An SLP's Role in Supporting a Student's School Re-Entry Following a Traumatic or Acquired Brain Injury

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#### Course Description

This course will outline a speech-language pathologist's role in supporting a student as they prepare for school re-entry following a traumatic or acquired brain injury (TBI, ABI). Topics to be covered are: overview of TBI/ABI in pediatric population, importance of communication and collaboration among medical team, outpatient providers and families, information vital to planning, formal and informal testing measures, goal formulation, activities, recommendations and accommodations.

### Objectives

- Learner will identify 4 key pieces of information to obtain from medical team, outpatient therapists, and/or family when preparing for a student's return.
- Learner will identify a variety of assessments used to evaluate at student with TBI/ABI
- Learner will list accommodations/recommendations for a student with at TBI/ABI returning to a classroom setting.
- Learner will generate a list of measureable goals to target in therapy for students with TBI/ABI.

### My Background

#### Speech-Language Pathologist for 11 years

- Graduated from the University of Virginia in 2010
- Certified Brain Injury Specialist for 7 years
- Majority of career spent working in the Day Rehabilitation Program at Children's Healthcare of Atlanta
- Currently work in a traditional outpatient pediatric rehabilitation program for Exeter Health Resources and for Northeast Rehabilitation Hospital Network at Pease in their inpatient rehabilitation unit.
- No financial disclosures

## My Background: What is Day Rehab?

- Intensive outpatient therapy program designed to treat school age children (4-21) who have had a TBI/ABI (mostly mild-severe; occasional concussion).
  - They are medically stable enough to discharge from the hospital but not ready to transition back home/school.
  - Patients receive PT, OT, ST, educational, psychological and medical supports 6 hours per day, 5 days a week. Must qualify for at least 2 disciplines
    - Could be with us 1 week-120 days; average LOS ~30 days
  - Group based model; all patients are safely able to participate in group therapy sessions.
  - Weekly community outings
  - Focus on supporting patients, families, and schools as they prepare to bring back a student. Participate in conferences with school based teams to provide insight and support for each patient.
  - Also ran a 2 week, grant funded, summer program for teens (14-21) with an ABI at any point in their lives with the focus being transition skills, resume building, social skill development, and compensatory strategy training.

#### Quick Neuro Rundown DEFINITIONS, OVERVIEW OF THE BRAIN, COMMON TOOLS

## Defining Brain Injury Definition from BIAA

- An acquired brain injury (ABI) is an injury to the brain that is not hereditary, congenital, degenerative, or induced by birth trauma. Essentially, this type of brain injury is one that has occurred after birth. The injury results in a change to the brain's neuronal activity, which affects the physical integrity, metabolic activity, or functional ability of nerve cells in the brain. An acquired brain injury is the umbrella term for all brain injuries.
- There are two types of acquired brain injury: traumatic and nontraumatic.

# Defining Brain Injury

#### Traumatic

A traumatic brain injury (TBI) is defined as an alteration in brain function, or other evidence of brain pathology, caused by an external force. Traumatic impact injuries can be defined as closed (or nonpenetrating) or open (penetrating). Examples of a TBI include:

► Falls

- Accidents—car, motorcycle, bike
- Concussion
- Assault, attack
- Gunshot injuries

#### Non-Traumatic

- Often referred to as an acquired brain injury, a non-traumatic brain injury causes damage to the brain by internal factors, such as a lack of oxygen, exposure to toxins, pressure from a tumor, etc. Examples of NTBI include:
  - ► Stroke
  - ► Near-drowning
  - Aneurysm, brain bleeds, AVM
  - ► Tumor
  - Infectious disease that affects the brain (i.e., meningitis)
  - Lack of oxygen supply to the brain (i.e., heart attack, drug overdose)

#### From BIAA:

#### **More Common Than You Think**



#### Acquired Brain Injury (ABI)

An injury to the brain that is not hereditary, congenital, degenerative, or induced by birth trauma. The injury results in a change in neuronal activity, which affects the physical integrity, the metabolic activity, or the functional ability of nerve cells in the brain.

#### THERE ARE TWO TYPES OF BRAIN INJURY



#### Non-Traumatic Brain Injury Often referred to as an acquired brain injury, non-traumatic brain injuries cause damage to the brain by internal factors, such as a lack of oxygen, exposure to toxins, pressure from a tumor, etc...



