Objectives

Upon completion of this presentation, participants should be able to:

- Describe evidence based treatment strategies for cognitive rehabilitation
- Describe treatment approaches for mild cognitive impairment
- Understand how personal and environmental factors impact rehabilitation after brain injury
Disclosure

Relevant Financial Relationships
None

Off-Label/Investigational Uses
None
Goals of Occupational Therapy cognitive rehabilitation

• To increase participation in meaningful and productive daily activities

• To improve performance of activities of daily living and instrumental activities of daily living

• To increase performance satisfaction of activities of daily living and instrumental activities of daily living
What the clinician needs to know

• We cannot isolate and treat cognition alone. Effective cognitive rehabilitation will also consider social, behavioral, and emotional functioning.

• Development of appropriate strategies requires consideration of the environment in which a person performs their daily activities.

• Cognitive rehabilitation is a partnership between the clinician and the individual with a brain injury, as well as their family.

Sohlberg and Mateer, 2001
International Classification of Functioning, Disability, and Health (ICF)
Integrated Biopsychosocial Model

Area of focus in most medical evaluations
International Classification of Functioning, Disability, and Health (ICF) 
Integrated Biopsychosocial Model
Definitions of the Components of the Model

- **Environmental Factors**: Physical, social and attitudinal environment in which people live and conduct their lives and can act as either facilitators or barriers.

- **Personal Factors**: These make up the particular background of an individual's life and living and comprise features of the individual which is not part of the health condition or health state. Can act as either facilitators or barriers.

- **Barriers**: Produce an increase in the severity of the disability.

- **Facilitators**: Improving or even eliminating disability.
Examples of Environmental Factors

Facilitators:

- Family system with levels of adaptability and cohesion which leads to the ability to change roles when needed to support family member.

- Work in a setting in which employees are expected to share responsibilities, are very aware of each others life circumstances, routinely get together socially outside of work and have often supported each other through losses and difficult circumstances.

Barriers:

- Family system which is either overly rigid or chaotic leading to either no defined roles or great difficulty in changing roles to support family member.

- Work in a setting where each employee has defined responsibilities with little opportunity for interaction with other employees and where employees have limited knowledge each others life outside of work.
Examples of Personal Factors

Facilitators:

• Person who is open to changes in routine and new ways of doing things.

• Person who is open to receiving assistance from others to facilitate highest level of independence.

Barriers:

• Person focussed on maintenance of long-standing routines with minimal changes as the main indication of “normalcy” in day to day life.

• Person who views receiving help from others as a sign of weakness, sickness and lack of independence.
International Classification of Functioning, Disability, and Health (ICF)
Integrated Biopsychosocial Model
Effective cognitive rehabilitation is:

- Remediation
- Compensation
- Adaptation
Cognitive Strategies

• Our way of approaching tasks

• Familiar or simple tasks are approached differently than new or complex tasks

• With cognitive impairment, use of strategies must become more deliberate, more frequent, and may require cues.
How to “cue” (hint, hint)

Self Cues
(“Let me think”)

Indirect Cues
(“Where could you look?”)

Direct cues
(“Do this...”)
Common Cognitive complaints after Brain Injury

- Difficulty remembering things
- Trouble multi-tasking
- Becoming distracted easily
- Problems getting started on tasks
- Unable to finish things I’ve started
- Trouble making decisions
- Slowed thinking, taking longer to do things
- Increased irritability
- Behavior changes
Awareness

• Key for cognitive rehabilitation

• With awareness
  • Able to identify and use strategies
  • Able to self monitor

• Unfortunately, that awareness can contribute to negative thinking
  • Frustration
  • Catastrophizing
Awareness cont.

