

How Brain Injury Functional Assessment Drives Treatment

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Learning Objectives

- ▶ Become familiar with the Mayo Portland Adaptability Inventory-4
- ▶ Understand common neurobehavioral manifestations
- ▶ Gain understanding on effective treatment philosophies when working with individuals with an acquired brain injury

What is a Brain injury?

The Academy of Certified Brain Injury Specialist define brain injury as:

An Acquired Brain Injury (ABI) is an injury to the brain that has:

- ▶ Occurred after **birth** and is not hereditary, congenital or degenerative.
- ▶ The injury commonly results in a change in neuronal activity, which affects the physical integrity, the metabolic activity, or the functional ability of the cell.
- ▶ The term does not refer to brain injuries induced by birth trauma.
- ▶ Traumatic brain injury (TBI)



Causes of ABI

- TBI
- Tumor
- Blood clot
- Stroke/Aneurism
- Seizure
- Toxic exposure (e.g., substance abuse, ingestion of lead, inhalation of volatile agents)
- Infections (encephalitis, meningitis)
- Metabolic disorders (insulin shock, diabetic coma, liver and kidney disease)
- Neurotoxic poisoning
- Lack of **oxygen** to the brain (hypoxia & anoxia)



Who here works with individuals with a brain injury?

How do you know?



Screening for Brain Injury

- ▶ Review of medical history
- ▶ Utilization of screening tools
 - ▶ Brainline.org
 - ▶ Nashia.org
 - ▶ Iowa Department of Public Health (Iowa Head Injury Screening Instrument)

T-B-I SCREENING

Name: _____ Date: _____

Treatment: Brain Injury, or TBI, is "...an insult to the brain caused by an external force that results in an altered consciousness and one or more impairments of brain functioning. It may be temporary or permanent." (CDC)

Use these questions to help a person recall injuries that may have involved an impact to the head or neck.

		YES	NO
Have you ever been knocked out following an accident, an assault, or any other injury?			
Have you ever been injured ... in a car or bike accident?			
... from being hit by something?			
... in a fight?			
... during sports?			
... by a family member?			
... while serving in the military?			
... being near an explosion?			
Have you ever been treated in an emergency room, or hospitalized following an injury?			
Were you ever injured and should have received medical attention but didn't?			

With the identification of a possible trauma, now evaluate whether any of the injuries caused an altered state of consciousness.

For each injury, determine if the person was hit in the head, near an explosion, or if the head could have been shaken violently. If so, was the person dazed or confused, had a period of memory lapse, or actually knocked out or unconscious?

Incident	Age at time	How you dazed or confused (D/C, how long, or how long you were hospitalized)	If knocked out, how long?	How you treated (ER, hospital, or ambulance, etc.)
B				
BEHAVIORAL EFFECT IMMEDIATELY: An altered state of consciousness evident in confusion, impaired memory for events around the injury or loss of consciousness.	D/C: Mon: 80			ER: Hosp: Rehab:
	D/C: Mon: 80			ER: Hosp: Rehab:
	D/C: Mon: 80			ER: Hosp: Rehab:
	D/C: Mon: 80			ER: Hosp: Rehab:

Why is Screening Important for Effective Treatment?

- ▶ Acquired brain injury may result in mild, moderate, or severe impairments that may be temporary or permanent in one or more areas including:
 - **Cognition** (i.e. speech-language communication, memory, attention and concentration, reasoning and abstract thinking)
 - **Physical functions** (i.e. ambulating, seeing, hearing, balancing)
 - **Psychosocial behavior** (i.e. social skills, anger management, impulsivity)

Functional Assessment

- ▶ The Center for Outcome Measurement in Brain Injury
 - ▶ An online resource for those needing detailed information and support in regards to outcome measures for brain injuries.
 - ▶ Many of the assessments are in the public domain and are free



Mayo Portland Adaptability Inventory-4

- ▶ Developed by James Malec
- ▶ Intended to be an in-person assessment with
 - ▶ The survivor
 - ▶ A family member of significant other
 - or
 - ▶ A clinician who is knowledgeable of the individual's abilities
- ▶ A 35-item instrument that assesses disability after brain injury
- ▶ The first 29 scale items reflect the current status of the individual with brain injury
- ▶ The additional six, unscored items identify the presence of other factors that may be contributing to the individual's current status

Mayo Portland Adaptability Inventory-4

- ▶ Items are scored on a 5-point Likert scale and represent the range of physical, cognitive, emotional, behavioral and social problems that people with acquired brain injury may encounter.
- ▶ Interprets raw scores into T-scores based on who is reporting
- ▶ Has been shown in to good validity and reliability across raters
- ▶ MPAL-4 has three subscales:
 - ▶ Ability Index (range 0-47)
 - ▶ Adjustment Index (range 0-46)
 - ▶ Participation Index (range 0-30)

Abilities

- | | |
|-----------------|--------------------------|
| ▶ Mobility | ▶ Attention |
| ▶ Use of hand | ▶ Concentration |
| ▶ Vision | ▶ Memory |
| ▶ Hearing | ▶ Fund of information |
| ▶ Dizziness | ▶ Novel problem-solving |
| ▶ Communication | ▶ Visuospatial abilities |

Adjustment

- ▶ Anxiety
- ▶ Depression
- ▶ Irritability, anger aggression
- ▶ Pain and headache
- ▶ Fatigue
- ▶ Inappropriate social interaction
- ▶ Impaired self-awareness
- ▶ Problems with family /significant relationships



