Brain Injury-Interdisciplinary Special Interest Group
(BI-ISIG)

Cognitive Rehabilitation Manual:

Translating Evidence-based Recommendations into Practice

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ACRM AMERICAN CONGRESS OF REHABILITATION MEDICINE

Improving lives through interdisciplinary rehabilitation research

DISCLOSURES

Thomas F. Bergquist, Ph.D., LP, ABPP-Cn
Has no financial or other interest to disclose

FIRM and ACRM staff have no financial or other interest to disclose.

This CME activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education thru the Joint Sponsorship of the Institute for Medical Studies (IMS) and ACRM. IMS is accredited by the ACCME to provide continuing medical education for physicians.

Behavioral – Learning Objectives

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

1. Define the acquisition, application, and the adaptation stages of cognitive rehabilitation.
2. Employ a decision tree to assist in determining the most appropriate cognitive rehabilitation intervention to implement.
3. Understand the critical processes involved in effective treatment planning and goal writing.
4. Explain the distinction between long term strategic goals and short term tactical goals.
5. Write specific short-term tactical goals for cognitive rehabilitation clearly linked to long-term strategic goals and the ACRM evidence based recommendations.

Obtaining CME Credit

Credit is only given to attendees that sign-in for the course; successfully complete the entire course; and evaluate the course.
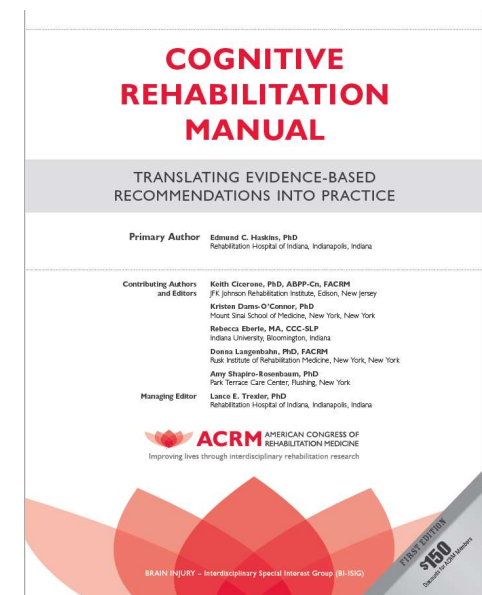
At the close of the workshop, you will receive an email with a link to the evaluation system. Please click on the link and begin to evaluate.

After you have completed the evaluation, an email will automatically be generated to you. In that email, you will be able to click on the link and print your certificate.

The evaluation system will close 30 days after the date of the workshop.

Development of the Manual

- Based on the systematic reviews (Cicerone et al., 2000, 2005, 2011)

- First draft by Ed Haskins, Ph.D.

- Edits, additions and revisions made by at least two members of the ACRM Cognitive Rehabilitation Manual Sub-Committee

- Externally-reviewed by 24 novice to expert therapists and subsequent revisions

- Reviewed by the Clinical Practice Committee of ACRM

- Feedback from Beta Edition

- Final version published in 2012

COGNITIVE REHABILITATION MANUAL

TRANSLATING EVIDENCE-BASED RECOMMENDATIONS INTO PRACTICE

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Classification of Level of Evidence

Class I/Ia (N = 65)	Studies with well designed, prospective, randomized controlled trials
Class II (N = 54)	Prospective, nonrandomized cohort studies; or clinical series with well-designed controls that permitted between subject comparisons of treatment conditions
Class III (N = 251)	Clinical series w/o concurrent controls, or studies with results from 1 or more single cases w/ appropriate methods

Evidence-Based Cognitive Rehabilitation: Recommendations

- Cicerone et al, Arch Phys Med Rehab, 2000, 2005 and 2011
- Researchers (Cognitive Rehabilitation Task Force of ACRM BI-ISIG) pursued comprehensive and methodical review of 370 articles (from 1971-2008) to derive 3 types of recommendations:
  - Practice Standards
  - Practice Guidelines
  - Practice Options
  - Did also state "Not recommended"

Recommendation	Description – as to whether the treatment be specifically considered for persons with neurocognitive impairments and disability
Practice Standard	Based on at least 1 well-designed class I study with an adequate sample, with support from class II/III evidence; providing substantive evidence to support a recommendation.
Practice Guideline	Based on 1 or more class I studies with methodologic limitations, or well-designed class II studies with adequate samples; providing evidence for probable effectiveness to support a recommendation.
Practice Option	Based on class II or class III studies that directly address the effectiveness of a treatment, providing evidence of possible effectiveness to support a recommendation.

