Battery (Brolin, 1992)
Transition Planning Inventory (Patton & Clark, 1996)
Enderle-Severson Transition Rating Scale (Enderle & Severson, 1991)

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Family

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What Are the Families Going Through?

The return of the child to school is a milestone that the family has looked forward to but it is often not the experience many anticipate it will be. The stressors that the families experience during the initial transition and beyond can be complicated and impact their interactions with the school in a variety of ways. This section will examine the problems and issues faced by the families of students with brain injury. Suggested strategies that educators can implement to ease the strain will also be covered.

Grief

The parents may very likely have been told that their child would not survive their injuries. Now that the initial medical crisis has passed, and the initial relief has subsided, the parents need to re-learn who their child is and how to care for them. Their child is not the same. Grieving for the loss of the child who was is very similar to the process that they would have gone through if the child died. However, they still have to struggle to meet this child's day-to-day needs – and the needs may be drastically different.

As discussed earlier, the consequences of brain injury are far reaching and can affect a wide spectrum of abilities and behavior. The behavior problems that are seen in school are most likely happening at home as well. Parents may minimize how significant or disruptive these behaviors are. No longer armed with the knowledge of who their child is, they don't know what will work to motivate or shape behavior as they may have once known. They are dealing with re-learning who their child is.

Uncertain Future

The medical staff that worked with the student cannot reliably answer the question "how much better will he/she get". This leaves the parents in limbo. Initially after a traumatic injury, there can be rapid gains, but these slow down after a period of time. Parents' expectations may not diminish however and they will want everything done to promote as much recovery as possible. Grief for the loss of the child also includes grieving the loss of their dreams for their child. This takes time. If a high school senior planned to enter medical school and is now struggling with basic arithmetic skill, it may not be a dream any of them are prepared to let go of.

Change of Environment

If the child was in a rehabilitation hospital following their accident, they were in an environment that was highly structured and goal-oriented. They were surrounded with experts in brain injury and there was attention to a wide range of medical needs. Now at home, the parents are assuming

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unfamiliar responsibilities, the brain injury experts have disappeared, and they expect the schools to take the place of the rehabilitation unit in engineering continued recovery.

The return of the child/adolescent to a "normal" environment can be daunting too. It can be a reminder of how many deficits still exist when compared to their peers. The child who excelled in rehab and "came a long way" may now be struggling with age-appropriate activities and once-simple tasks.

For many parents who are entering into the special education services of their school for the first time, it is foreign territory. They do not know what the schools can provide for their son or daughter with a traumatic brain injury (TBI), nor do they understand the "culture" of special education or the laws/limitations impacting their situation. They may assume the system can do more than it can. When these services are not forthcoming, they may assume an adversarial stance.

Change of Roles and Normalcy in Family Life

Every family has its own way of operating, of establishing an "equilibrium" that its members are accustomed to. A traumatic injury will most likely disrupt that balance and cast its members into unfamiliar roles. This starts at the time of the injury and can continue for several months or longer. A significant injury is said to happen to the whole family, not just one member. One parent may become the primary caregiver of the injured child and leave the tasks or roles they had previously accomplished undone or "reassigned". Conflict and upset are common. Marital relations between parents can be strained. In a single parent household, the parent can feel under tremendous stress and experience isolation.

Siblings of the injured child are, of course, affected too. There can be the same mix of conflicting emotions that are present in the parents: sorrow, guilt, anger, and resentment. They may be in the position of having to assume responsibilities beyond what is age appropriate. They may receive far less attention and supervision than they are accustomed to. All this can lead to acting out. So the parents of the identified child may be dealing with these additional problems as well. While some families may be drawn closer by the crisis, most families experience increased strain for all their members.

Financial Strains

Prolonged hospital/rehabilitation stays are expensive. In today's climate, health insurance covers less and families often have to "fight the system" to get what they do obtain. The families have to make tough decisions about treatment based on financial considerations. In addition, time lost from work can result in lost wages and income. This additional stressor is one more factor that the family is attempting to deal with while making the multiple adjustments already described.

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What Support Can Be Provided To Families

Permit the Grief to Happen

When people have sustained a significant loss, time is an important factor in healing. A year is not at all unusual. It is important to have realistic expectations for the parents. Not everyone can "get on with it" on the same timeframe. If a rapport has been established with the parents and they are "stuck" at a certain phase, suggest they seek professional help. The physician overseeing the care of the student may be able to suggest someone.

Provide Information

The parents are on a learning curve, with a lot of new information to absorb. They may have gotten information about brain injury, its effects and aftermath at the time of the injury but could not take it all in. Pass on information about traumatic brain injury (TBI) to them or put them in touch with the state brain injury association. In Virginia, the phone number is (804) 355-5748 or (800) 334-8443.

The Virginia Department of Education (VDOE) supports a network of local Parent Resource Centers across Virginia. These centers provide information and training for parents and educators on a variety of topics related to special education. They also can assist parents with understanding how the local school division can serve their child most effectively. For information about the nearest Parent Resource Center, please call the department at 1-800-422-2083 or visit them on the web at www.pen.k12.va.us/VDOE/sess.