#### Traumatic Brain Injury

An alteration in brain function, or other evidence of brain pathology, caused by an external force. There are two primary mechanisms of TBI; those involving impact to the head (Traumatic Impact), and those involving inertial forces which affect the brain (Traumatic Inertial)



### **Basic Neuro Introduction**



The functional sections (lobes) of the brain are also categorized by side – the right side and the left side. If you split the brain down the middle into two equally-sized parts, they are not the same and do not carry the same functions. The right side of the brain controls the left side of the body, while the left side of the brain controls the right side of the body. Each side is responsible for different functions, and general patterns of dysfunction may occur depending on the side of the brain sustaining an injury. (biausa.org)

## Left and Right Hemispheres

#### Left Hemisphere

- Analytical
- Logical
- Precise
- Organized
- Detached
- Literal
- Injuries of the left side of the brain can cause:
  - Difficulties understanding language (receptive language)
  - Difficulties in speaking or verbal output (expressive language)
  - Mood changes/Catastrophic reactions (depression, anxiety)
  - Impaired logic; can be rigid, difficulty with flexible thinking, changing plans
  - Sequencing difficulties
  - Decreased control over right-sided body movements

#### Right Hemisphere

- Creative
- Imaginative
- Intuitive
- Conceptual
- Empathetic
- Figurative
- Injuries of the right side of the brain can cause:
  - Visual-spatial impairment
  - ▶ Visual memory deficits
  - Left neglect (inattention to the left side of the body)
  - Decreased awareness of deficits
  - Altered creativity and music perception
  - Loss of "the big picture" type of thinking
  - Decreased control over left-sided body movements

### **Basic Neuro Introduction**



- Frontal Lobe (shown in orange)
- Temporal Lobe (pink)
- Parietal Lobe (blue)
- Occipital Lobe (green)
- Cerebellum (red)
- **Brain Stem** (yellow)

# Basic Neuro Introduction—Frontal Lobes

- Frontal Lobes Functions (Orange)
- ► Attention
- Concentration
- Self-Monitoring
- Organization
- Expressive Language (Speaking)
- Motor Planning & Initiation
- Awareness of Abilities
- Awareness of Limitations
- Personality
- Mental Flexibility
- ▶ Inhibition of Behavior
- ► Emotions
- Problem Solving
- ► Planning
- Judgment
- An injury to the frontal lobes may affect an individual's ability to control emotions, impulses, and behavior or may cause difficulty recalling events or speaking.



## Basic Neuro Introduction— Temporal Lobes

- Temporal Lobes Functions (Pink)
- Memory (right side)
- Understanding Language (Receptive Language—left)
- Sequencing (right)
- Hearing (both)
- Organization (both)
- An injury to the temporal lobes may lead individuals to demonstrate difficulty with communication (left) or memory (right)



## Basic Neuro Introduction—Parietal Lobes

- Parietal Lobes Functions (Blue)
- Sense of Touch
- Spatial Perception (Depth Perception)
- Identification of Sizes, Shapes, Colors
- Visual Perception
- Individuals who have injured their parietal lobes may have trouble with their five primary senses



## Basic Neuro Introduction— Occipital Lobes

Occipital Lobes Functions (Green)

- Vision
- An injury to one's occipital lobes may lead to trouble seeing or perceiving the size and shape of objects.
- Even if there is "no damage" to the occipital lobe, vision can still be affected because the visual track is so long and complex



### Basic Neuro Introduction--Cerebellum

- Cerebellum Functions (Red)
- Balance & Coordination
- Skilled Motor Activity—speech included
- Visual Perception
- An injury to the cerebellum may affect balance, movement, and coordination.



## Basic Neuro Introduction—Brain Stem

- Brain Stem Functions (Yellow)
- Breathing
- Arousal
- Consciousness
- Heart Rate
- Sleep & Wake Cycles
- The brain stem controls the body's involuntary functions that are essential for survival, such as breathing and heart rate.



# Glasgow Coma Scale Interpretation (Pediatric Scale)

- Eye Opening (E)
  - 4 = spontaneous
  - ► 3 = to voice
  - 2 = to pressure
  - ▶ 1 = none
  - NT = not testable
- Verbal Response (V)
  - 5 = smiles, oriented to sounds, follows objects, interacts
  - ► 4 = cries but consolable, inappropriate interactions
  - ▶ 3 = inconsistently inconsolable, moaning
  - ▶ 2 = inconsolable, agitated
  - ▶ 1 = none
  - NT = not testable

- Motor Response (M)
  - ▶ 6 = moves spontaneously or purposefully
  - ▶ 5 = localizing (withdraws from touch)
  - 4 = normal flexion (withdraws to pain)
  - 3 = abnormal flexion (decorticate response)
  - 2 = extension (decerebrate response)
  - ▶ 1 = none
  - NT = not testable

Pediatric brain injuries are classified by severity using the same scoring levels as adults, i.e. 8 or lower reflecting the most severe, 9-12 being a moderate injury and 13-15 indicating a mild TBI. As in adults, moderate and severe injuries often result in significant long-term impairments.

