Evidence Based Practices: Remediation of Attention & Memory Issues

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Objectives

• Identify the different types of memory and attention

• Understand the impact that cognitive deficits can have on functional abilities.

• Identify some of the necessary steps therapists must use to minimize the impact of attention and memory deficits on the completion of various ADLs
• The Aging population is growing, and cognitive issues increase as we age

• People with cognitive disabilities have a tendency to be impacted by normal aging issues even earlier

• The focus of LTSS is to keep people living in their homes and communities longer, so we need to support them by improving key cognitive skill areas
Cognitive deficits impact people with a variety of conditions
What is Cognitive Rehabilitation Therapy?

The Brain Injury Interdisciplinary Special Interest Group (BI-ISIG) of the American Congress of Rehabilitation Medicine defines cognitive rehabilitation therapy to be a:

"systematic, functionally-oriented service of therapeutic cognitive activities, based on an assessment and understanding of the person's brain-behavior deficits." "Services are directed to achieve functional changes by (1) reinforcing, strengthening, or reestablishing previously learned patterns of behavior, or (2) establishing new patterns of cognitive activity or compensatory mechanisms for impaired neurological systems" (Harley, et al., 1992, p.63).
Cognitive Rehabilitation Therapy - CRT

- Not the same as Attendant Care or Personal Assistance

- Not the same as Community Integration
Four Pronged Approach to CRT

(Malia & Brannagan 2000)
Hierarchy of Treatment

Medical Stability

Mood and Behavioral Stability

Attention training

Memory

Executive Skills

Social Skills training
Brain Injury

• Loss of skills gained in rehabilitation
• Increased risk for injuries from falls and other impact injuries
• Increased risk for other injuries
• Increase in medical needs
• Increased risk for social isolation
• General decrease in endurance, strength and range of motion
• Decrease in independent living skills
Addressing Attention
ACRM’s Best Practices

• Remediation of attention should be done during the post-acute phase

• Remediation should include direct attention training and a metacognitive, strategy based approach

• Computer based training should be used only as an adjunct and should be therapist directed

ACRM, 2012
Journal of Head Trauma Rehab Practice Standards

• Metacognitive strategy training using functional everyday activities should be used, especially for those with mild-moderate attention deficits.

• Training in dual-tasking should be used to improve function on tasks similar to those trained.

• Alterations to the environment and tasks can be used to reduce the impact of attentional problems on daily activities.

• Do NOT rely on repeated exposure and practice with computer based attentional tasks due to lack of impact on everyday functioning.
Attention

• Underlying foundation of all other cognitive processes

• Connected to awareness and executive functions

• Deficits that are really attention based may be confused for memory issues

*Recommendations for Best Practice, Society for Cognitive Rehabilitation, 2004*
Hierarchy of Attention

1. Focused Attention
2. Sustained Attention
3. Selective Attention
4. Alternating Attention
5. Divided Attention

ACRM’s Cognitive Rehabilitation Manual, 2012
Attention training models look to improve function with:

- Sustained attention (vigilance)
- Capacity for information
- Ability to shift attention
- Speed of processing
- Screening out distractions

Sohlberg, et al, 2003
Attention Process Training

• Remediate cognitive skills at a basic level as a vehicle for strengthening skills and developing strategies and awareness
• Assess to determine what types of attention are affected
• Know what functional tasks are being targeted for generalization

Sohlberg and Mateer, 2007
Time Pressure Management

• Compensates for mental slowness
• Applies structured problem solving strategy
• Helps to prevent and manage time pressure which can decrease performance
• Addresses common problem with underestimation of time constraints
• Training assists with re-training attention memory and problems solving
• Educates to improve understanding, planning, level of preparedness, and how to plan for the unexpected

Winkens, et al, 2009
Evidence Based Practices: Memory
When is it easiest to remember?
When is it hardest?

• Think about what types of things are the easiest or hardest to remember – names? appointments? what you read? jokes?

• Back in school - was it easier to remember in one subject areas versus another?
Do these things have an impact?

- Your focus
- Your interest
- How well you understand it
- How meaningful it is to you
- How much information you have to remember
- How much time is available
- Whether you used strategies
- How well the input matched your preferred style
Memory

- Relies on complex neural connections
- Damage to any part of the pathways can result in impairment

ACRM Cognitive Rehabilitation Manual, 2012
Numerous studies support the value of memory strategy training for mild memory impairments, including the use of internal strategies (i.e. visual imagery or mnemonic) and external compensatory tools (i.e. smartphone, or memory notebook).

