Pediatric and Adolescents

Learning Objectives

Be able to discuss the disruption in trajectory of child development interrupted by brain injury

Be able to identify the diagnostic criteria for Shaken Baby Syndrome/Abusive Head Trauma

Be able to explain the types of educational accommodations available under a Section 504 plan

Be able to describe the process of gaining access to special education supports and services

Be able to articulate why the traditional 3-year or triennial re-assessment cycle utilized in special education may not be appropriate for students with brain injury

Be familiar with options for special education for children in private or parochial schools

Be able to give an example of an Individual Health Care Plan

DEVELOPMENT AND DEVELOPMENTAL DISRUPTION

Peak Maturation Mileposts

Most brain maturation occurs from birth to 5 years. Injury in that time frame may be the most devastating time for injury to occur.
Brain Maturation by Lobe

PARIETAL-OCCIPITAL REGION

Age Increments

% of Maturation Increments

0.0% 1.0% 2.0% 3.0% 4.0% 5.0% 6.0% 7.0% 8.0%

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Development Disruption

Performance

Age

ABUSIVE HEAD TRAUMA/SHAKEN BABY SYNDROME (AHT/SBS)

AHT/SBS

Girls 42%
Boys 58%

Biological Father 56%
Boyfriend of Mother 16%
Biological Mother 15%
Babysitter 5%
Other 8%

AHT/SBS Outcomes

mTBI IN CHILDREN AND ADOLESCENTS
Concussion and mTBI

- Second Impact Syndrome
- Persistent symptoms

Return to Play or School

- State concussion legislation
- Strategies for recovery
- Evaluation for return

Coordinating Medical and Rehabilitation Systems with School Reintegration

Educational Needs

- Motor impairments
  - Gross and fine motor, strength, coordination, speed; may also include rigidity, tremors, spasticity, ataxia, or apraxia
- Physical effects
  - Disruption in growth, eating disorders, development of diabetes, or thermoregulation difficulties
- Peeling disorders
- Dysphagia
- Sensory impairments
  - Vision, hearing
- Communication impairments
  - Expressive and receptive language
  - Pragmatics

Cognitive impairments
- Attention, memory, executive functioning, speed of processing, splinter skills
- Academic or learning difficulties
- Fatigue
- Physical and cognitive
- Medical issues
  - Seizures, headache, pain, orthopedic issues
- Social-emotional or behavioral difficulties
- Family difficulties
- Post-school or vocational issues

Common Long Term Effects

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>The Student...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>Is unable to recall previously-learned information that serves as the foundation for new learning</td>
</tr>
<tr>
<td></td>
<td>Cannot remember a series of two to three step directions</td>
</tr>
<tr>
<td></td>
<td>Is unable to grasp new concepts without repeated exposures</td>
</tr>
<tr>
<td></td>
<td>Has difficulty recalling the day's schedule, what was assigned for homework, or what materials to bring to class</td>
</tr>
<tr>
<td>Attention and Concentration</td>
<td>Is distracted by normal classroom activity</td>
</tr>
<tr>
<td></td>
<td>Is delayed in responding to questions</td>
</tr>
<tr>
<td></td>
<td>Has difficulty staying on topic during a class discussion</td>
</tr>
<tr>
<td></td>
<td>Is unable to complete a task without prompting</td>
</tr>
<tr>
<td></td>
<td>Is unable to remember the middle of a conversation</td>
</tr>
<tr>
<td></td>
<td>Becomes fatigued by mid-afternoon and appears uninterested in activities</td>
</tr>
<tr>
<td>Migraines or Headaches</td>
<td>Has difficulty organizing and completing long-term projects</td>
</tr>
<tr>
<td></td>
<td>Has difficulty in response to unexpected or new tasks or activities</td>
</tr>
<tr>
<td></td>
<td>Is unable to come up with solutions to problem situations (e.g., lunch money)</td>
</tr>
<tr>
<td></td>
<td>Has difficulty swallowing and difficulty maintaining body posture</td>
</tr>
<tr>
<td></td>
<td>Has difficulty evaluating and altering performance</td>
</tr>
</tbody>
</table>
Common Long Term Effects