### Rancho Los Amigos Scale

#### Level I: No Response: Total Assistance

No response to external stimuli

#### Level II: Generalized Response: Total Assistance

- Responds inconsistently and non-purposefully to external stimuli
- Responses are often the same regardless of the stimulus

#### Level III: Localized Response: Total Assistance

- Responds inconsistently and specifically to external stimuli
- Responses are directly related to the stimulus, for example, patient withdraws or vocalizes to painful stimuli
- Responds more to familiar people (friends and family) versus strangers

### Rancho Los Amigos Scale (cont.)

#### Level IV: Confused/Agitated: Maximal Assistance

- ► The individual is in a hyperactive state with bizarre and non-purposeful behavior
- Demonstrates agitated behavior that originates more from internal confusion than the external environment
- Absent short-term memory
- Level V: Confused, Inappropriate Non-Agitated: Maximal Assistance
  - Shows increase in consistency with following and responding to simple commands
  - Responses are non-purposeful and random to more complex commands
  - Behavior and verbalization is often inappropriate, and individual appears confused and often confabulates
  - If action or tasks is demonstrated individual can perform but does not initiate tasks on own
  - Memory is severely impaired and learning new information is difficult
  - Different from level IV in that individual does not demonstrate agitation to internal stimuli. However, they can show agitation to unpleasant external stimuli.

#### Rancho Los Amigos Scale cont.

#### Level VI: Confused, Appropriate: Moderate Assistance

- ► Able to follow simple commands consistently
- Able to retain learning for familiar tasks they performed pre-injury (brushing teeth, washing face) however unable to retain learning for new tasks
- Demonstrates increased awareness of self, situation, and environment but unaware of specific impairments and safety concerns
- Responses may be incorrect secondary to memory impairments but appropriate to the situation
- Level VII: Automatic, Appropriate: Minimal Assistance for Daily Living Skills
  - Oriented in familiar settings
  - ▶ Able to perform daily routine automatically with minimal to absent confusion
  - Demonstrates carry over for new tasks and learning in addition to familiar tasks
  - Superficially aware of one's diagnosis but unaware of specific impairments
  - Continues to demonstrate lack of insight, decreased judgment and safety awareness
  - Beginning to show interest in social and recreational activities in structured settings
  - ▶ Requires at least minimal supervision for learning and safety purposes.

#### Rancho Los Amigos Scale cont.

#### ► Level VIII: Purposeful, Appropriate: Stand By Assistance

- Consistently oriented to person, place and time
- ▶ Independently carries out familiar tasks in a non-distracting environment
- Beginning to show awareness of specific impairments and how they interfere with tasks, however, requires standing by assistance to compensate
- ► Able to use assistive memory devices to recall daily schedule
- Acknowledges other's emotional states and requires only minimal assistance to respond appropriately
- Demonstrates improvement of memory and ability to consolidate the past and future events
- ▶ Often depressed, irritable and with low frustration threshold
- Level IX: Purposeful, Appropriate: Stand By Assistance on Request
  - ► Able to shift between different tasks and complete them independently
  - Aware of and acknowledges impairments when they interfere with tasks and able to use compensatory strategies to cope
  - Unable to independently anticipate obstacles that may arise secondary to impairment
  - With assistance able to think about consequences of actions and decisions
  - Acknowledges the emotional needs of others with stand by-assistance.
  - Continues to demonstrate depression and low frustration threshold

#### Rancho Los Amigos Scale cont.

#### Level X: Purposeful, Appropriate: Modified Independent

- Able to multitask in many different environments with extra time or devices to assist
- Able to create own methods and tools for memory retention
- Independently anticipates obstacles that may occur as a result of impairments and take corrective actions
- Able to independently make decisions and act appropriately but may require more time or compensatory strategies
- Demonstrate intermittent periods of depression and low frustration threshold when under stress
- Able to appropriately interact with others in social situations

### Why talk about GCS and Ranchos?

- GCS gives us insight into the severity of the injury immediately after the injury occurs.
  - It allows first responders to quickly, clearly, and reliably assess a patient and their injury.
  - The lower the GCS score, the more severe the injury, the larger the likelihood of significant deficits and a more guarded prognosis.
- Rancho Levels give us insight into where the patient is in terms of their recovery, how they are functioning, and where they may be struggling.
  - Individualized; looks at how a person is currently functioning, what skill areas might be emerging, and how much assistance a person requires to carryover tasks.

#### **TBI** Recovery

- ► The quickest recovery is seen in the first 90 days following and injury
  - Recovery will continue after this, we may just see slower, more steady recovery.
  - ▶ Typical recovery time following a brain injury is 6 months-2 years.
  - After 90 days, a person with a TBI is considered to have a chronic condition
- This is important to understand when designing a treatment plan, setting benchmarks, and evaluating progress.
  - A patient/student with a TBI should progress much quicker than one with an autism diagnosis, developmental delays, etc.
  - Their goals and plans needs to reflect this—we need to plan to update their goals, their plans of care, the level of supports they need frequently.
  - This is where their past medical history, previous level of function, good understanding of their injury, location of injury, etc comes into play.