There are also many other resources that can provide information to families. Some of these include, but are not limited to:

- Parent Educational Advocacy Training Center (PEATC) 800-869-6782
- The Special Education Advocate: www.wrightslaw.org
- Brain Injury Association of America (BIAA) 703-761-0750
- Centre for Neuro Skills (CNS) 800-922-4994
- National Information Center for Children and Youth (NICHCY) http://nichcy.org

Explain the Process

Parents have likely entered a whole new world and problems can be averted if the IEP (Individualized Education Program) and 504 processes and the roles that different members of the team play are explained at the outset. This can set the stage for a higher degree of cooperation and understanding. Again, be prepared to repeat this information, or better yet, put it in writing.

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Involve the Parents in Planning Interventions

Encourage the parents to be an active member of the team. A collaborative relationship will bear better results than an exclusive or adversarial one. Interventions that address cognitive or behavioral issues will have better success if there is carryover between the classroom and the home.

Communicate

Keep the parents up to date with what is happening in the classroom. Find out from them what is happening at home. The student will still be changing in abilities as the healing occurs. Recovery is uneven. Consistent communication will help keep everyone's efforts coordinated and hopefully decrease frustration.

Provide Links to Others

Getting advice from professionals over a period of time can be overwhelming and sometimes fall on deaf ears. But hearing from others who know from first-hand experience can lead to greater acceptance and insight. Encourage families to join support groups in the local community. State brain injury associations are great source for this information. Whether or not a formal support group exists in the area, consider linking students and families with newly acquired injuries to those who have had some experience with the situation.

Allow the Process to Unfold

Since students with brain injuries are unlike those with other disabilities, the process of meeting their special needs may not get conveniently worked out with one plan. Parents will need school staff to model flexibility and a willingness to allow for an uneven progression forward.

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Special Education

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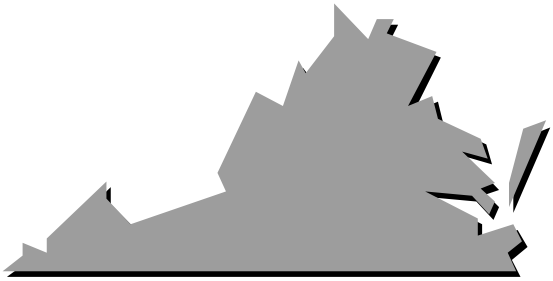
Virginia's Definition of Traumatic Brain Injury



"...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 including: **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 to brain injuries induced by birth trauma."

Note. From Regulations Governing Special Education Programs for Children with Disabilities in Virginia (p. 15), by the Virginia Department of Education, March 2002, Richmond, VA.

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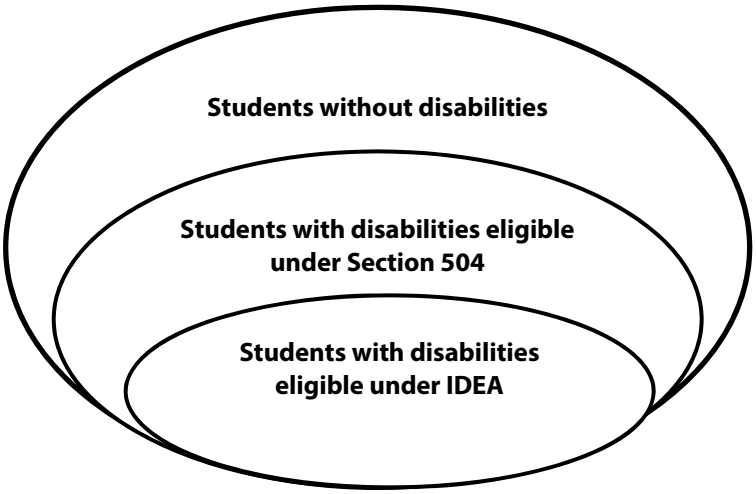
IDEA vs. 504



Schools must comply with both the Individuals with Disabilities Education Act (IDEA) and Section 504 of the Rehabilitation Act. Compliance with IDEA does not necessarily indicate Section 504 compliance and one does not take precedence over the other.

IDEA Students	*Section 504 Students Only*
✓ Students are qualified under one or more of the IDEA disabling conditions: • Intellectual disability • Hearing impairment including deafness • Speech or language impairment • Visual impairment including blindness • Emotional disability • Orthopedic impairment • Autism • Traumatic brain injury • Other health impairment • Specific learning disability • Deaf-blindness • Multiple disabilities	✓ Students are qualified if they "have a physical or mental impairment which *substantially limits one or more major life activities*" (Wright & Wright, 2002, p. 268) Examples of potential 504 *Handicapping Conditions* that are not typically covered under IDEA include: • Communicable diseases (e.g., TB, HIV) • Medical conditions (e.g., asthma, allergies, diabetes, heart disease) • Temporary medical conditions due to illness or accident • Attention Deficit [Hyperactivity] Disorder (ADD, ADHD) • Behavioral difficulties • Drug/alcohol addiction
✓ Students qualify if they require special education.	✓ Students need not require "special education" to be protected under 504.
✓ **Free Appropriate Public Education (FAPE)** means publicly funded provision of special education and related services.	✓ **Free Appropriate Public Education** (FAPE) refers to an education that is comparable to that provided to students without disabilities.
✓ Specially designed individual education programs are planned for each student by IEP (Individualized Education Programs) teams.	✓ Requires a written plan designed by individuals knowledgeable about the student, but not an IEP per se.