Cicerone et al, 2000, 2005 & 2011

Identification of Relevant Literature 2009 - 2014

- 117 published reports of cognitive rehabilitation were fully evaluated and classified
  - 42 Class I studies
  - 14 Class II studies
  - 61 Class III studies

Cicerone, et al, pending

Study Classification 2009 - 2014

Study Design	Attention	Memory	Visuospatial	Communication	Executive	Comprehensive	Total
Class I	6	7	7	2	15	5	**42**
Class II	1	7	0	1	3	2	**14**
Class III	7	6	6	6	17	19	**61**

Cicerone et al, pending

Newest Systematic Review Recommendations

- Attention = 2
  - Standard
  - Guideline
- Visuoperceptual = 6
  - Standard – 2
  - Guideline – 2
  - Option - 2
- Memory = 5
  - Standard – 2
  - Guideline
  - Option - 2

- Cognitive-linguistic = 6
  - Standard – 2
  - Guideline – 2
  - Option - 2
- Executive Functions = 6
  - Standard – 1
  - Guideline – 2
  - Option - 3
- Comprehensive-Holistic = 4
  - Standard -1
  - Guideline -1
  - Option - 2

Recommendations for comprehensive-holistic neuropsychological rehabilitation

Intervention	Level of Recommendation
Comprehensive-holistic neuropsychologic rehabilitation is recommended during postacute rehabilitation to reduce cognitive and functional disability for persons with TBI or stroke, regardless of severity or time post injury	Practice Standard
Multi-modal, computer-assisted cognitive retraining *with the involvement and direction of a rehabilitation therapist* is recommended as a component of neurorehabilitation for the remediation of attention, memory, and executive function deficits following stroke or TBI. Computer-assisted cognitive retraining programs should stimulate the cognitive domains of interest, adjust task difficulty based on patient's level of performance, and provide feedback and objective performance data	Practice Guideline
Integrated treatment of individualized cognitive and interpersonal therapies is recommended to improve functioning within the context of a comprehensive neuropsychological rehabilitation program, and facilitate the effectiveness of specific interventions. Such interventions should be goal directed and emphasize individualized client centered goal setting to promote enhanced residential independence and occupational functioning	Practice Option
Group-based interventions may be considered as part of comprehensive-holistic neuropsychological rehabilitation to improve functional awareness, strategy use, functional independence and psychological well being after TBI or stroke	Practice Option

Brain Injury-Interdisciplinary Special Interest Group
American Congress of Rehabilitation Medicine
Systematic Review 2009 – 2014 Members

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Identification of Relevant Literature 1980 - 2014

- 487 original published reports of cognitive rehabilitation were fully evaluated and classified
  - 107 Class I studies
  - 68 Class II studies
  - 312 Class III studies

Levels of Recommendation for Rehabilitation Strategies

- Practice Standard: "substantial evidence"

- Practice Guideline: "probable effectiveness"

- Practice Option: "possible effectiveness" but requires further research

Barriers to Translation of Research into Clinical Practice

- Clinical methods not often described in sufficient detail

- Practitioners do not have easy access to literature or time to read literature

- Training programs for practitioners do not include BI specific cognitive rehabilitation strategies

- Rehabilitation organizations have reduced training budgets

- Staff turnover results in experience drain

Purpose of the Manual

- Guide the practice of cognitive rehabilitation based on the evidence

- Assist the therapist in determining which type of strategy might be the most appropriate

- Provide structure for establishing and measuring long-term strategic and short-term tactical goals, based on the evidence

- Provide the therapist easy access to the rehabilitation procedures, tactics and strategies that were utilized in the research

Organization of the Manual

• Introduction provides an overarching structure to treatment

• Protocols for 5 key cognitive deficit areas (attention, memory, visual neglect, executive functioning and social communication)

• All protocols include techniques and strategies from studies reviewed by the Cicerone group.