# The Student is Ready to Return

# SLP's Role Things to Consider

- Ensuring Release of Information forms are completed.
  - Parent must complete this
  - This will allow outpatient SLP and school SLP to communicate freely, share information and collaborate on a student's case.
- ► Information Gatherer
  - Getting as much information as possible
  - Asking questions to begin to build a plan
- Premorbid level of functioning
  - Vital for outpatient therapists to know/understand so that they aren't asking a patient to do something they weren't able to do prior.
    - What were they like academically, behaviorally, socially, and functionally in their home, school, and community environments.
    - Did they have and IEP or 504 plan prior to the injury? Were they failing school? Defiant behaviors?

### Outpatient Speech Therapist's Role

- Outpatient therapists treat functional deficits, involved with how to help them at home, in the community, and at school.
- May or may not treat existing deficits
  - Example: Insurance may not pay for treatment of an existing condition (articulation errors, language delays, etc). They may only pay for treatment of new deficits.

#### Evaluate and treat deficits on a global scale:

- Receptive and Expressive Language
- Reading Comprehension and Written Expression
- Pragmatics
- Orientation
- Memory
- Attention
- Executive functioning (problem solving and reasoning)
- Organization
- Motor Speech, Dysphagia, AAC/AT
- Consider Hearing status, vision changes/deficits

#### School Speech Therapist's Role

- Evaluate and treat a student's deficits to determine their impact on academics, their ability to access their education, the social/emotional impact of their injury, and their ability to participate in the classroom.
- Likely won't focus directly (if at all) on swallowing, motor speech deficits or voice unless they are directly affecting their classroom participation.
  - If a student has motor speech or voice issues, they can be indirectly addressed during language activities. Just have to be creative!!

### Recipe for a complete evaluation

- Formal assessment
- Informal assessment
- Observation
- Case history
- Parent report
- Student interview (when possible)
- Open mind
- ► Flexible plan
- Many of these areas overlap into others. Knowing and understanding all of them will allow you to choose activities that will give you the most insight into a patient/student.
- We don't want to wear them out and we don't want to frustrate them to the point they want to shut down.

### Formal Evaluation Measures

#### ► Formal

- ► PPVT
- ► EVT
- ► CELF-5
- CELF-5 Metalinguistic
- ► PTBI
- CLQT (18 and older)
- ► FAVRES
- ► TONI
- GSRT to assess reading
- Written language prompt; scale based on age/grade

- Benefits of Formal Assessments:
  - Standardized
  - Insurance companies love data!
  - Establish a clear baseline
  - Can be repeated to measure progress
- Draw backs:
  - Completed in an unrealistic environment
  - Lengthy; may make errors due to fatigue vs indicate deficit
  - Not many choices that are normed for brain injury
  - Test Anxiety

### Pediatric Test of Brain Injury

#### Assess children's skills after brain injury

Designed for use with children ages 6– 16 recovering from brain injury, the Pediatric Test of Brain Injury™ (PTBI™) is the only criterion-referenced, standardized test that assesses the skills children need to return to school and function in the general education curriculum. PTBI is rigorously tested using cutting-edge item response theory (IRT) analysis, traditional test development methods, and field testing at trauma and rehab centers and clinics.



### Pediatric Test of Brain Injury

#### Benefits

- PTBI helps speech-language pathologists and other clinicians:
  - determine children's neurocognitive, language, and literacy abilities
  - identify strengths and weaknesses
  - ► target effective interventions
  - make sound decisions about school reintegration
  - monitor functional changes
  - track recovery patterns over time
  - Quick to administer—30 minutes, typically.



### Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES-S)

- Test Overview
- ► Ages 12-19
- Administration Time: 50 min (approx.)
- ► 4 Complex/Integrative/Real Life Tasks
  - Planning and Event
  - Making a Decision
  - Scheduling
  - Building a Case
- The S-FAVRES was carefully constructed with input from speech-language pathologists, adolescents, teachers, and experts in adolescent development and brain injury.

- Standardized on students with & without brain injuries
- Types of Scoring: Norms available for:
  - Accuracy
  - Time
  - ► Rationale
  - Reasoning Subskills

# Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES-S)

- Features of the S-FAVRES
  - Functional tasks
  - Real life amounts of information (text, discourse, multiple factors)
  - Context
  - Roles/Perspectives/Points of View
  - Multiple Stimuli
  - Integrative Functions
  - Novel Tasks
  - Emotional Content
  - Interaction with Examiner

- Reasoning Subskills Examined
  - Getting the Facts
  - Eliminating Irrelevant Information
  - Weighing the Facts
  - ► Flexibility
  - Predicting Consequence

### S-FAVRES

- The S-FAVRES is based on research evidence that has identified the need for an adolescent measure that:
- Challenges the cognitive-communication skills that are under development during adolescence
- Evaluates aspects of complex comprehension (sarcasm, humour, intent, gist or central theme) discourse, social communication, verbal reasoning, problem solving, meta-cognition, executive functions
- Examines the interplay between cognitive, communication, and emotional regulation skills in real life, integrative tasks
- Is sensitive to higher order cognitive-communication deficits that emerge in adolescents
- ► Is sensitive to subtle deficits of MTBI
- Assesses integrative functions or activities in which combined skills or processes are required
- Includes timed scores to evaluate speed of processing