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>The Student...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Skills</td>
<td>Has difficulty taking turns in a conversation</td>
</tr>
<tr>
<td></td>
<td>Is unable to summarize and articulate thoughts</td>
</tr>
<tr>
<td></td>
<td>Does not understand the meaning of a conversation when figurative language is used</td>
</tr>
<tr>
<td></td>
<td>Is unable to take notes while listening to the lecture</td>
</tr>
<tr>
<td></td>
<td>Has difficulty copying information from the board or projection unit</td>
</tr>
<tr>
<td></td>
<td>Talks around a subject or uses indefinite words</td>
</tr>
<tr>
<td>Visual Spatial Skills</td>
<td>Has difficulty completing simple math problems when presented with a worksheet</td>
</tr>
<tr>
<td></td>
<td>Completes only problems on one-half of the page due to difficulty seeing objects</td>
</tr>
<tr>
<td></td>
<td>Becomes disoriented in the hallway and has difficulty finding the classroom</td>
</tr>
<tr>
<td></td>
<td>Takes an inordinate amount of time to produce written material</td>
</tr>
<tr>
<td>Behavioral and Emotional Effects</td>
<td>Students say or do inappropriate things resulting from social inadequacy</td>
</tr>
<tr>
<td></td>
<td>Is unable to start or stop an activity without assistance</td>
</tr>
<tr>
<td></td>
<td>Impulsively leaves the seat or classroom</td>
</tr>
<tr>
<td></td>
<td>Becomes emotionally frustrated</td>
</tr>
</tbody>
</table>

Changes in Behavior

- Difficulty with short-term memory
- Reduced behavior control
- Limited executive functioning
- Limited awareness of others’ expectations of them
- Misperception of interaction
- Limited awareness of body cues
- Communication deficits
- Inattention
- Impulsivity
- Disinhibition
- Inflexibility
- Emotional lability

Section 504 of the Rehabilitation Act of 1973

- Requires schools receiving federal funding to provide reasonable accommodations to allow an individual with a disability to participate
- Students qualify for a 504 Plan if they have a presumed disability
- The term disability means that an individual has a physical or mental impairment that substantially limits one or more major activities; has a record of the impairment; or is regarded as having an impairment
- Can range from basic classroom interventions to a formal plan

Individuals with Disabilities Education Act (IDEA)

- Federal education mandate to provide public education through special education and support services to children with eligible disabilities
- Special education is defined as Specialized Academic Instruction (SAI) and services and are delivered at no cost to meet the need of a child with a disability
- An Individualized Education Plan (IEP) starts with the assessment process to determine if child meets criteria to receive special education support

Developing the IEP Document

- Assessments
- Present Level of Academic Achievement and Functional Performance (PLAAFP)
- Goals (review more often than required)
- Determination of Specialized Academic Instruction (SAI)

Services for Children in Charter and Private Schools
Transitions
Multiple transitions over the years – grade to grade, elementary to middle to high school, to graduation – can be difficult at times for any student and particularly troublesome for students with brain injury.

Learning Objectives
- Be able to give an example of neuropsychological assessment tools frequently utilized by the military to identify the areas of function which may have been affected after brain injury
- Be able to distinguish between the effects of brain injury in combat and peacetime
- Be able to distinguish between the causes of brain injury in combat and peacetime
- Be able to discuss the diagnostic, treatment, and rehabilitation options for patients with brain injury and/or PTSD symptoms
- Be able to describe the interaction and cascading effects of mTBI symptoms
- Be familiar with the VA Polytrauma System of Care
- Be able to summarize elements of a Community Integrated Rehabilitation program

Incidence
- 22% TBI and Ocular
- 77% TBI and Orthopedic
- 1% TBI and Other

Four Levels of Blast Related Injuries
- Combat Related Injuries
- Peacetime Related Injuries
- Anywhere: falls, motor vehicle accidents
Four Levels of Blast Related Injuries

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristic</th>
<th>Body Part Affected</th>
<th>Type of Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Unique to high order explosive (HE), results from the over-pressurization wave with body surfaces.</td>
<td>Gas filled structures are most susceptible - lungs, GIT, and middle ear.</td>
<td>Blast lung; Tympanic membrane rupture &amp; middle ear damage; Abdominal hemorrhage &amp; perforation (split rapture); Concussion (TBIs without physical sign of head injury)</td>
</tr>
<tr>
<td>Secondary</td>
<td>Result from flying or falling debris and bomb fragments.</td>
<td>Any body part may be affected.</td>
<td>Penetrating ballistic (fragmentation) or blunt injuries - eye penetration.</td>
</tr>
<tr>
<td>Tertiary</td>
<td>Result from individuals being thrown to the blast area, body impacts ground or objects.</td>
<td>Any body part may be affected.</td>
<td>Fracture and traumatic amputation - closed and open brain injury.</td>
</tr>
<tr>
<td>Quaternary</td>
<td>Explosion related injuries, bruises, or injuries not due to primary, secondary, or tertiary mechanisms. Baseline or complications of existing conditions.</td>
<td>Any body part may be affected.</td>
<td>Burns (flash, partial, and full thickness); Crush injuries; closed &amp; open brain injury; A Tommy; COPD; asthma breathing problems from dust, smoke, or toxic fumes; Angina - Hyperglycemia, hypertension.</td>
</tr>
</tbody>
</table>