• Also provides information about:
- Suggested methods for implementing strategies
- Complex programs (ex: Teach-M, Problem Solving Group Protocol)
- Guidelines for setting tactical goals for each cognitive area and specific sample goals

•Decision trees, worksheets, handouts, and goal –writing templates to maximize usability

Introduction – Key Components

- Provides a general framework for conducting cognitive rehabilitation

- Serves as a tool to assist in selection of appropriate treatment strategies

- Assists in developing individualized treatment plans and in learning how to write appropriate short and long term goals.

- Serves as an adjunctive tool to guide clinical application of whatever protocol you might be using
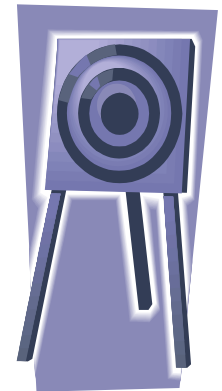
Primary Goals of Cognitive Rehabilitation

- "…ameliorate injury-related deficits in order to maximize safety, daily functioning, independence and quality of life"
- Achieved in a step-wise manner

Awareness

↓

Compensation

↓

Internalization

↓

**Generalization**
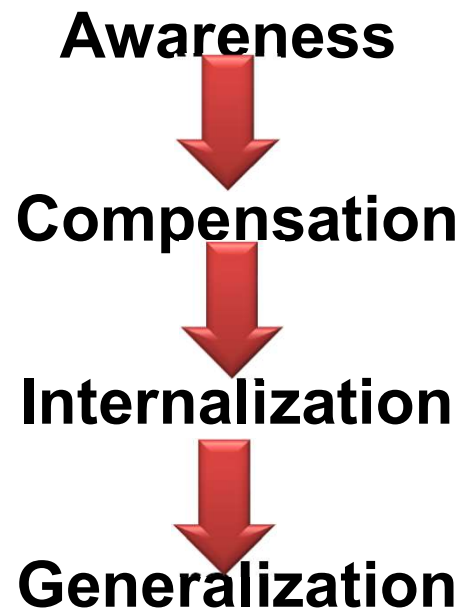
Problem Orientation, awareness and goal setting

- Recognizing specific problem(s) that require intervention

- Collaborating to establish meaningful short- and long-term goals

- Awareness and goal setting is a major therapeutic priority; foundation for most intervention

# The importance of recognizing the impact of impaired cognitive functioning on self-worth and mood.

- Twenty years after the advancement of cognitive rehabilitation, there is still a tendency to view and treat cognitive functioning, personality, and emotional reactions as separate entities.
- Critical gap remains in explaining how we can bridge the various needs of our clients in more integrated treatments that not only acknowledge but **mesh** cognitive, emotional, and motivational interventions.

Humpty-Dumpty sat on a wall,
Humpty-Dumpty had a great fall;
All the king's horses, and all
the king's men
Cannot put Humpty-Dumpty
together again.
(An egg)