## Test of Nonverbal Intelligence 4<sup>th</sup> Edition

- The Test of Nonverbal Intelligence Fourth Edition is a practical, easy-to-use, normreferenced instrument that measures an individual's intelligence. The administration and response format are pragmatic with simple oral instructions, requiring test takers to answer only with simple but meaningful gestures such as pointing, nodding, or blinking. This test is ideal for those who have language, hearing, or motor impairments, or are not familiar with mainstream American culture
- Language-Free Cognition / Reasoning
- Ages 6 through 89
- Norm-Referenced



### Note about Testing

- A school system does NOT have to utilize the testing completed by an outside entity.
  - It is the school's discretion to take on outpatient therapist's testing measures and incorporate them into their school plan. They can take the results into consideration but they do not have to utilize the results when qualifying a student for services, goal formulation, or plan development.
  - It is, however, up to both parties to communicate so that test duplication does not occur.
  - While this has been infrequent in my experiences, it does occur and has lead to frustration from families and among treatment teams.

# What Are We Assessing? Language

- Receptive Language
  - Can they follow verbal directions?
    - How many steps?
    - ► Complexity?
    - ▶ With or without distraction?
    - ► Length of information?
    - ▶ Novel or familiar?
    - ► Are they getting part of it? What part do they recall?
  - Can they answer yes/no questions? Wh Qs?
- Reading Comprehension
  - ▶ Recognize letters in print? Name? Words?
  - Decode vs comprehend?
  - ► Can they visually scan/track?

\*\*If they struggle with receptive language, they will likely struggle with reading comprehension.

- Expressive Language
  - ▶ Can they communicate basic wants/needs?
    - ► How—verbally, nonverbally?
  - Confrontational naming
  - ► Generative naming
  - ► Wh Questions
  - Compare/contrast
  - Multiple meaning words
  - Organization of message—does it make sense? Organized? Tangential?
  - Paraphasias
  - ▶ Basic conversation? More complex?
- Written Expression
  - Can they write or type?
  - Dominant hand involvement?
  - Does it mimic their spoken language?
  - ► Letter formulation?

### What Are We Assessing?

- Pragmatics/social
  - ► Eye contact
  - Overall mood
  - Turn taking in activities, conversation
  - Triggers/emotional regulation
  - How do they interact with familiar/unfamiliar caregivers?
  - Appropriateness of conversation topics, comments to others

#### Orientation

- Person, place, time, situation
- Spatial/body awareness
- Is it consistent throughout the day, in a setting, or does it depend?

# What Are We Assessing? Memory

#### Types of Memory

- Immediate: recall of information that happened immediately, no delay
- Short Term: recall of information following a short delay, may or may not have a distraction during that delay
  - What they ate the previous meal
  - ▶ What they did in the class before
  - ▶ 3 words I asked you to recall
- Long Term: recall of information that was learned/presented a long time ago and has had the opportunity to be encoded
  - Routines, family/friends, birthday, etc.
- Working Memory: recall of information presented a short time ago that needs to be manipulated in some way
  - ► Vitally important for learning!!
- Recall can also be heavily influenced by preference—some information just isn't relevant or motivating to recall.

### What Are We Assessing? Attention

#### Types of Attention

- Sustained: ability to focus for x amount of time.
- Selective: ability to focus specifically on a given task/activity, tuning out distractions or irrelevant information
- Alternating: switching attention between two or more tasks
- Divided: dividing attention between two or more tasks
- If a student can not attend, we can NOT expect them to recall the information!!
  - If information isn't attended to, it isn't processed and stored, therefore it won't be recalled.

# What Are We Assessing? Executive Functioning

- Problem Solving
  - Cause and effect at the most basic level
  - Do they recognize if a problem exists?
  - Identify a solution? Multiple solutions?
  - Mental flexibility
  - Execute the solution?
  - Evaluate successfulness of the solution?
  - If it wasn't successful, what next?

- Reasoning
  - Deductive reasoning
  - Inferential reasoning
  - Mental flexibility
- Organization
  - Can they sequence steps? How many?
  - Where do they fall apart in a task?
  - Do they have a system that already works for them?

#### Informal Evaluation Measures

- Informal—often more helpful than formal measures!
  - Observations in familiar and unfamiliar tasks
  - Assess cognitive fatigue; how long until they zone out or do they act out. What are their signs?
  - Review classroom assignments, look for trends
  - Sequencing of steps for tasks (familiar vs unfamiliar)
  - Memory/recall of relevant information
  - How they answer questions in conversation
  - Report from family; how do they do at home in a familiar, comfortable space? In public (store, restaurant, etc)
  - What happens when they are overwhelmed?
  - Visual difficulties with tasks?
  - Do they need things repeated often? Demo'ed?