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A Very Brief Introduction

A Parent's Guide to Special Education (revised 2010), written by the Virginia Department of Education (VDOE), is thorough, easy to read and understand, and provides good, useful information; it is available through special education administrators. Following are a few basic concepts regarding special education in Virginia:

- Public schools are required to screen all students within 60 business days of enrollment to determine if a special education referral is indicated. If so, the referral must go to the special education administrator within 5 business days.
- Referral for special education evaluation can be made at any time by contacting the special education administrator. It's best to put the request in writing.
- The special education administrator, upon receiving the referral, may request a review by the Child Study Team, which goes by different names in different school districts; this has to be done within 5 business days.
- If the student is referred, the Child Study Team reviews the information provided and decides whether or not to evaluate the student.
    - If so, the school must educate the parent/guardian as to the process, obtain consent, and complete the appropriate evaluations to assist with eligibility determination for special education and related services within 65 days.
    - If not, written notification of the decision is given, with an explanation of how the decision was reached. Information on how to challenge the decision is also provided.
- Once the decision to evaluate is reached, the student, parent/guardian, representatives from the school, and/or qualified professionals decide what information to obtain and how to proceed.
- Copies of the final evaluation report must be provided to the parent/guardian at least 2 days before the eligibility meeting. It is at this meeting that the team determines if the student is eligible for special education and related services.
    - If found eligible, an Individualized Education Program (IEP) must be developed within 30 days.
    - If not, written notification of the decision is given to the parent, with an explanation of how the decision was reached.

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The Individualized Education Program (IEP) and the IEP Team

Once a student has been found eligible for special education services, the IEP is developed by a team whose members meet to review the assessment information available about the student and design an appropriate plan to address the student's educational needs.

An **IEP** is a written statement, created and reviewed annually, that outlines the school's plan for instruction. It has to be in place before special education and related services are provided or as soon as possible after changes are made to an existing IEP. It includes statements that summarize and address the following:

- Student's present level of performance
- Measurable annual goals
- How the student's progress toward the annual goals will be measured
- Dates and locations of service
- Placement and services
- Special education and related service needs
- Participation in state and division wide assessment
- Transition service needs
- Transition services
- Transfer of rights at age of majority

The Reauthorization of IDEA in 2004 reiterated the importance of parental involvement in the IEP process. The student's parents must be part of various processes such as evaluation of the student, eligibility determination, and educational placement. In addition, the information provided by the parents must be considered when developing and reviewing the student's IEP (Wright & Wright, 2002).

The IEP must consider many different factors with respect to the student. In the case of a student whose behavior impedes his or her learning or that of others, the IEP must consider strategies that address the behavior, including positive behavioral interventions, strategies, and supports. With all students, the IEP must also address communication needs and whether or not the student requires interpreters or assistive technology devices and services.

The **IEP team** for each student with a disability includes parent(s)/guardian, regular and special educators, someone who can interpret the instructional implications of evaluation results, and someone from the school who is qualified to provide or supervise the provision of special education and knows about the general curriculum and other available resources. Depending on the purpose of the meeting, other participants may be involved. For example, if one of the purposes of the meeting is the consideration of transition services for the student, then a representative of any agency that is likely to be responsible for providing or paying for the transition services should be involved.

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Services

The IDEA (Individuals with Disabilities Education Act) states that schools, to the maximum extent possible, are to educate students with disabilities in the general education classroom with appropriate aids and supports, along with non-disabled peers in the school they would attend if not disabled (Wright & Wright, 2002). Many students returning to school after sustaining an injury are often in active recovery and will need to have the IEP (Individualized Education Program), and consequently the services decision, re-evaluated more frequently than other students. According to IDEA, the IEP team must meet at least once a year to review and adapt the plan. However, due to the rapid changes that often occur with students with TBI, the IEP team should be prepared to meet as often as necessary to ensure the IEP is as up-to-date as possible (National Association of State Head Injury Administrators, 2005).

Decisions regarding special education services are to be based on the educational benefit of regular education to the student in comparison to the benefits of special education, the benefit to the student with the disability from interacting with non-disabled students, and the degree of disruption of the education of other students. Decisions may not be based on the category of disability, the configuration of the delivery system, the availability of education, related supports or space, or administrative convenience (National Information Center for Children and Youth, 2000).

Decisions regarding services are to be based on the student's current level of performance and goals. Students may require services in regular classes, regular classes with support services, resource room services, self-contained classes, home instruction, and residential programs.
In determining the appropriate environment in which education can occur, there are several key points to consider including the student's ability to attend to task, communicate, follow directions, demonstrate appropriate social skills, and learn. Can the student:

- Follow simple directions?
- Function within a group of 2 or more students?
- Engage in meaningful communication?
- Tolerate 20-30 minutes of general classroom stimulation?
- Attend to task for at least 10-15 minutes (Wehman, Keyser-Marcus, West, Sherron-Targett, & Bricout, 2001)?

