OBJECTIVES

Participants attending this presentation will:

- Describe the aim and use of the *Cognitive Rehabilitation Manual* for interventions in the areas of: Executive Function, Memory, Attention, Hemispatial Neglect and Social Communication.
- Describe the five factors of goal-writing utilized to demonstrate measurable progress in the areas of cognitive rehabilitation.
- Discuss the challenges of implementing cognitive rehabilitation interventions by a variety of disciplines in diverse settings.

Evidence in Cognitive Rehabilitation

- The *Cognitive Rehabilitation Manual* represents the work of the Interdisciplinary Special Interest Group of the American Congress of Rehabilitation Medicine (ACRM).
- Their goal was to operationalize the published systematic reviews (2000, 2005, 2011) by Cicerone et al.
- There are other sources for guidelines in this area, e.g., International Cognitive (INCOG).
Cognitive Rehabilitation Manual

- This text is NOT a substitute for clinical training and supervision in the area of cognitive interventions.
- Two-day training sessions are offered to explain the structure and content of the manual.
- A goal-writing framework is provided that can be used in treatment for all five cognitive areas.

Classifications of recommendations

- **Practice Standard**: Substantial evidence
  Based on at least one class I study
- **Practice Guideline**: Probable effectiveness
  1 or more class I study w/methodological limitations
- **Practice Option**: Possible effectiveness but requires further research
  Class II or class III studies, directly using a treatment

REMEDIATION OF ATTENTION

ACRM Practice Standard

- Direct attention training and strategy (metacognitive) training during post-acute rehab after TBI.

ACRM Practice Option

- Computer-based interventions as an adjunct to clinician-guided treatment. Sole reliance on repeated exposure and practice solely via computer is NOT recommended.

Cicerone et al., 2011
REMEDIATION OF MEMORY DEFICITS

ACRM Practice Standard:
- Memory strategy training recommended for mild memory impairments post TBI, including use of internalized strategies (visual imagery) and external memory compensations (notebooks).

ACRM Practice Guideline:
- For those with moderate to severe impairment, only the use of external compensations (e.g., notebooks, electronic devices etc.) with direct application to functional activities are recommended.

Cicerone et al., 2011

REMEDIATION OF MEMORY DEFICITS

ACRM Practice Standard:
- Meta-cognitive strategy training (self-monitoring and self-regulation) is recommended for deficits in executive functioning after TBI, including impairments of emotional self-regulation, and as a component of interventions for deficits in attention, neglect, and memory.

Cicerone et al., 2011

REMEDIATION OF EXECUTIVE FUNCTION DEFICITS

ACRM Practice Options:
- For people with severe memory impairments after TBI, errorless learning techniques may be effective for learning specific skills or knowledge, with limited transfer to novel tasks or reduction in overall functional memory problems.
- Group-based interventions may be considered for remediation of memory deficits after TBI.

Cicerone et al., 2011
REMEDIATION OF EXECUTIVE FUNCTION DEFICITS

**ACRM Practice Guideline:**
- Training in formal problem-solving strategies and their application to everyday situations and functional activities is recommended during post-acute rehabilitation after TBI.

**ACRM Practice Option:**
- Group-based interventions may be considered for remediation of executive and problem solving deficits after TBI.

*Cicerone et al., 2011*

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REMEDIATION OF VISUOSPATIAL AND PRAXIC DEFICITS

**ACRM Practice Standards:**
- Visuospatial rehabilitation that includes visual scanning training is recommended for left visual neglect after right hemisphere stroke.
- Specific gestural or strategy training is recommended for apraxia during acute rehabilitation for left hemisphere stroke.

**ACRM Practice Guideline:**
- The use of isolated microcomputer exercises to treat left neglect after stroke does not appear effective and is not recommended.

*Cicerone et al., 2011*

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REMEDIATION OF VISUOSPATIAL AND PRAXIC DEFICITS

**ACRM Practice Options:**
- Inclusion of limb activation or electronic technologies for visual scanning training may be included in the treatment of neglect after right hemisphere stroke.
- Systematic training of visuospatial deficits and visual organization skills may be considered for persons with visual perceptual deficits, without visual neglect, after right hemisphere stroke as part of acute rehabilitation.
- Computer-based interventions intended to produce extension of damaged visual fields may be considered for people with TBI or stroke.