### Informal Evaluation Measures

- Informal—often more helpful than formal measures!
  - How do they transition in the hallways? Lunch room?
  - ► How do they do with transitions?
  - ► New learning abilities?
  - Carryover of skill?
  - Mental flexibility—are they rigid in how they think and process information?
  - How long can they sit and attend? Do they have a calm body when sitting?
  - Assess processing speeds—how long does it take for them to respond?
  - Are they an accurate historian?

### Informal Evaluation Ideas

- Observation in various settings—just watching can tell you SO much!
- ▶ Tell me about yourself
- Generative naming (timed or untimed, simple category or more complex)
- Compare/contrast familiar word pairs
- Responsive naming
  - Word finding abilities, receptive language skills
- Following directions in any setting, with background noise, varying complexity
- Numbers in reverse order, alphabetizing words, sequencing items based on a given characteristic
  - ▶ Working memory, attention
- Clock drawing (as appropriate for age)
  - Organization, planning and execution, following directions
- Verbally describe steps to brush teeth, get ready for school, make scrambled eggs
  - Planning, organization of verbal message, long term memory recall
  - Or sequence steps to complete a familiar task
- Novel board game/card game
  - ▶ Working memory, attention, receptive language skills, social skills (turn taking), sequencing, visual scanning

## Cognitive Fatigue

- Cognitive fatigue is present in nearly every patient recovering from a TBI/ABI—Why?
  - The energy once used to attend, process language, locate words, organize information, etc is now being used to heal the brain.
    - Ex: Energy needed to sit in a chair, energy to tune out background noise
  - ▶ They are working significantly harder to do things that came easily before
  - Once the tank is empty, it will have to be refilled.
  - ▶ Consider (or ask) how a student is sleeping; rest following an injury is important for recovery.

#### ► How to spot it

- Change in the quality of work
- Zoning out or distracted
- ► Task avoidance
- Behavior changes—grouchy, short tempered, etc.
- Frustration with a task they know how to do
- Disorganization

# Environment can have an effect on outcomes and performance!

- Testing Environment
  - Quiet
  - ► Limited to no distractions
  - ► 1:1 setting
  - Repetitions allowed, in general
  - Untimed, typically

- Classroom Environment
  - Background noise to tune out
  - ► Distractions
  - ► More people
  - More difficult to ask for help
  - Time constraints—have to move on to the next activity, class, etc

\*\*Important to consider BOTH environments since performance can vary so significantly.

#### School Planning I HAVE ALL OF THIS GREAT INFO—WHAT DO I DO WITH IT?!

# IDEA's Definition of "Traumatic Brain Injury"

- Our nation's special education law, the Individuals with Disabilities Education Act (IDEA) defines traumatic brain injury as...
- "...an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psycho-social 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." [34 Code of Federal Regulations §300.7(c)(12)]

#### IEP vs 504

#### IEP

- This is a plan or program developed to ensure that a child with an identified disability who is attending an elementary or secondary educational institution receives specialized instruction and related services. The IEP is developed by a team of individuals from various educational disciplines, the child with a disability, family members, and/or designated advocates.
- ► An IEP typically includes the following:
  - The involvement and progress of the child with a disability in the general curriculum.
  - ► All related services for which the child qualifies.
  - Appropriate educational accommodations necessary for the child to be successful.
  - The child's present levels of educational performance.
  - Measurable annual goals and objectives for the child's education.
  - Parent must sign off on the plan and is an active participant in the process

#### 504

- The 504 Plan is a plan developed to ensure that a child who has a disability identified under the law and is attending an elementary or secondary educational institution receives accommodations that will ensure their academic success and access to the learning environment.
  - Parent does not have to sign off on the plan

### CHOA Handout

https://www.choa.org/-/media/Files/Childrens/patients/schoolprogram/iep-504-resourcepage.pdf?la=en&hash=BF719764C11B474F8659306C061E00FD938CE 5D0

#### IEP vs 504

- Not all students who have disabilities require specialized instruction.
  - For students with disabilities who do require specialized instruction, the Individuals with Disabilities Education Act (IDEA) controls the procedural requirements, and an IEP is developed.
  - The IDEA process is more involved than that of Section 504 of the Rehabilitation Act and requires documentation of measurable growth.
  - For students with disabilities who do not require specialized instruction but need the assurance that they will receive equal access to public education and services, a document is created to outline their specific accessibility requirements. Students with 504 Plans do not require specialized instruction, but, like the IEP, a 504 Plan should be updated annually to ensure that the student is receiving the most effective accommodations for his/her specific circumstances.

