Neurobehavioral Considerations Relative to Rehabilitation following Brain Injury

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Objectives

Participants will

• a) iterate a working definition of neurobehavioral issues and provide examples of the potential cluster of symptoms

• b) describe how neurobehavioral issues create barriers to rehabilitative progress

• c) describe two examples to mitigate escalating maladaptive behaviors secondary to neurobehavioral issues
Clinical Research in Neurogenic Communication Disorders (CRNCS) Lab

Licensed Speech-Language Pathologist and my co-investigator is Dr. Cara Meixner, an associate professor of Graduate Psychology at JMU

Today’s presentation combines findings from several of our recent works
Disclosures

- Invited, compensated presenter
- Funding (i.e., grant) support through:
  - Commonwealth Neurotrauma Initiative Trust Fund
  - Department of Aging and Rehabilitation Services (Virginia)
• **Acquired Brain Injury (ABI)** is a global term that refers to any damage to the brain that is not of a developmental or neurodegenerative cause.

• The main causes of ABI are traumatic injury (e.g., TBI) and stroke. ABI can also be caused by oxygen deficiency, infectious disease, toxic chemical exposure, electrical shock, and brain tumor.

Definition adopted from *Virginia Brain Injury Council*, 2010; updated by Meixner and O’Donoghue, 2014. Graphic designed for this presentation by Christopher Katalinas.
Defining Neurobehavioral

- **Neurobehavioral** refers to the way the brain affects emotion, behavior, or learning.

- Needs and issues refer to the compromising *cognitive, behavioral, physical, and/or social changes* that result from an ABI.
Drew, once an active college athlete and dedicated student, experienced what he thought was a concussion as a result of tackle during football practice. Although Drew is still living at college and trying to remain a full-time student athlete, he suffers from intense headaches, light sensitivity, irritability, memory loss, and sleeplessness. The cumulative effects of not being able to focus in the classroom or train as an athlete are frustrating and isolating—and Drew’s teammates have noticed a change in his once calm and easy-going demeanor. After reluctantly visiting an athletics trainer and medical doctor, Drew was prescribed several medicines to alleviate his headaches and insomnia. Although he has experienced some relief, Drew’s inability to focus and erratic behaviors have remained unchanged; his teammates also note a spike in his use and abuse of alcohol.
Kendra, a 37-year-old individual who sustained a brain injury as a result of a car accident, was recently released from yet another skilled nursing facility after several episodes of severe agitation and aggression. Safety and wellbeing concerns from Kendra’s family grow—and ultimately, they are unable to provide, fund, or find in-state care. Out of local options, Kendra is sent to an out-of-state facility where she has started to receive necessary, multidisciplinary care. However, the financial burden placed on Kendra’s family is cumbersome and threatening—even the travel costs to visit Kendra are unsustainable.
Defining Neurobehavioral

Neurobehavioral Symptom Clustering

Cognitive
- decreased memory
- reduced processing speed
- disorganized
- poor self-regulation
- loss of attention
- cannot concentrate
- impaired executive functioning
- sensitivity
- decreased sensory functioning
- headaches
- temperature
- chronic pain
- appetite change

Behavioral
- aggressive
- apathetic
- lack of motivation
- irritability
- personality change
- disinhibition
- lack of empathy
- hostility
- impulsivity
- moodiness
- major depression
- obsessive compulsive disorder
- PTSD
- emotional distress
- anxiety and panic
- addiction

Physical
- PTSD
- major depression
- obsessive compulsive disorder
- anxiety and panic
- addiction

Psychiatric
- PTSD
- major depression
- obsessive compulsive disorder
- anxiety and panic
- addiction

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Implications

- May experience changes in personality, find problem solving difficult, experience a lack of motivation, and/or act impulsively

- **Persistent issues** often stem from compromised functional abilities that limit ability to engage in professional, social, and educational activities, leading to:
  - Underemployment
  - Institutionalization (e.g., judicial, medical)
  - Need for financial assistance
Our Research

What are the barriers to accessing crisis intervention services for individuals with brain injury?


Perceived Obstacles & Barriers for Survivors of ABI

- The Self
  - Isolation
  - Awareness
  - Communication

- The Family
  - Denial
  - Systems impact

- External Stigma
  - Invisibility
  - Laziness
  - Other stigma

- Professional Issues
  - Collaboration
  - Training & Education
  - Liability
  - Awareness & Perception

- Training & Education
  - Convenient
  - Cost effective
  - Applicable (first-hand)
  - Provided by experts

- Funding
  - Family
  - Insurance (e.g., Medicaid)
  - General systems issue

- System Resources
  - Uniformity of procedures
  - Education
  - Advocacy & Access
  - Resource availability

Meixner, O’Donoghue, & Witt (2013)
Maladaptive Behaviors and Communication Disorders

- Respondent themes emerged from the categories of “communication challenges” and “behavior”. “Communication challenges” was saturated across interviews, serving as home to the themes: “Others to understand” and “Learn to talk.”
- “Impulsive” was the most common behavior descriptor.
- The researchers queried whether and how challenges changed or evolved across the rehabilitation process. The themes were “Independence” and “Talking”.
- Plausibly, “independence” and “talking” – core to rehabilitation – may mitigate communication challenges and maladaptive behaviors. This observation constructs an overarching theme emphasizing the importance of communication (e.g., independent decision-making) and its role in recovery following TBI.

Jones, Meixner, & O’Donoghue (2016)
NB Treatment and Services

- **Continuum of care** for individuals that recognizes:
  - Recovery is not linear
  - Diagnoses are multi-complex and co-occurring
  - Services required may change over time

- Education, prevention, crisis management and stabilization, *transition to rehabilitation, and reintegration into society*

- Interdisciplinary **and** multi-agency collaboration
What Makes a Difference?

Drawing from a mixed-methods study by Harding et al. (in review).

Purpose was identifying the factors that most influence *how* improvement happens.

Focus rehabilitative care programs delivered in non-hospital, home-like, community-based environments.

Measurement using pre-post MPAI-4 change score.
Quant - Over 700 subjects with 52 classified as “highest level of change”.
Qual – 10 interviews exploring change factors

Key to Changes (findings): support, therapies, continuum of care, environment of care
NASHIA initiatives for access to affordable and appropriate interprofessional care across the 50 states.

The importance of community-based programming that provides short and long-term plans

Recognition of the Olmstead Act and the need to actively promote person centered care. People wishing to move into community or to their home are given opportunities and supports to that end.
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A complete reference list is also available upon request.