Related services, supplementary services, and secondary transitional services are three phrases that are commonly used in special education. Related Services include speech-language pathology, audiology services, psychological services, physical and occupational therapy, therapeutic recreation, counseling services, rehabilitation counseling, orientation and mobility services, medical services for diagnostic or evaluation purposes, school health services, social work services, parent counseling and training, and transportation (National Information Center for Children and Youth, 2001).

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Supplementary Aids and Services are defined as "aids, services, and other supports that are provided in regular education classes or other education-related settings to enable children with disabilities to be educated with children without disabilities to the maximum extent appropriate" (Virginia Department of Education, 2002, p.14). They may include services of various special education providers, materials, devices, and instructional adaptations and are not limited to the services of various personnel that provide direct instruction, indirect consultation, and related services (Council for Exceptional Children, 2002).

Types of Supplementary Aids and Services include (Coalition for Inclusive Education, 2000):

- Assistive technology devices
- Instructional practices
- Instructional adaptations
- Behavior intervention/support plans
- Curriculum accommodations (These do not substantially change the instructional level, content, or the performance criteria; may include the use of audio tapes instead of books, large print books, Braille materials, method of performance, calculator for math processes, or word processor instead of handwriting.)
- Curriculum modifications (These do change the instructional level, the content, and the performance criteria. Changes relative to what a student is expected to learn and demonstrate when participating in the general education curriculum are allowed. While the student works on modified course content, the subject area remains the same as the rest of the class. Modifications may include redesigning the size, breadth, or focus of the assignment.)
- Individualized supports (These generally fall under accommodative strategies and include, but are not limited to, rephrasing of questions and instructions, allowance for additional time to move between classes, special seating arrangements, testing modifications, and curricular aids such as highlighted reading materials, main idea summaries, organizational aids, pre-written notes, and/or study guides.)

Secondary Transition Services in an IEP are defined as a coordinated set of activities for a student with a disability that is designed within a result-oriented process that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child's movement from school to post-school activities, including postsecondary education, integrated employment, continuing and adult education, adult services, independent living, or community participation. These services are based on the individual child's needs, taking into account the child's strengths, preferences and interests and includes instruction, related services, community experiences, the development of employment and other post-school adult living objectives and, if appropriate, acquisition of daily living skills and functional vocational evaluation.

For complete information on secondary transition services, see the Parent's Guide for Special Education (Revised 2010) at www.doe.virginia.gov/special_ed/parents/parents_guide.pdf (p. 30) and the Virginia Special Education Regulations at www.doe.virginia.gov/special_ed/regulations/state/regs_speced_disability_va.pdf (pp. 11-12 and 39-40.)

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Understanding Parental Rights and Procedural Safeguards

Procedural safeguards are designed to protect the rights of parents when it comes to their child's education. These include written notification of decisions, parental involvement in the IEP (Individualized Education Program) meeting requirements for consent, the confidentiality of school records, and procedures for resolving complaints. The school must provide written notification of proposal or refusal to act and information on the rights of parent(s)/guardians and the student with a disability.

The procedural safeguards notice, which explains legal rights, is required to be provided once a year, unless:

- The student is initially referred for an evaluation;
- The parent requests an additional copy; or
- A request for a due process hearing has been filed.

Information contained in the procedural safeguards notice explains:

- Access to the student's educational records.
- Parent's right to obtain an independent educational evaluation (IEE) at public expense if the parent disagrees with an evaluation component by the local educational agency (LEE).
- Requirement of prior written notice on matters regarding the identification, evaluation, or educational placement of their child, or the provision of Free Appropriate Public Education (FAPE) to their child.
- Mediation, due process hearings, and complaint procedures, including statute of limitations period to file requests for due process hearings.
- Civil actions, including the time period for filing an appeal of the due process hearing decision with the Court.
- Educational placement during due process hearing.
- Parental rights to give or refuse consent before the child is evaluated or reevaluated or provided with special education and related services for the first time.
- Procedures for students who are subject to placement in an interim alternative educational setting as a result of disciplinary action.

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Resolving Disagreements

If a parent or guardian disagrees with the school's decisions relative to the identification, evaluation, placement, or the provision of a free appropriate public education, there are several options to resolve the dispute available through the Virginia Department of Education (VDOE). Additional information, including forms to fill out for due process and complaints, can be found as follows:

By mail: Virginia Department of Education
PO Box 2120
Richmond, VA 23218
By phone: 1-800-292-3820 voice; 1-800 - 422-1098 TDD
Via the web: http://www.doe.virginia.gov

Mediation: A neutral third party assists with the negotiation of issues affecting the student. VDOE pays for the cost and keeps a list of mediators, who are assigned cases on a rotating basis. It is a voluntary action on the part of the school and the parent(s)/guardian; it cannot be used to delay rights to any other process afforded and has to be scheduled in a timely manner, conducted in a convenient location for both parties, and must conclude with a written agreement.

