Executive Cognitive Functions:

Strategies to Facilitate Community Participation and Life Satisfaction following Severe TBI

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Course Objectives

At the conclusion of the course, participants will be able to:

• Describe how executive dysfunction can impact one’s ability to participate successfully in adult roles and relationships

• Describe the role of goal setting in the assessment and treatment process following TBI

• Identify how impaired awareness of deficits impacts the recovery process following TBI
The Challenge of TBI Rehabilitation

• Getting from here......

• To here ......
• Often a long, complex, and multidimensional road to recovery

The importance of client centeredness and motivation ......

Consideration of what clients WANT to work on versus what they NEED to work on

NONCOMPLIANCE?
Beyond Impairments: Traumatic Brain Injury – Some Key Rehabilitation Outcomes

- Relationships / social participation
- Work / School
- Leisure
- Life Satisfaction
- Coping / Stress Management
- Mobility / Transportation
- Home Management
- Meaningful Daily Routine
Damage to frontal lobes and subcortical limbic system contribute to impaired executive functions.

Profound impact on all aspects of higher level behavior and participation (home, social, vocational, leisure) – initiation, motivation, attention, learning, impulse control, conformity to social norms, and ability to anticipate consequences.
Limbic Drives

- Hunger
- Thirst
- Sex
- Appropriation of Resources
- Control/Dominance
- Defense/Self-Protection/Survival
# Stages of Cognitive Recovery (Rancho Los Amigos / Hagen, 1997)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>No response: Generalized response</td>
<td>Total assistance</td>
</tr>
<tr>
<td>II</td>
<td>Generalized response</td>
<td>Total assistance</td>
</tr>
<tr>
<td>III</td>
<td>Localized response</td>
<td>Total assistance</td>
</tr>
<tr>
<td>IV</td>
<td>Confused-agitated</td>
<td>Maximal assistance</td>
</tr>
<tr>
<td>V</td>
<td>Confused-inappropriate, non-agitated</td>
<td>Maximal assistance</td>
</tr>
<tr>
<td>VI</td>
<td>Confused-appropriate</td>
<td>Moderate assistance</td>
</tr>
<tr>
<td>VII</td>
<td>Automatic-appropriate</td>
<td>Minimal assistance for daily living skills</td>
</tr>
<tr>
<td>VIII</td>
<td>Purposeful-appropriate</td>
<td>Stand-by assistance</td>
</tr>
<tr>
<td>IX</td>
<td>Purposeful-appropriate</td>
<td>Stand-by assistance on request</td>
</tr>
<tr>
<td>X</td>
<td>Purposeful-appropriate</td>
<td>Modified independent</td>
</tr>
</tbody>
</table>
Categories of Executive Cognitive Functions (Zoltan, 2007)

- Problem Solving
- Goal Setting
- Self-Awareness
- Initiation
- Mental Flexibility
- Self-Monitoring
- Abstraction / Generalization
- Planning
As “control” functions, executive cognitive functions enable people to engage in controlled behavior beyond that based on impulse alone.

- Facilitate successful adaptation to unpredictable environments, stressful situations, and challenging tasks.
Hierarchy of Executive Functions

- Self Awareness
  - Anticipation
  - Goal Selection
  - Pre-Planning
  - Monitoring

- Drive
- Impairments
- Behavior
- Sequencing

Adapted from Stuss and Benson
Self-Awareness

- Decreased awareness of cognitive, emotional, and behavioral impairments is one of the greatest obstacles in TBI rehabilitation.

- Impact on client centered goal setting?

- Impact on motivation?

- Direct relationship between unawareness of impairments and poorer recovery post injury (7 and 5 years).