## Supports

- In general, I recommend giving these students as much support as possible initially. It is much easier to take supports away than it is to add them later.
  - If they don't use or need the supports, GREAT!! We want them to heal, grow, and be more independent.
- We don't want to set them up to fail.
  - We don't know how they will respond to this new environment
  - ▶ What works in one class/subject may not in another
  - Performance may fluctuate—and we need to be ready to meet them where they are.
  - ► Frustration tolerance is typically low
  - Depression can be a factor as they recover

## Accommodations vs Modifications

#### Accommodations

An accommodation is a support or service that is provided to help a student fully access the general education curriculum. Accommodations provided during classroom instruction and assessments must also be provided during state assessments, if permitted.

- Change how a child learns or accesses the curriculum
- Change the way materials are presented
- Change the way a student can respond
- Allow students with disabilities the opportunity to complete the same curricular activities as peers
- Keep intact the objectives of the content or activity
- Enable the student to bypass the effects of the disability
- ► Help remove barriers

#### Modifications

Modifications are changes to course content, required work, or instructional level. They change the learning goal for an individual student and are used when the general curriculum is too advanced for a student. Modifications usually involve hanging an assignment or objective.

- Change what a child is taught or expected to do in school
- Individualizes changes made to the content and performance expectations for students
- Change the complexity level of information
- Modify the course or activities/objectives to meet the needs of the learner
- Allow a student with a more significant learning need to experience the same curriculum as his or her peers, but with different learning outcomes

# Strategies and Supports

- Errorless Learning—minimizes opportunity for errors, inaccurate recall, frustration.
- Extended time to complete ALL tasks
  - Limit time constraints on tasks when possible
- No cold-calling in class, especially if they have aphasia/language involvement
- Reduced length and complexity of tasks without sacrificing quality of work
- Frequent breaks for fatigue
- Rephrasing of materials
- Notes provided ahead of time
- Cloze notes
- Note taker
- Voice to text option for students with dominant hand involvement
- Visual supports (red line anchor for reading, visual cues to draw attention)

- Repeat back and verify strategy for comprehension
- ► Graphic Organizers
- Presets for information or to a change in routine
- Multiple repetitions of information
- Clear, consistent expectations and routines
- Direct instruction of what is needed
- Internal and external cueing systems
- ▶ Peer models, when appropriate
- Frequent re-orientation to tasks
- Ask the student how they want to be helped
- Try not to make assumptions or projections
  - Ex: Ask the student how many problems they think they can do or will get correct

### Classroom Set Up

#### Consider seating

- Preferential seating (often in front, close to teacher or next to para)
- Comfortable chair/position—may need PT for this depending on their level of impairment.
- Clean, organized work surface
- Away from distractions
  - ► Auditory distractions (AC unit, hum of lights, ticking of clock, clicking of keyboard)
  - Visual distractions (windows, doors, flashing lights/screens)
- Consider how materials are presented
  - Visual supports for spoken information
  - High contrast
  - ► Larger font, picture
  - ▶ Front and back copies
  - Writing on a test vs back and forth from bubble sheet/answer sheets

#### Classroom Set Up

- Routines and Predictability
  - Students with TBI/ABI rely heavily on routines, predictable schedules.
  - Preset them prior to changes, remind them frequently
- Breaks for cognitive fatigue, especially if it is a screen heavy lesson/day
- Let them know how you will grade them
  - If you're looking at comprehension, don't grade for spelling or grammar.
  - Reduce the complexity/expectations and communicate what it is you are grading/looking for

### Goals

- Goals should be specific, functional, and measureable but may be more broad than typically seen with articulation, developmental language, etc.
  - Ex: Goals to work on working memory won't be a specific as addressing /s/ at word, phrase, sentence level.
- Goals will likely be met more quickly than traditional IEP goals, especially if the goal is targeting previously learned/mastered skills prior to injury.
  - May meet several times a year to update progress, goals, and supports needed—this is what we hope for!
- What level of support do they need?
  - Does this change or is it consistent across settings and tasks?
- What compensatory strategies do they need?
- Do they need assistance to identify and implement them?
  - Are they using strategies independently?
  - ► Task for setting specific?
  - External vs internal?
- Can they generalize skills across settings?

### Goals

- Consider what goals will be addressed individually, in group settings, in cafeteria, bus, playground, etc.
  - Write a goal with these different environments in mind
- Ultimate goal:
  - Increased independence/less support
  - Internalization of strategies
  - Generalization of skills across tasks and settings
  - Increased confidence in abilities
  - Deficit awareness
  - Functional abilities in all settings

### Sample Goals

- Student will: follow x step directions with x% accuracy with (min/mod/max/HOH) supports
- Student will: verbally respond to questions in the classroom setting x amount of trials with increased time and presets.
- Student will: sustain attention to complete x task with increased time x% accuracy, x supports.
- Student will: initiate need for assistance in x3/5 opportunities via any modality.
- Student will: write name and accurate date on all activities with preset, 75% of opportunities.
- Student will: verbally summarize 3 of 5 tasks completed in classroom setting with assistance for word finding as needed, 75% of the time.
- Student will: respond to greeting and closing 100% of the time, given increased time.