ACRM Practice Standard, 2012

Structured journaling used at the end of each session requiring individuals to reflect on experience, identify challenges, and anticipate future problems improved self-regulation as well as performance of ADL’s

Goverover et al 2007
Teaching internal compensatory strategies

- Strategies include instructional and/or metacognitive strategies (ie: visualization/visual imagery, repeated practice, retrieval practice, PQRST, self-cueing, self-generation, self-talk, etc).
- Tends to be most effective with patients who have mild to moderate range impairments and/or some preserved executive cognitive skills.
- Utilizing multiple strategies is considered effective.
- Strategies can be taught individually or in a group format.
External compensatory strategies

- Environmental supports and reminders are recommended for TBI patients who have memory impairment and most especially with those who have severe memory impairment – (ie: NeuroPage, mobile/smartphones, SIRI, PDA, notebooks, whiteboards, etc). Patients with TBI and their caregivers/support staff must be trained in how to use these external supports.
• Restorative techniques such as computer-based training show no evidence in enhancing sustained memory performance. Guidelines in using such techniques indicate that it should only be considered to develop adjunct memory rehabilitation strategies with evidence-based instructional and compensatory strategies, and only if developed in conjunction with a therapist with a focus on strategy development and transfer to functional tasks.
Memory is comprised of sub-processes

- Attention
- Encoding
- Storage
- Retrieval

Sohlberg & Mateer, 2001
Attention is:

- Viewed as a prerequisite for memory.
- May be the most important component of memory.
- Necessary for vigilance, sustained attention, working memory.
- Needed for short term memory that enables encoding.

*ACRM Cognitive Rehabilitation Manual, 2012*
Encoding

• Ability to assign meaning to incoming information to aid future recall

*ACRM Cognitive Rehabilitation Manual, 2012*
Storage

• Also called retention
• Refers to the transfer of information into long term memory for permanent storage
• Allows retrieval at a later time

ACRM Cognitive Rehabilitation Manual, 2012
Retrieval

• If information is successfully stored in long term memory it can be retrieved

• Problems occurring at this phase are a result of “faulty organization at the time of encoding”.

ACRM Cognitive Rehabilitation Manual, 2012
Working memory

• The ability to hold in mind and mentally manipulate information over short periods of time.
• Critical to new learning and engagement
• Examples—remembering a phone number long enough to write it down, following verbal multi-step directions, remembering the name of someone you just met long enough to introduce that person.
• Impacted by distraction, too much information, complexity and difficulty
• When working memory space is stretched too far, information begins to drop off
• Once it’s lost it is gone for good

(Gathercole & Alloway, 2007)
Characteristics of individuals with poor working memory

- Easily distracted
- Fails to follow instructions
- Fails to recall the sequence or content of instructions
- Loses place easily
- Abandons task
ACRM Practice Standard, 2012

- Numerous studies support the value of memory strategy training for mild memory impairments, including the use of internal strategies (i.e. visual imagery, “chunking” or mnemonics) and external compensatory tools (i.e. smartphone, or memory notebook).
ACRM Practice Standard, 2012

- Internal strategies require awareness, motivation and control, and are often appropriate for mild impairments
- More severe impairments may benefit more from external strategies directed towards functional activities
- All strategies will be enhanced with a metacognitive approach
Memory

• Interventions to promote external compensations and specific skill learning is recommended for persons with moderate to severe memory deficits after TBI or stroke

• Individuals with mild impairment should use internalized strategies (mnemonics, visual imagery) and external (notebooks, cells)

• Individuals with moderate to severe should use external strategies with direct application to functional activities
Strategies and Tools

- Verbal mediation
- Rehearsal
- Self pacing
- Self monitoring
- Managing emotions
- Eliminating environmental factors
- Changing diets
- Avoid Stimulus
- Cognitive playground
Effectiveness dependent on...

• Supported and consistent repetition and practice
• Success with strategies
• Awareness of when needed
• Awareness of how to use
• Application in a variety of settings
• Independent use
Other things that can impact memory and attention

• Fatigue
• Altered sleep patterns
• Emotions
• Pain
• Medications
Impairments of Awareness

• Individuals with less insight or awareness will have less motivation to engage fully in treatment

• Will require more structure and assistance to learn strategies and apply them to their day-to-day functions

• Not one size fits all

ACRM 2012
Guiding Principles: Awareness

“The starting point for therapeutic intervention”

• The rationale for CRT, methods and activities, and importance for continued motivation must be endorsed by the individual.

  ACRM 2012

• Anosognosia: an inability or refusal to recognize a defect or disorder that is clinically evident.
Causes of Awareness Deficits

- Neurocognitive Factors
- Psychological Factors
- Social/Environmental Factors

ACRM 2012
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