*Cicerone et al., 2011*
REMEDIATION OF LANGUAGE & COMMUNICATION DEFICITS

ACRM Practice Standards:
- Cognitive-linguistic therapies are recommended during acute and post acute rehabilitation for language deficits secondary to left hemisphere stroke.
- Specific interventions for functional communication deficits, including pragmatic conversational skills, are recommended for social communication skills after TBI.

Cicerone et al., 2011

REMEDIATION OF LANGUAGE & COMMUNICATION DEFICITS

ACRM Practice Guidelines:
- Cognitive interventions for specific language impairments such as reading comprehension and language formulation are recommended after left hemisphere stroke or TBI.
- Treatment intensity should be considered a key factor in the rehabilitation of language skills after left hemisphere stroke.

Cicerone et al., 2011

REMEDIATION OF LANGUAGE & COMMUNICATION DEFICITS

ACRM Practice Options:
- Group based interventions may be considered for remediation of language deficits after left hemisphere stroke and for social-communication deficits after TBI.
- Computer-based interventions as an adjunct to clinician-guided treatment may be considered in the remediation of cognitive-linguistic deficits after left hemisphere stroke or TBI. Sole reliance on repeated exposure and practice on computer-based tasks without some involvement and intervention by a therapist is not recommended.

Cicerone et al., 2011
**COMPREHENSIVE-HOLISTIC NEUROPSYCHOLOGIC REHABILITATION**

**ACRM Practice Standard:**
- Comprehensive-holistic neuropsychological rehabilitation is recommended during post-acute rehabilitation to reduce cognitive and functional disability for persons with moderate or severe TBI.

**ACRM Practice Options:**
- Integrated treatment of individualized cognitive and interpersonal therapies is recommended to improve functioning within the context of a comprehensive program, and to facilitate the effectiveness of specific interventions.
- Group-based interventions may be considered as a part of a comprehensive neuropsychologic rehabilitation program after TBI.

Cicerone et al., 2011

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**Collaborative Goal Setting**

- It is critical to use objective measures for short-term goals and engage the patient/client
- Ongoing counseling and review of progress helps to maintain patient/client participation, motivation and engagement
- Does the patient/client understand the relationship between your LONG and SHORT-term goals?

Lance Trexler - CRM training, October 2012

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**Considerations for goal setting (STG)**

- Type of task
- Task complexity
- Level of cueing
- Type of strategy
- Measure of success
- General guidelines
  - Start w/ relatively easy tasks
  - Individually tailored
  - Emphasis on feedback and discussion
  - Distributed practice paradigm
  - Be flexible!

Tracking progress

- Quantitative measures
  - Accuracy
  - Speed
  - Level of cueing

- Qualitative measures
  - Specific error patterns
  - Patient factors
  - Environmental factors

Amy Rosenbaum - CRM training, October 2012

CHALLENGES OF IMPLEMENTATION

Clinician’s ability to deliver cognitive interventions

- Varies significantly relative to discipline, experience and setting
- The terminology has different meanings for clinicians
- Clinical supervision schedules vary widely, as does supervisor comfort with content
Complexity of topic

- Theory and Application to Treatment
  - Selected disciplines receive coursework in the area of cognitive rehabilitation
  - The literature on cognitive rehabilitation is wide ranging
  - Education is initially needed at the basic level to ensure that all staff can participate

Ongoing Education

- Brain Injury Center supports clinical education
  - Monthly inservices
  - Specifically targeted Hypothesis Formation, but didn’t meet need to change daily practice

- Clinical Research Integration
  - Content experts available but must address details of documentation forms and expectations, clinical rounds guidance, and fidelity of delivered interventions

Knowledge Translation Barriers

- Clinical methods may not be described in enough detail for others to replicate
- Clinicians may have difficulty accessing the literature
- Brain injury specific interventions may not be included in training
- Staff turnover and reduced training budgets

Lance Trexler – Cognitive Rehabilitation Manual (CRM) training, October 2012
Cognitive Rehab Manual Literature

- Evidence is specific to Traumatic Brain Injury and Stroke populations
- Standards, Guidelines, Options are broad

Simply distributing the Cognitive Rehabilitation Manual was not enough → There are still gaps in clinicians’ ability to specify what to deliver to the patient...