- Without awareness,
  - Unlikely to change behavior or use strategies
  - Low buy-in for rehabilitation
  - Increase awareness through caregiver questionnaires, performance prediction and review, timely feedback
Evidence Based Practice

• ACRM BI-ISIG Cognitive Rehabilitation Task Force
• Practice Standards
• Practice Guidelines
• Practice Options
Memory
Best Practices for Memory Rehabilitation

• BI-ISIG Cognitive Rehabilitation Task Force
• Practice standard: For mild memory impairment, use of internal and external memory compensations
• Practice Guideline: For more severe memory impairment, use of external compensation
The Memory Process

Figure 15. Memory process
Input

• Attention
  • Identify barriers (internal and external)
  • Generate strategies

• Engaging the senses
  • Hear it! Write it! See it!

• Eliminate distractions

![Image of a to-do list with items like Pay bills, Wash car, Get laundry, Buy groceries, and Pick up kids.](image-url)
Storage

• Repetition
• Visualization
• First letter mnemonics
• Association
Retrieval

- Organization
- Increased time
- Decrease pressure
Memory Rehabilitation Approaches:

- External compensations
- Internal strategy training
External Strategies

• Mild to severe impairment
  • “The hallmark of these strategies is the use of a reference or device that is external to the patient. The general goal is to bypass impaired functions by providing an alternative strategy to record and retain information or to cue adaptive behaviors.”
External Strategies

• Calendar/Planner
• Smartphones
• Alarming watches
• Voice recorders
• Tablets
• Computers
• Cue cards
Calendar

• Pre-dated
• Prefer 1 or 2 page per day
• Timed and untimed sections
• Help to establish routine and structure
• Enough room to break tasks into smaller steps
• Check off tasks as they are completed
External Strategy: 
Cue Cards

• Visual cue strategically placed to remind a person to use strategies and/or do something.
  • Can direct an action, i.e. Brush Teeth
  • Can direct to a strategy, i.e. Slow Down

• Individualized
Sample *Action* Cue Card

• Before I leave the house, do I have my…
  • Keys
  • Wallet
  • Phone
  • Hat
  • Sunglasses
  • Calendar
YOU CAN HELP
BRING BACK THE BEES!

WHERE'S BUZZ THE BEE?
Buzz is missing because there's something
wrong going on with the world's bees.
Bee populations everywhere have been
decreasing at an alarming rate, and that
includes honeybees like Buzz.

WHY ARE BEES IMPORTANT?
Bees are pollinators, which are
needed to grow crops and many
of the foods we love, like coffee.

Look in my calendar

HOW TO GET YOUR FREE
Veseys Seeds

VISIT
www.chexzos.com/bringbackthebees

Plant lots of wildflowers,
 especially those that attract bees,
to help save the bees.

#BRINGBACKTHEBEES
Before You Go...

Do you have your:
- key 🔑
- wallet 🔒
- phone 📱
- bus pass 🚌
- sunglasses 🕶️
- Brush Teeth
- Floss Teeth
- Wash Face
Sample *Strategy* Cue Card

- Slow down
- Write information down
- Ask questions when I’m stuck
- Take a break and come back to it later
- Double check
Internal Strategies
(Metacognitive Strategy Training)

• Requires awareness of the need for such strategies
• Mild to moderate impairments
• Self instructional
• Can be facilitated by external strategies
  • With repeated exposure, people begin to internalize the strategies
  • Examples: Slow Down, Stop and Think
Internal Strategies

• Association
  • Associating something new with something you already know
  • Using visual imagery to understand the relationship between information

• Organizational
  • Acronyms
  • Clustering/Making categories
  • Visualization
  • Keep a consistent routine
• **R.A.C.E.**
  • R: Relocate
  • A: Activate the fire alarm system
  • C: Contain the fire (close doors)
  • E: Extinguish (if possible)

• **S.B.A.R.**
  • S: Subject
  • B: Background
  • A: Assessment
  • R: Recommendations
Examples of Self Instructional Strategies

• Stop and think
• Slow down
• Visualize what you will need before starting
• Repeating or rehearsing information
• Positive affirmations
• Take a break when needed
Treating Impairments in Attention
Best Practices for Rehabilitation for Deficits of Attention

- BI-ISIG

- Practice Standard: Remediation in post-acute rehabilitation (including direct attention training and strategy training)