Due Process: A due process hearing can be initiated by the parent(s)/guardian if there is disagreement relative to the school's decisions on identification, evaluation, placement, or FAPE (Free Appropriate Public Education); the school can also request a due process hearing if a parent/guardian refuses to provide consent for an action that requires parental consent. The school can request an expedited hearing if the school believes it is dangerous for the student to remain in the current placement following disciplinary action. It is initiated by sending a request for the hearing in writing to the school and to VDOE. An impartial hearing officer, an attorney appointed on a rotation basis, oversees the hearing, hears evidence presented by the parent(s)/guardian and the school, and then issues a decision. An early resolution time period may last up to 30 days. The due process hearing officer's decision must be rendered 45 days after the end of the early resolution period. Time extensions are sometimes granted.

Complaint: VDOE's complaint system investigates and makes decisions regarding violations of special education law. A complaint is filed by contacting VDOE in writing and must declare an IDEA (Individuals with Disabilities Education Act) violation statement, a statement of the facts on which the complaint is based, and supporting documentation, if any. A 10 day early resolution period is allowed for dispute resolution, however there is a 60 day period for rendering a complaint decision. If VDOE finds that the school had failed to provide the student with appropriate services, VDOE must address how the situation will be resolved.

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The Individualized Education Program (IEP)

What's in an IEP?

The IEP includes statements that summarize and address:

Present level of educational performance

Annual goals

Special education and related service needs

Non-participation with students without disabilities

Participation in state and district-wide assessment

Dates and locations of service

How progress will be measured

Transition service needs

Transition services

Transfer of rights at age of majority

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IEP Teams Must Include:

Student

Parent(s)/Guardian

Teachers

Administrator

IEP Teams May Include:

Teacher aides

Bus driver

Therapists

Social worker

Psychologist

School Nurse

Physician

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Individualized Education Program (IEP) Goals

The following criteria are utilized to develop appropriate IEP goals:

- ✓ Review the student's past academic achievement and functional performance.
- ✓ Consider the student's present level of performance when estimating what can be expected.
- ✓ If reviewing current IEP, consider:
  - ☺ Progress toward annual goals, or lack thereof.
  - ☺ Progress in the general education curriculum, or lack thereof.
  - ☺ Results of any reevaluations.
  - ☺ Anticipated needs.
- ✓ Determine:
  - ☺ Strengths.
  - ☺ Areas of concern.
  - ☺ Instructional needs.
  - ☺ Style of learning.
  - ☺ Assessment information.
  - ☺ How the student's disability affects involvement and progress in the general education curriculum.
- ✓ Assess the practicality of the chosen goals in terms of final outcomes, age-appropriateness, relevancy, etc.

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Glossary of Terms

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Glossary of Terms

Acalculia
The inability to perform simple problems of arithmetic.

Acute Rehabilitation Program
Primary emphasis is on the early phase of rehabilitation which usually begins as soon as the patient is medically stable. The program is designed to be comprehensive and based in a medical facility with a typical length of stay of 1-3 months. Treatment is provided by an identifiable team in a designated unit.

Adaptive/Assistive Equipment
A special device which assists in the performance of self-care, work or play/leisure activities or physical exercise.

Agnosia
Failure to recognize familiar objects although the sensory mechanism is intact. May occur for any sensory modality.

Agraphia
Inability to express thoughts in writing.

Alexia
Inability to read.

Amnesia
Lack of memory about events occurring during a particular period of time. See also: anterograde amnesia, retrograde amnesia, post-traumatic amnesia.

Amotivation
Occurs when there is no perceived connection between one's actions and outcomes; no expectation of reward or sense of purpose. Similar to the concept of learned helplessness.

Aneurysm
A balloon-like deformity in the wall of a blood vessel. The wall weakens as the balloon grows larger and may eventually burst, causing a hemorrhage.

Anomia
Inability to recall names of objects. Persons with this problem often can speak fluently but have to use other words to describe familiar objects.

Anoxia
A lack of oxygen. Cells of the brain need oxygen to stay alive. When blood flow to the brain is reduced or when oxygen in the blood is too low, brain cells are damaged.

Anterograde Amnesia
Inability to consolidate information about ongoing events. Difficulty with new learning.

Anticonvulsant
Medication used to decrease the possibility of a seizure (e.g., Dilantin, Phenobarbital, Mysoline, Tegretol).

Aphasia
Loss of the ability to express oneself and/or to understand language. Caused by damage to brain cells rather than deficits in speech or hearing organs.

Apraxia
Inability to carry out a complex or skilled movement; not due to paralysis, sensory changes, or deficiencies in understanding.

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Ataxia

A problem of muscle coordination not due to apraxia, weakness, rigidity, spasticity or sensory loss. Caused by lesion of the cerebellum or basal ganglia. Can interfere with a person's ability to walk, talk, eat, and to perform other self care tasks.

Augmentative and Alternative Communication

Use of forms of communication other than speaking, such as: sign language, "yes, no" signals, gestures, picture board, and computerized speech systems to compensate either temporarily or permanently for severe expressive communication disorders.

ADL

Activities of daily living. Routine activities carried out for personal hygiene and health (e.g., bathing, dressing, feeding) and for operating a household.