Terminology Example:
Selected Teaching Methods

- Errorless Learning
  - Provide info; ask patient to recall without delay; actively discourage guessing
- Spaced Retrieval
  - Patient/client is asked to retain info over progressively longer periods of time
- Chaining
  - Trains sequences of steps by procedural memory; Forward and Backward types

How does staff understand and use these terms?


Next step?

We created a WORK GROUP to operationalize the manual for our setting
PROCESS OF IMPLEMENTATION

Choosing First Content Area: MEMORY

- Why memory?
  - Memory deficits are ubiquitous in TBI
  - Wide range of difficulty seen in practice:
    - Post Traumatic Amnesia to Metacognitive strategy use
  - All services in our continuum report this problem

WHO participated?

- Inpatient and Outpatient
- Clubhouse
- Residential
- Fixed and Rotators
- All Disciplines
- Novice and Experienced Staff
Meeting Schedule

- Weekly work group meetings done via conference call
- Inservice targeted for summer
- Anticipated duration of roll-out: 3-6 months of monthly or bi-monthly inservices and meetings

Overall Plan

- Identify definitions/terminology
- Describe how memory works – the process
- Examine discipline-specific evaluation: observation, formal vs informal assessment, hypothesis testing
- Role of supervision
- Translating assessment into treatment

Practical Considerations

- The Work Group is comprised of 13 people
- Meeting TIME was challenging due to varied sites and work schedules.
- Scheduled meetings 2x/month and utilized conference calling/webinars to keep all informed
- Assignments
  - Necessary to identify specific methods of implementation of these concepts
  - We relied on supervisors to create assignments in their respective areas to monitor with their staff
First six months
Where we started:
✓ explain the process of utilizing the ACRM guidelines to educate staff on using evidence-based treatment to address memory deficits
✓ Created slides on memory skills that could be used by ALL sites
✓ However, other needs became apparent and we stepped back and addressed evaluation needs
Where we are now:
✓ Discuss process of educating and training staff on how to incorporate hypothesis testing into evaluation and treatment

Outcome
✓ Creation of staff education materials that are applicable to ALL brain injury programs
✓ Slides were reviewed by group with the understanding that all supervisors could convey this common information to their staff. It is assumed that supervisors will augment the slides with details and examples in their discipline or point in the continuum.

Implementation Plan
✓ Framework for evaluation and for supervision
✓ First round of lectures provided by our neuropsychologists with the intent to identify qualified staff who can teach content to others
✓ Extensive schedule of presentations in order to reach nurses on all shifts, residential staff etc.
Assignments

❖ Follow-up managed by direct supervisors
❖ Supervisors could augment slides to help instruct staff on assignment completion
❖ Expected review of hypothesis generation and testing assignments: in supervision and in clinical documentation
❖ Expected review of assignments on memory interventions (documentation of memory goals, description of treatment interventions, consistency across team for patient when applicable)

Examples of slides on hypothesis testing and memory processes

Use of the Cognitive Rehabilitation Manual Across the Continuum of Care

- Diagnosis, impairments, abilities
- Consider the referral question: is the patient an active, engaged learner?
- Is the patient aware of their deficits?

- Context and demands of observed actions that result
- How did the set up influence performance?
- How did the environment drive performance?

- Consider visual and verbal presentations of information: Was a model and/or demonstration effective?
- How did I present info and was one method more effective than another?
Consider...What are the possible reasons for the behavior/action?

Memory PROCESS

<table>
<thead>
<tr>
<th>Acquisition</th>
<th>Storage</th>
<th>Retrieval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking in Information</td>
<td>Recording it, Filing it</td>
<td>Accessing information when needed</td>
</tr>
<tr>
<td>Encoding</td>
<td>Consolidation</td>
<td>Retrieval</td>
</tr>
</tbody>
</table>
Organization of Long-term Memory Systems

**Declarative**
- Conscious recall of objects, information, and events
  - **Episodic**
    - Autobiographical experiences
  - **Semantic**
    - Knowledge

**Non-Declarative**
- Nonconscious performance of knowledge or skills
  - **Priming**
    - Cued recall of a previously learned response
  - **Procedural**
    - "skill memory"

Primary References

Related Readings