### Sample Goals

- Student will: engage in conversational turn taking 2x with peer to complete an activity with x support x times per week
- Student will: communicate classroom needs via any modality x% of the time with x level of support
- Student will: indicate lunch choice in the cafeteria with x amount of support, x/5 days per week
- Student will: route plan and navigate to/from classes with supervision
- Student will: utilize compensatory memory strategies to keep up with homework assignments/important dates with supervision, x amount of assistance
- Student will: verbalize steps needed to complete a multi-step classroom project with x amount of assistance
- Student will: identify preferred study strategies and utilize them to prepare for upcoming quiz/test with x amount of support, x% of the time.

### Sample Goals

- Student will: contribute to classroom discussions x number of times per week with preset and increased time for thought formulation.
- Student will: demonstrate understanding of the signs of cognitive fatigue and advocate for taking a break as needed, 80% of opportunities.
- Student will: follow a visual class schedule with x amount of support, 90% of opportunities.
- Student will: recall and execute their locker combination 90% of the time with fading supports (ideally less support throughout the year)
- Student will: utilize a graphic organizer to assist in composing a 5 sentence paragraph passage on a preferred topic with no more than 3 spelling errors in 3/5 opportunities.
- Student will: demonstrate functional working memory skills to locate page in textbook 80% of the time on the first attempt.
- Student will: demonstrate functional organizational skills by locating homework assignments on the first attempt 80% of the time.

#### Treatment Ideas

- Pick tasks that will give you the most bang for your buck and will allow you to see many skills at work, even though you are targeting one area specifically.
- Consider how relevant a task is for a student
- Make it meaningful and motivating whenever you can
  - Or verbalize why you chose a specific activity/how it will affect them.
- Choose an activity that is just challenging enough that they will participate but not shut down—easier said than done!

### Treatment Ideas

- Classroom activities/tasks
  - Relevant, functional, and already planned as part of their day
  - Easy to track performance and outcomes
- Board games, card games: Address several areas and fun for students!
  - Uno, Phase 10, Guess Who, Headbands, Outburst, Racko, Battleship, Wh Bingo, Sudoku puzzles, crossword puzzles, Go Fish, memory/picture match
  - Craft activities for younger students
- Receptive Language: Barrier games, verbal directions for activities, Simon Says, story retell, Telephone game,
- Expressive Language: Don't Say It/Taboo, Scrabble, Word finding games, crossword puzzles, I Spy with descriptions
- Pragmatic/Social: Social Thinking curriculum, group activities, hypothetical situations, conversations, real time practice/role play, peer modeling
- Reading Comprehension: reading directions to complete tasks, story reading
- Written Expression: making lists, writing sentences with target words, story writing

### Treatment Ideas

- Orientation: Orientation logs, calendars, visual cues and practice
- Memory (short term and working memory skills)
  - ► Recall of information with a delay
  - Numbers in reverse order
  - Alphabetize word list
  - Carryover of information
  - Story retell after a delay

#### ► Attention

- Any task can target attention!
- Specific syllable/figure cross out, completing tasks with background noise/distractions, play a game while doing targeted practice

#### Executive functioning

Games, mazes, deductive reasoning puzzles, why questions, inferential reasoning questions with RC, hypothetical situations, word problems, counting change, functional math problems (telling time, money calculations), plan and execute a tasks, Apples to Apples (providing rationale for chosen card)

#### Organization

Sequencing of steps, alphabetizing, list making, sorting and categorization

### Who Else Can Help?

- PT/OT/ST from hospital setting or outpatient
- Vocational Rehab counselor for transition/vocational support
- Recreational therapists
- Neuropsychologists for comprehensive testing
- Vision specialists, neuro ophthalmologist (may wait to evaluate depending on post accident timing)
- Augmentative Communication team, Assistive Technology specialists
- Pediatric psychologist to understand behaviors, how to support
- Physiatrist—doctor who specializes in rehab
- Hospital teacher, if applicable

#### Questions? THANK YOU! CONTACT INFORMATION: ANDREALWITT@GMAIL.COM

#### Resources

- https://www.ncbi.nlm.nih.gov/books/NBK448151/
- https://www.hopkinsmedicine.org/health/conditions-anddiseases/traumatic-brain-injury
- www.Biausa.org
- https://www.biausa.org/brain-injury/about-brain-injury/nbiic/what-isthe-difference-between-an-acquired-brain-injury-and-a-traumaticbrain-injury
- https://www.doe.in.gov/sites/default/files/specialed/accommodationsvs-modifications-comparison-chart.pdf
- https://brookespublishing.com/product/ptbi/
- https://www.washington.edu/accesscomputing/what-differencebetween-iep-and-504-plan
- https://www.academictherapy.com/detailATP.tpl?eqskudatarq=DDD-1321