Brain Injury, Mild

A patient with a mild traumatic brain injury is a person who has had a traumatically-induced physiological disruption of brain function, as manifested by at least one of the following: 1) any period of loss of consciousness, 2) any loss of memory for events immediately before or after the accident, 3) any alteration in mental state at the time of the accident (e.g., feeling dazed, disoriented, or confused), 4) focal neurological deficit(s) which may or may not be transient; but where the severity of the injury does not exceed the following: a) loss of consciousness of approximately 30 minutes or less; b) after 30 minutes, an initial Glasgow Coma Scale score of 13-15; c) Post Traumatic Amnesia not greater than 24 hours.

Brain Injury, Traumatic

Damage to living brain tissue caused by an external, mechanical force. It is usually characterized by a period of altered consciousness (e.g., amnesia or coma) that can be very brief (minutes) or very long (months/indefinitely). The specific disabling condition(s) may be orthopedic, visual, aural, neurologic, perceptive/cognitive, or mental/emotional in nature. The term does not include brain injuries that are caused by insufficient blood supply, toxic substances, malignancy, disease-producing organisms, congenital disorders, birth trauma, or degenerative processes.

Circumlocution

Use of other words to describe a specific word or idea which cannot be remembered.

Clonus

A sustained series of rhythmic jerks following quick stretch of a muscle.

Cognitive Rehabilitation

Therapy programs which aid persons in the management of specific problems in perception, memory, thinking, and problem solving. Skills are practiced and strategies are taught to help improve function and/or compensate for remaining deficits. The interventions are based on an assessment and understanding of the person's brain-behavior deficits and services are provided by qualified practitioners.

Coma

A state of unconsciousness from which the patient cannot be awakened or aroused, even by powerful stimulation; lack of any response to one's environment. Defined clinically as an inability to follow a one-step command consistently; Glasgow Coma Scale score of 8 or less.

Communicative Disorder

An impairment in the ability to 1) receive and/or process a symbol system, 2) represent concepts or symbol systems, and/or 3) transmit and use symbol systems. The impairment may be observed in disorders of hearing, language, and/or speech processes.

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Community Skills

Those abilities needed to function independently in the community. They may include: telephone skills, money management, pedestrian skills, use of public transportation, meal planning, and cooking.

Comprehension

Understanding of spoken, written, or gestural communication.

Concentration

Maintaining attention on a task over a period of time; remaining attentive and not easily diverted.

Concrete Thinking

A style of thinking in which the individual sees each situation as unique and is unable to generalize from the similarities between situations. Language and perceptions are interpreted literally so that a proverb such as "a stitch in time saves nine" cannot be readily grasped.

Concussion

The common result of a blow to the head or sudden deceleration usually causing an altered mental state, either temporary or prolonged. Physiologic and/or anatomic disruption of connections between some nerve cells in the brain may occur. Often used by the public to refer to a brief loss of consciousness.

Confabulation

Verbalizations about people, places, and events with no basis in reality. May be a detailed account delivered.

Contracture

Loss of range of motion in a joint due to abnormal shortening of soft tissues.

Cortical Blindness

Loss of vision resulting from a lesion of the primary visual areas of the occipital lobe. Light reflex is preserved.

Diffuse Axonal Injury (DAI)

A shearing injury of large nerve fibers (i.e., axons covered with myelin) in many areas of the brain. It appears to be one of the two primary lesions of brain injury, the other being stretching or shearing of blood vessels from the same forces, producing hemorrhage.

Diplopia

Seeing two images of a single object; double vision.

Disinhibition

Inability to suppress (i.e., inhibit) impulsive behavior and emotions.

Disorientation

Not knowing where you are, who you are, or the current date. Health professionals often speak of a normal person as being oriented "times three" which refers to person, place, and time.

Dysarthria

Difficulty in forming words or speaking them because of weakness of muscles used in speaking or because of disruption in the neuromotor stimulus patterns required for accuracy and velocity of speech.

Dysphagia

A swallowing disorder characterized by difficulty in oral preparation for the swallow or in moving material from the mouth to the stomach. This also includes problems in positioning food in the mouth.

Emotional Lability

Exhibiting rapid and drastic changes in emotional state (e.g., laughing, crying, anger) inappropriately without apparent reason.

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Executive Functions

Self regulating and controlling functions that direct and organize behavior (ex. initiating, inhibiting, orienting to task, self-monitoring and evaluating, and strategic thinking).

Figure-Ground

The differentiation between the foreground and the background of a scene; this refers to all sensory systems, including vision, hearing, touch.

Flaccid

Lacking normal muscle tone; limp.

Frustration Tolerance

The ability to persist in completing a task despite apparent difficulty. Individuals with a poor frustration tolerance will often refuse to complete tasks which are the least bit difficult. Angry behavior, such as yelling or throwing things, while attempting a task is also indicative of poor frustration tolerance.

Glascow Coma Scale

Assessment often used to determine the severity of a brain injury based on three categories – opening eyes, moving, and verbalizing. A score 13 to15 indicates a mild injury; 9 to12 a moderate injury, and 3 to 8 a severe injury.

Hemianopsia/Hemianopia

Visual field cut. Blindness for one half of the field of vision. This is not the right or left eye, but the right or left half of vision in each eye.

Hemiparesis

Weakness of one side of the body.