- Practice Option: Computer based interventions, used as adjunct to clinician guided treatment.
Attention/Concentration

Focused: recognize sensory information
- Sustained: Maintained over a period of time
- Selective: Ability to process target information specifically and inhibit non target information simultaneously
- Alternating: Shifting focus between tasks that have different demands
- Divided: Responding to two or more stimuli simultaneously
Two Approaches to Treating Attention

• Direct Attention Training

• Strategy Training
Direct Attention Training

• Attention Process Training  (Sohlberg and Mateer)
Attention
Strategy Training

- Self Management
- Environment
- Time Pressure Management (for mental slowness)
- $n$-back procedure (addresses working memory)
Self Management

- Pacing
- Taking Breaks
- Choosing “best time of day”
- Talking through tasks
- Anticipating task demands
- Self monitoring/questioning
- Breaking tasks into smaller steps
Environmental Modifications

- Choose most helpful environment
- Remove distractions
- “Do not disturb”
Time Pressure Management

• Training strategy for people with slowed processing, particularly when under pressure or time constraints

• Application of a structured strategy to help them
  • Identify a problem
  • Anticipate and plan
  • Doing and self-monitoring
  • Self evaluation
Time Pressure Management
Case example

• 42 year old female, 2 months out from mild head injury

• Four kids under the age of 15

• Primary complaint: “I forgot how to get to my kids’ school.” Patient reported getting lost while driving kids to school, would often end up pulling over to cry.
Case example continued…

• Strategies taught:
  • Allow more time and be prepared
  • Visualize the drive before you go
  • Minimize distractions in the car
  • Have a plan in case things go wrong- pull over before you get upset
**n-back Procedure**

- Focus on use of strategies to allocate attention resources and manage the rate of Information.
- Increase awareness
- Strategies such as pacing, talking out loud, rehearsal can be identified and practiced.
Executive Functions

• Planning
• Managing time
• Working memory
• Problem solving/decision making
• Organizing and integrating past and present information
• Mental flexibility
Best Practices for Rehabilitation of Impairments in Executive Function

• BI-ISIG

• Practice Standard: Metacognitive Strategy Training (self-monitoring and self-regulation)

• Practice Guideline: Formal problem solving strategies
Self Questioning and Monitoring

• What do I need to do? What will I need? How long will it take?

• How am I doing? Stop to check. Am I following my checklist? Am I staying on task?

• Did I complete everything I set out to do? Did I have any problems? How long did it take?
Executive Function

• **Goal**: What is my goal?

• **Plan**: What will I need? What problems might I encounter? What are some alternatives?

• **Do**: Execute the task. How am I doing?

• **Review**: Did I meet my goal? How did I do?
Executive Function: External Structure

- Planner/calendar
- Checklists
- Timers, alarms on cell phone
Problem Solving

- Ability to identify a problem
- Ability to generate ideas or solutions
- Ability to mentally manipulate, compare and contrast ideas
- Logical and rational thought process
- Anticipate possible outcomes
# Generalized Problem Solving Format

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Recognize the problem and define it. Identify a goal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Create a plan. Generate solutions, list the steps of those solutions. Identify the advantages and disadvantages of each solution.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Choose a solution. Execute the task. Use self-monitoring.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Evaluate the outcome. Was the goal met?</td>
</tr>
</tbody>
</table>
7th Inning Stretch!
Cognitive Fatigue

• Commonly experienced, less commonly understood
• May occur separately or in conjunction with physical fatigue
• Often feels disproportionate to level of effort or activity
• Can be cumulative
• Results in declining cognitive functions
Too much, too fast…
Environmental Stimulation

Overload!

- Input faster than output
- Feeling overwhelmed
- Goal to avoid overflow
Management of Cognitive Fatigue

• Brain Breaks
• Planning ahead
• Moderation
• Using a planner
  • Create “brain space”
  • Anticipate activity demands
  • Reflect on activity levels and performance
More Than Just a Brain Injury

- Symptoms of brain injury often mirror other problems
- Exacerbation of existing characteristics
- “Awakening” of hidden issues
- New onset of mental health disorders related to changes after brain injury
- Emotional response to changes after brain injury
Same symptoms - What’s to blame?