Screening and Testing

- Military Acute Concussion Evaluation (MACE)
  - Used in conjunction with reports of loss of consciousness and post-traumatic amnesia.
- Neurobehavioral Symptom Inventory (NSI)
- State-Trait Anxiety Inventory (STAI) and the Automated Neuropsychological Assessment Metrics (ANAM)
- The ANAM Simple Reaction Time and Continuous Performance subtests
- Repeatable Battery for the Assessment of Neuropsychological Status (RBANS)

Treatment Considerations for Concussion & mTBI

Medical Discharge
Returning Home

Community Integrated Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Participant Characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurobehavioral Program</td>
<td>Severe behavioral disorders; needs 24-hour supervision</td>
<td>Residential setting; Intensive behavioral treatment</td>
</tr>
<tr>
<td>Residential Community Program</td>
<td>Requires 24-hour supervision or support</td>
<td>Residential setting with community access; Integrated comprehensive treatment</td>
</tr>
<tr>
<td>Comprehensive Holistic Treatment</td>
<td>Need for intensive services; benefit from improved awareness</td>
<td>Day programs; Integrated, multimodal rehabilitation</td>
</tr>
<tr>
<td>Home-based Program</td>
<td>Able to reside at home; able to self-direct care</td>
<td>Staff, telephonic and web-based supports and services in home; May need outpatient supplemental services</td>
</tr>
</tbody>
</table>

Families

Learning Objectives

- Be able to discuss the concept of caregiver burden with respect to brain injury
- Be able to identify helpful strategies that are useful in working with families when one family member has a brain injury
- Be able to describe the impact of brain injury on marital satisfaction
- Be able to give an example of current family interventions specific to brain injury

- Be familiar with the theoretical frameworks without disturbing families affected by brain injury

Background

- Caregiver burden
- Optimal family functioning
- Family needs
Caregiver Burden

Stressors
- Acute phase: catastrophe and unexpected responsibilities
- Rehab phase: added unfamiliarity, confusion, uncertainty, and pressure
- Post-discharge: isolation and distress

Relief
- Realistic expectations
- Hopeful attitude
- Reliance on others for support

Theoretical Frameworks

<table>
<thead>
<tr>
<th>Family Systems Theory (FST)</th>
<th>Family Centered Service (FCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grounded in the notion that the whole is greater than the sum</td>
<td>Similar to FST; it is about mutual respect, information sharing, participation and collaborative partnerships between the survivor and their family</td>
</tr>
<tr>
<td>Encourages practitioners to think of interactions which occur between family members’ thoughts, beliefs and actions; they influence decisions and behaviors</td>
<td>Families are considered to be the experts</td>
</tr>
<tr>
<td>Families have shared beliefs and ways of communicating that affect the way they understand rehab goals and outcomes</td>
<td>Assumes families have strength and capacity to solve problems</td>
</tr>
</tbody>
</table>

Family Systems Theory (FST)

- Encourages practitioners to think of interactions which occur between family members’ thoughts, beliefs, and actions; they influence decisions and behaviors.
- Families have shared beliefs and ways of communicating that affect the way they understand rehab goals and outcomes.
- Families are considered to be the experts.
- Assumes families have strength and capacity to solve problems.

Family Centered Service (FCS)

- Similar to FST; it is about mutual respect, information sharing, participation and collaborative partnerships between the survivor and their family.
- Families are considered to be the experts.
- Assumes families have strength and capacity to solve problems.

Theoretical Frameworks

- Resilience Theory
- Cognitive Behavioral Theory & Cognitive Behavioral Family Theory (CBT/CBFT)

Brain Injury Family Interventions (BIFI)

<table>
<thead>
<tr>
<th>Sample BIFI Topic</th>
<th>Implemented by non-licensed professional</th>
<th>Back up with licensed professional</th>
<th>License Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is normal after TBI</td>
<td>Yes</td>
<td>Yes</td>
<td>X</td>
</tr>
<tr>
<td>Brain injury affects the entire family</td>
<td>X</td>
<td>X</td>
<td>Yes</td>
</tr>
<tr>
<td>Coping with change and loss</td>
<td>X</td>
<td>X</td>
<td>Yes</td>
</tr>
<tr>
<td>Taking care of yourself</td>
<td>Yes</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Setting realistic goals</td>
<td>Yes</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Focusing on gains and accomplishments</td>
<td>Yes</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Considerations and Techniques for Professionals Working with Families

Other Considerations for Professionals