Hemiplegia

Paralysis on one side of the body.

Hydrocephalus

Enlargement of fluid-filled cavities in the brain, not due to brain atrophy.

Impulse Control

Refers to the individual's ability to withhold inappropriate verbal or motor responses while completing a task. Persons who act or speak without first considering the consequences are viewed as having poor impulse control.

Incontinent

Inability to control bowel and bladder functions. Many people who are incontinent can become continent with training.

Initiative

Refers to the individual's ability to begin a series of behaviors directed toward a goal.

Lability

State of having notable shifts in emotional state (e.g., uncontrolled laughing or crying).

Memory, Episodic

Memory for ongoing events in a person's life. More easily impaired than semantic memory, perhaps because rehearsal or repetition tends to be minimal.

Memory, Immediate

The ability to recall numbers, pictures, or words immediately following presentation. Patients with immediate memory problems have difficulty learning new tasks because they cannot remember instructions. Relies upon concentration and attention.

Memory, Long Term

In neuropsychological testing, this refers to recall thirty minutes or longer after presentation. Requires storage and retrieval of information which exceeds the limit of short term memory.

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Memory, Short Term

Primary or 'working' memory; its contents are in conscious awareness. A limited capacity system that holds up to seven chunks of information over periods of 30 seconds to several minutes, depending upon the person's attention to the task.

Money Management

Ability to distinguish the different denominations of money, count money, make change, budget.

Motor Control

Regulation of the timing and amount of contraction of muscles of the body to produce smooth and coordinated movement. The regulation is carried out by operation of the nervous system.

Motor Planning

Action formulated in the mind before attempting to perform.

Muscle Tone

Used in clinical practice to describe the resistance of a muscle to being stretched. When the peripheral nerve to a muscle is severed, the muscle becomes flaccid or limp. When nerve fibers in the brain or spinal cord are damaged, the balance between facilitation and inhibition of muscle tone is disturbed. The tone of some muscles may become increased and they resist being stretched--a condition called hypertonicity or spasticity.

Neglect

Paying little or no attention to a part of the body.

Neuropsychologist

A psychologist who specializes in evaluating by testing brain/behavior relationships, planning training programs to help the brain injury survivor return to normal functioning and recommending alternative cognitive and behavioral strategies to minimize the effects of brain injury. Often works closely with schools and employers as well as with family members.

Nystagmus

Involuntary horizontal, vertical, or rotary movement of the eyeballs.

Occupational Therapy

Occupational therapy is the therapeutic use of self-care, work, and play activities to increase independent function, enhance development, and prevent disability; may include the adaptation of a task or the environment to achieve maximum independence and to enhance the quality of life. The term occupation, as used in occupational therapy, refers to any activity engaged in for evaluating, specifying, and treating problems interfering with functional performance.

Orientation

Awareness of one's environment and/or situation, along with the ability to use this information appropriately in a functional setting.

Orthosis

Splint or brace designed to improve function or provide stability.

Paresis

Muscle weakness.

Perception

The ability to make sense of what one sees, hears, feels, tastes, or smells. Perceptual losses are often very subtle, and the patient and/or family may be unaware of them.

Perseveration

The inappropriate persistence of a response in a current task which may have been appropriate for a former task. Perseverations may be verbal or motoric.

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Physiatrist

Pronounced Fizz ee at' rist. A physician who specializes in physical medicine and rehabilitation. Some physiatrists are experts in neurologic rehabilitation, trained to diagnose and treat disabling conditions. The physiatrist examines the patient to assure that medical issues are addressed; provides appropriate medical information to the patient, family members and members of the treatment team. The physiatrist follows the patient closely throughout treatment and oversees the patient's rehabilitation program.

Physical Therapist

The physical therapist evaluates components of movement including muscle strength, muscle tone, posture, coordination, endurance, and general mobility. The physical therapist also evaluates the potential for functional movement, such as ability to move in the bed, transfers, and walking and then proceeds to establish an individualized treatment program to help the patient achieve functional independence.

Post Traumatic Amnesia (PTA)

A period of hours, weeks, days, or months after the injury when the patient exhibits a loss of day-to-day memory. The patient is unable to store new information and therefore has a decreased ability to learn. Memory of the PTA period is never stored, therefore things that happened during that period cannot be recalled. May also be called Anterograde Amnesia.

Pre-morbid

Preceding the occurrence of disease or disability.

Problem-Solving Skill

Ability to consider the probable factors that can influence the outcome of each of various solutions to a problem, and to select the most advantageous solution. Individuals with deficits in this skill may become "immobilized" when faced with a problem. By being unable to think of possible solutions, they may respond by doing nothing.

Psychologist

A professional specializing in counseling, including adjustment to disability. Psychologists use tests to identify personality and cognitive functioning. This information is shared with team members to assure consistency in approaches. The psychologist may provide individual or group psychotherapy for the purpose of cognitive retraining, management of behavior and the development of coping skills by the patient/client and members of the family.