Participation



- ▶ Initiation
- ▶ Social contact with friends/ work associates
- ▶ Leisure and recreational activities
- ▶ Self-care
- ▶ Residence
- ▶ Transportation
- ▶ Paid or other employment
- ▶ Managing money and finances

Pre-existing and associated conditions

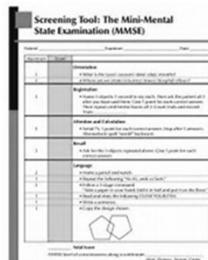
- ▶ Alcohol use
- ▶ Drug use
- ▶ Psychotic symptoms
- ▶ Law violations
- ▶ Other physical impairments
- ▶ Other cognitive impairments



Additional Assessments

- ▶ Social history
- ▶ Overt Behavior Scale
- ▶ Mini Mental Status Exam

- ▶ It should be noted that initial assessments should be a baseline



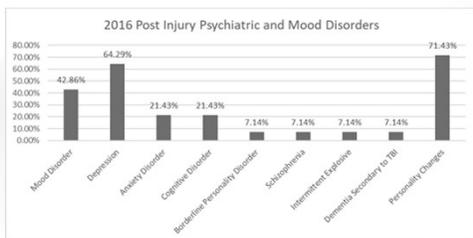
Common Neurobehavioral Changes

- Disinhibition
- Outward anger
- Low frustration tolerance
- Inappropriate sexual language or behavior
- Lack of interest (apathy)
- Difficulty initiating tasks
- Mood swings / emotional lability
- Irritability
- Depression
- Social immaturity
- Self-centered
- Confusion
- Impulsiveness
- Restlessness, agitation
- Memory

Cumulative Averages 2011-2015 Cohort Conditions Prior to Injury	2016 Cohort	Cumulative Averages 2011-2015 Cohort Conditions Post Injury	2016 Cohort
Psychiatric	71.33%	Psychiatric (See Figure 3)	90.30% 100%
Substance Abuse	67.11%	Substance Abuse (See Figure 2)	56.45% 64.29%
Medical Conditions	32.25%	Medical Conditions (See Figure 4)	87.09% 92.85%

Community NeuroRehab Outcomes Data 2011-2016

Community NeuroRehab Outcomes Data 2011-2016



Effective Treatment Approaches

- ▶ Cognitive Behavioral Therapy
 - ▶ One of the most common and evidenced based treatments for
 - ▶ Depression
 - ▶ Anxiety
 - ▶ PTSD
 - ▶ Substance abuse
 - ▶ Borderline personality disorder
 - ▶ OCD
 - ▶ Bipolar



CBT and Other Insight Based Approaches

- ▶ Can have limited effectiveness in long term change after brain injury due to
 - ▶ Memory impairments/confabulation
 - ▶ Impulsivity/disinhibition
 - ▶ Lack of awareness of deficits (anosognosia)
 - ▶ Slowed cognition

Many times survivors of brain injury are deemed resistant or unmotivated if they do not progress in treatment

- ▶ Difficulty remembering content of sessions
- ▶ Struggles in completing homework assignments

Automatic Thoughts

Our thoughts control how we feel about ourselves and the world around us. Automatic thoughts happen so quickly and so often that we are often unaware of them. They are called automatic thoughts.

Observations, our automatic thoughts are negative and automatic. Identifying these negative automatic thoughts and replacing them with more positive thoughts can improve our mood.

Situation	Automatic Thought	New Thought
Example: I have a headache and I can't go to work.	This is terrible, going to the bank is impossible because I have a headache and I can't go to work.	The headache is not terrible because I can go to work and I can take a break if I need it.

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In many cases challenging behaviors are often no more voluntarily controllable than the physical residuals of brain injury

- ▶ People's behavior is based on a complex set of variables including:
 - ▶ A culmination of past life experience
 - ▶ Specific effects of disability (i.e. physical or cognitive)
 - ▶ Interpretation of environment
- ▶ Many times positive outcomes are dependent on:
 - ▶ Understanding predisposed behaviors
 - ▶ Modification of antecedents
 - ▶ Support system and therapeutic rapport

Personal Intervention Plans (PIPs)

(McMorrow, 1997; 2003)

- Individualized plan for self management of emotions and behaviors
- A way to teach behavioral self-management and provide support
- Compensatory strategies for people who have difficulty generating options and problem solving in intense situations

Step #1 (Identify Predispositions)

I am likely to have a bad day when...

(List situations that may precede a "bad day.")

Step #2 (Identify Antecedents)

I am likely to get upset when...

(List events that produce upset for you.)

Step #3 (Identify sequence from start to finish)

When I get upset, I notice a sequence that starts with _____ and may end with _____.

(Make a list from the first sign to other things that do or could occur.)

Step #4 (Identify replacement behaviors)

When I notice that a difficult situation is coming or when I begin to get upset, I will have the most success when I...

(List the steps you need to take.)

Step #5 (Identify possible supports)

Other people can help me by...

(Identify who you need to help and list what you need them to do.)

Role of Support System

- ▶ The support system may need to assist in the development and implementation of Personal Intervention Planning
- ▶ Relationships are vital in the effectiveness of utilization of PIPs
- ▶ Must avoid power and control
- ▶ Consequence based interventions are largely ineffective in promoting long term change after brain injury

Integrating Assessment into PIPs

- ▶ Typically speaking, any deficit that is identified through assessment can be address through PIPs
- ▶ PIPs are a fluid and dynamic process that can adapt through time and as the survivor changes

Thank you

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