- Impaired awareness of deficits strongly correlated with family well being.
The Value of Daily Goals

Help clients feel organized and have a focus

Provide motivation and encourage participation in rehabilitation

Provide concrete and meaningful way to evaluate effectiveness of rehabilitation programs

* Difficult to establish client centered treatment goals when client presents with self awareness deficits
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Comprehensive Assessment

- Client centered problem identification, prioritizing, and goal setting
  - Maximizes efficiency of participation
  - Recognizes importance of client self-report
  - Fosters therapeutic relationship
  - Motivates client

- Assessment of impairments and functional capacity
  - Establish symptom / impairment presentation, severity, tolerance, impact of activity

- Neurocognitive assessment
  - Establishes recovery of symptoms, particularly in regards to important aspects of learning

- Environmental assessment
  - Creates most productive setting / conditions for learning
  - Observing client performance in actual or simulated environments
Assessment Fundamentals Across Severity and the TBI Continuum

- Client Centeredness Assessment
  - Evaluation of perceived strengths, deficits, and goals
  - Rapport Building
Engage the Client in Goal Setting

<table>
<thead>
<tr>
<th>Activity</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking on uneven surfaces</td>
<td>6</td>
</tr>
<tr>
<td>Volunteer Work</td>
<td>7</td>
</tr>
<tr>
<td>Laundry</td>
<td>5</td>
</tr>
<tr>
<td>Cooking</td>
<td>3</td>
</tr>
<tr>
<td>Washing Dishes / Cleaning Room</td>
<td>6.5</td>
</tr>
<tr>
<td>Rehab Tasks</td>
<td>5</td>
</tr>
<tr>
<td>School</td>
<td>8</td>
</tr>
<tr>
<td>Talking to People / Meeting People</td>
<td>9.9</td>
</tr>
<tr>
<td>Fishing</td>
<td>8.5</td>
</tr>
<tr>
<td>Gardening</td>
<td>8</td>
</tr>
<tr>
<td>Walking around the neighborhood</td>
<td>6</td>
</tr>
<tr>
<td>Going to Restaurants</td>
<td>8</td>
</tr>
</tbody>
</table>
Engage the Client in Goal Setting (continued)

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Performance</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking to / Meeting People</td>
<td>6.5</td>
<td>9</td>
</tr>
<tr>
<td>Fishing</td>
<td>8</td>
<td>10</td>
</tr>
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Assessment Fundamentals Across Severity and the TBI Continuum

- Evaluate Performance and Impairments / Deficits in Context of Goals
  - Establishing Baseline
Assessment Fundamentals Across Severity and the TBI Continuum

Evaluate Performance and Deficits in Context of Goals

Establishing Baseline

• *Caregiver life satisfaction among strongest predictors of emotional distress for persons with TBI.*
Structured versus Unstructured Assessment

- Combination provides balance between baseline data collection and “realistic” performance

- Use real world environments and activities that are better suited to the evaluation of executive cognitive functions

- Development of ecologically valid assessments greatly needed, especially for moderate to severe TBI
The Intervention Process
Key Considerations

- Therapeutic Relationship
- Self confidence and self-esteem
- Self-awareness and executive cognitive functions
- Client centeredness and compliance
- Stress and Learning
- Repetition vs. boredom
Therapeutic Relationship Building – Key Challenges

• Individual with TBI Ill-Prepared for “Re-Wiring”

• Self-Esteem is at a Low Point

• Impaired awareness of deficits by client

• Client likely to Reject Needed Feedback
  a. Not MR/DD – accustomed to independence
  b. Likely to Reject Feedback from Family / Resent authority
The Impact of Impaired Self-Awareness following TBI

• Makes it tough to have a good relationship with therapists

• Makes it tough to accept feedback from family and caregivers

• Makes it tougher to get back to work

• Makes it hard to establish or maintain interpersonal relationships
The Consequence of Impaired Self-Awareness

- At elevated risk for:
  - Making poor judgment decisions
  - Difficulty developing adequate coping skills
  - Experiencing difficulty coping with change
  - “The Challenge of Finding a Friend”
The Impact of Community Based Rehabilitation on Community Participation

Wheeler, Lane, McMahon (2007); Wheeler (2012)
Measure = Community Integration Questionnaire