Ranchos Los Amigos Scale of Cognitive Functioning

A scale, divided into 8 levels, used to provide a snapshot of the brain injury survivor's ability to interpret and process information and generate a response based on that information. The scale can also be helpful in developing individual interventions and strategies to assist in progressing to the next level

Reasoning, Abstract

Mode of thinking in which the individual recognizes a phrase that has multiple meanings and selects the meaning most appropriate to a given situation. The term "abstract" typically refers to concepts not readily apparent from the physical attributes of an object or situation.

Reasoning, Concrete

The ability to understand the literal meaning of a phrase.

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Reasoning, Problem-Solving

The ability to analyze information related to a given situation and generate appropriate response options. Problem-solving is a sequential process that typically proceeds as follows: identification of problem; generation of response options; evaluation of response option appropriateness; selection and testing of first option; analysis as to whether solution has been reached. A patient/client may discontinue making a cup of coffee because the sugar bowl is empty, even though sugar is readily available in a nearby cabinet. A patient/client may easily navigate his way into a room crowded with furniture, but request staff assistance to navigate his way out.

Reasoning, Sequencing

The ability to organize information or objects according to specified rules, or the ability to arrange information or objects in a logical, progressive manner. Nearly every activity, including work and leisure tasks, requires sequencing. For example, in cooking certain foods it is important that ingredients be added and mixed in a specified order; in dressing, undergarments must be put on prior to outer garments.

Recreation Therapist

Individual within the facility responsible for developing a program to assist persons with disabilities plan and manage their leisure activities; may also schedule specific activities and coordinate the program with existing community resources.

Rehabilitation

Comprehensive program to reduce/overcome deficits following injury or illness, and to assist the individual to attain the optimal level of mental and physical ability.

Rehabilitation Counselor

Also called Vocational Counselor. A specialist in social and vocational issues who helps the patient develop the skills and aptitudes necessary for return to productive activity and the community.

Rehabilitation Nurse

A nurse specializing in rehabilitation techniques as well as basic nursing care. Nurses assist the patient and family in acquiring new information, developing skills, achieving competence and exhibiting behaviors that contribute to the attainment of a healthy state.

Retrograde Amnesia

Inability to recall events that occurred prior to the accident; may be a specific span of time or type of information.

Second Impact Syndrome

Occurs when an individual suffers a second concussion while still symptomatic from an earlier one. SIS can occur hours, days, or weeks following the previous concussion and causes rapid brain swelling which can lead to permanent injury, coma, and even death.

Seizure

An uncontrolled discharge of nerve cells which may spread to other cells nearby or throughout the entire brain. It usually lasts only a few minutes. It may be associated with loss of consciousness, loss of bowel and bladder control, and tremors. May also cause aggression or other behavioral change.

Sensory Integration

Interaction of two or more sensory processes in a manner that enhances the adaptiveness of the brain.

Sequencing

Reading, listening, expressing thoughts, describing events, or contracting muscles in an orderly and meaningful manner.

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Sheltered Workshop

A work setting certified as such by the Wage & Hour Division. It provides transitional and/or long-term employment in a controlled and protected working environment for those who are unable either to compete or to function in the open job market due to their disabilities. May provide vocational evaluation and work adjustment services.

Shunt

A procedure to draw off excessive fluid in the brain. A surgically-placed tube running from the ventricles which deposits fluid into either the abdominal cavity, heart, or large veins of the neck.

Spasticity

An involuntary increase in muscle tone (i.e., tension) that occurs following injury to the brain or spinal cord, causing the muscles to resist being moved. Characteristics may include increase in deep tendon reflexes, resistance to passive stretch, clasp knife phenomenon, and clonus.

Spatial Ability

Ability to perceive the construction of an object in both two and three dimensions. Spatial ability has four components: the ability to perceive a static figure in different positions, the ability to interpret and duplicate the movements between various parts of a figure, the ability to perceive the relationship between an object and a person's own body sphere, and the ability to interpret the person's body as an object in space.

Speech-language Pathology Services

A continuum of services including prevention, identification, diagnosis, consultation, and treatment of patients regarding speech, language, oral, and pharyngeal sensorimotor function.

Tactile Defensiveness

Being overly sensitive to touch; withdrawing, crying, yelling, or striking when one is touched.

Task Analysis

Breakdown of a particular job into its component parts; information gained from task analysis can be utilized to develop training curricula or to price a product or service.

Tracking, Visual

Visually following an object as it moves through space.

Tremor, Intention

Course, rhythmical movements of a body part that become intensified the harder one tries to control them.

Tremor, Resting

Rhythmical movements present at rest and may be diminished during voluntary movement.

Unilateral Neglect

Paying little or no attention to things on one side of the body. This usually occurs on the side opposite from the location of the injury to the brain because nerve fibers from the brain typically cross before innervating body structures. In extreme cases, the patient may not bathe, dress, or acknowledge one side of the body.

Verbal Apraxia

Impaired control of proper sequencing of muscles used in speech (e.g., tongue, lips, jaw muscles, vocal cords). These muscles are not weak but their control is defective. Speech is labored and characterized by sound reversals, additions, and word approximations.

Vestibular

Pertaining to the vestibular system in the middle ear and the brain which senses movements of the head. Disorders of the vestibular system can lead to dizziness, poor regulation of postural muscle tone, and inability to detect quick movements of the head.

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