• Depression:
  • Loss of interest
  • Feeling sad, helpless
  • Irritability
  • Fatigue
  • Changes in sleep or appetite
  • Memory problems
  • Time management/prioritization trouble
Same symptoms- What’s to blame?

• Anxiety
  • Avoidance of people and activities
  • Overwhelmed in noisy/busy environments
  • Changes in sleep/appetite
  • Difficulty concentration
  • Intrusive thoughts
  • Irritability
  • Poor memory
“Awakening” of hidden issues

• Previous set of coping strategies was effective
• After brain injury, problems emerge that were previously manageable
• Previous set of coping strategies no longer effective, or person is unable to implement those strategies
New Onset of Mental Health Disorders after ABI

• Major life changes after brain injury
  • Loss of roles
  • Loss of leisure activities
  • Loss of vocational activities
  • Divorce
  • Physical disabilities
  • Change in living environment
  • Difficulty communicating
  • LOSS OF INDEPENDENCE
Cognitive lapse (Error)  Emotional response
Stress Management and Relaxation

- Double WHAMMY - Simultaneous increase in stress and decrease in ability to cope
- Requires increase in coping techniques, stress management tools, relaxation
- Identification of new ways to cope
Stress Management and Relaxation

- Relaxed (diaphragmatic) breathing
- Guided imagery
- Passive or Progressive Muscle relaxation
- New leisure activities
- Journaling
- Recording daily positives
- Exercise
4 Basic Needs

- Physical
- Emotional
- Intellectual
- Spiritual
Physical Needs

• Helping the person identify what they do to feel their best physically.

• What do we need?
  • Sleep: 8-12 hours
  • Rest throughout the day
  • Nutrition
  • Physical Activity
What can happen after brain injury?

• People are not meeting their physical needs.
  • Difficulty sleeping vs. unable to stay awake
  • Forgetting meals, poor nutritional content, unable to prepare meals, limited access to groceries
  • Restrictions on physical activity due to injury, limited access to gym, balance problems and/or dizziness, pain, lack of initiation
Emotional

• What is the most basic, emotional human desire?
  • To love and be loved
  • Interdependence
  • Requires investing time in relationships
  • Changes focus from self to well-being of others
What can happen after brain injury?

• People are not meeting their emotional needs.
  • Unable to participate in previous leisure activities
  • Decreased socialization
  • Loved ones taking on caregiver role
  • Loved ones working more to meet financial burden
  • Decreased initiation
  • Focus on self, decreased ability to acknowledge others’ feelings
  • Difficulty with communication
Intellectual

• To be engaged, to learn
• Needs are met when we are rested and relaxed
• Wisdom vs. Facts
What can happen after brain injury?

- People are not able to meet their intellectual needs
  - Difficulty with learning due to impaired concentration, memory, vision, headaches
  - Problems following intellectual conversations
  - Loss of vocational activity
Spiritual

- Connection to a higher power
- A feeling of purpose in their life
- Nature
- Prayer
- Meditation
- Reflection
- Silence
- Simplicity
What can happen after brain injury?

- People are not meeting their spiritual needs.
  - Unable to “quiet” their mind
  - Loss of belief system due to their circumstances
  - Unable to plan time for silence, reflection
  - Forgetting to set time aside for these needs
  - Feeling overwhelmed by other demands
Restoring Basic Needs

- Planner/calendar
- Moderation
- Communication
- Address barriers
Why take this approach?

- Brain injury often leads to both cognitive and emotional problems
- Therapeutic interventions are more effective when they focus on both the cognitive impairments and the person’s emotional response to them. Cognitive therapy should not only focus on specific cognitive skills, but also should help the person understand and cope with their symptoms. (Mateer CA, Sira CS, & O'Connell ME.)
Questions?
Thank you!
References