Graphs represent admission, 3 month, and 1 year follow during participation community based rehabilitation.
Interdisciplinary rehabilitation program / life skills training
Life Satisfaction and TBI
Wheeler, Lane, and McMahon (2007)

Treatment in intensive life skills as part of a community re.Entry program versus non-treatment controls at baseline and 12 week follow-up. Significant improvements in home management and productivity noted at 12 weeks in treatment group.
The TBI Rehabilitation Process

• If relationships are always “great” during the therapy process – functional improvements may not be occurring

• Challenging the client during therapy
  – Best achieved through graded activity in a supportive relationship
  – Therapist can be “tested” by the client during this process
Suggestions on Establishing Rapport

1. Be “unconditional”
2. Be client-centered
3. Be credible
4. Be consistent
5. Adhere to professional boundaries
Contextualized Treatment

• Treatment that incorporates real-life activities that will be done in the home and community after discharge

The TBI Comparative Effectiveness of Rehabilitation Study
Corrigan and Horn (2017)

From: Rehabilitation Interventions for Traumatic Brain Injury: What Works Best for Whom – BIA USA Webinar (Jennifer Bogner, September 2017)
Contextualized Treatment: Examples

- Self Care / ADL’s
- Instrumental Activities of Daily Living
- Community Based Activities
- Conversation level language
- Swallowing
- Environmental Problem Solving
- Community Mobility
- Functional Transfers
- Wheelchair Management
- Therapeutic Recreation
- Functional Math, Reading, Writing

Bogner 2017
The Impact of Contextualized Therapy in Inpatient Rehabilitation

- The more time that is spent working directly on real-life activities, the more the person will be participating in the community within the year.

Bogner 2017
• Sometimes you may need to identify a component skill that needs to be strengthened before the person can work on the actual goal activity.

• In these situations, if it is possible to work on the component skill within the context of a real life activity, then perhaps greater benefit can be achieved.

• Persons admitted with greater disability may experience greater benefit.

Bogner 2017
Evaluating Social Interaction Skills (Fisher and Griswold, 2014)

- Initiating and terminating social interaction
- Producing social interaction
  - Gestures / flow
- Physically supporting social interaction
  - Eye contact, personal space, touch, impulsivity
- Shaping the content of social interaction
  - Questioning, disclosure, emotional expression
- Maintaining the flow of social interaction
  - Turn taking, topic transitions, flow
- Verbally supporting social interaction
  - Tone of voice, clarifies, responding, emphasizing
- Adapting social interaction
  - Adjusts, maintains plot, repeats as needed
Neurological recovery requires struggle/effort.

If struggle is too difficult, client will become overwhelmed/defeated.

Goal of therapist is to break down tasks into manageable goals that carry a high likelihood of success.
The Value of a Therapeutic Community – TBI Group Therapy

- TBI client – often show little interest in how others perceive them

- Frontal lobes – connect behavior to associated emotional states
  - If person can’t feel what the impact of their behavior has on others, they’re indifferent to behavior
The value of a therapeutic community – group therapy (cont’d)

Group members – do start to care about what others think of them so group begins to have a profound impact on behavior

Positive behavior = immediate positive feedback from friends

Unacceptable behavior = will receive immediate critical feedback from same group
The Value of Group Activities

1) Facilitate assessment of social behaviors – social microcosm

2) Provides environment for receiving feedback regarding inappropriate social behaviors

3) Provides forum for practicing skills related to social competence

4) Provides motivating environment for goal setting
Conclusions

1. Executive cognitive functions significantly impact successful community participation / re-entry following TBI

2. Assessment and treatment challenges associated with self-awareness deficits

3. Participation in unstructured daily activities facilitates awareness of deficits and fosters learning / rehabilitation

4. Therapeutic relationship and client / family participation central to optimal program outcome
Center for Outcomes Measurement in Brain Injury. [http://www.tbims.org/combi/index.html](http://www.tbims.org/combi/index.html) - source of scales / questionnaires


References (Continued)