Mateer, C. et al (2005). Putting humpty dumpty together again. The importance of integrating cognitive and emotional interventions. *JHTR*, 20: 62-75.
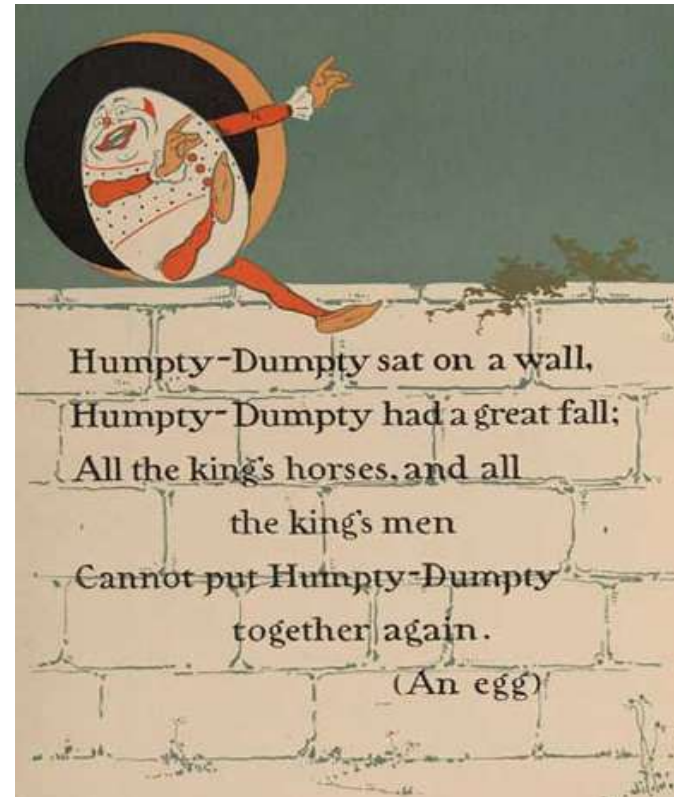
Compensation

- Providing clients with the necessary tools
- Positively impacts functioning despite persistent or chronic impairments
- Often the end goal for cognitive rehabilitation
- Examples:
  - External memory aids
  - External templates for decision making
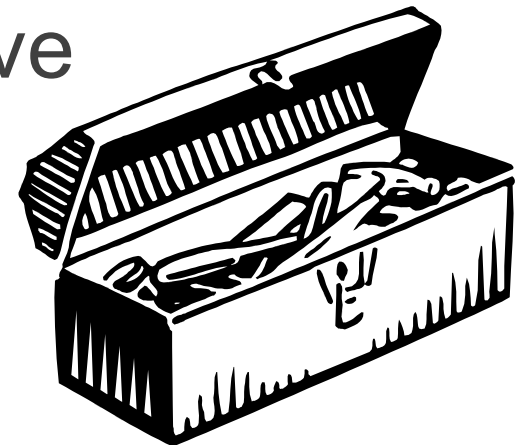
1.6 External Versus Internal Strategies

External

- Those external to the patient; e.g. use of notebooks, electronic devices, cue cards…

- LTG of external strategies is to enable patient to compensate for their impairments INDEPENDENTLY by using aids.

Internal

- Any self-generated procedure whose purpose is to enhance conscious control over thoughts behaviors or emotions.

- LTG of internal strategies is to enable patient to become so familiar/adept with process they can use it globally and without external assistance

Examples of recommended BI-ISIG Strategies

External Strategies

- Memory - memory book training, Errorless Learning, Spaced Retrieval, Chaining

- Executive function – formal problem solving procedures (GPDR with worksheets, external cueing and prompting)

- Hemispatial Neglect – Lighthouse Strategy with use of visual aid and external cueing

Internal Strategies

Memory – Association techniques (visual imagery), Organization/Elaboration techniques (mnemonics, PQRST)

Attention – Metacognitive strategy training (N-back procedures, Time Pressure Management Training)

Executive Functioning – Metacognitive strategy training (self monitoring, self-regulation), formal problem-solving strategies (ex: GPDR)

Hemispatial Neglect – visual imagery training (ex: Lighthouse Strategy)

Internalization

- The clinical process of gradually increasing the automaticity of practiced strategies which facilitates independence through the use of compensatory strategies and tools.

Cue Types

- **Direct cue:** specific prompt given by someone other than the person with injury

- **Indirect cue:** general prompt given by someone else

- **Self-cue:** consciously cueing oneself; think about where info would be found

- **Independent routine:** person with injury automatically referring to calendar for info

Generalization

- Application of appropriate strategies for managing deficits in personally relevant areas of everyday functioning

Table 1-1: Stages of Cognitive Rehabilitation

Stage of Treatment:	Goals:	Type of Strategies Used:
Acquisition	1. teach purpose and procedures of treatment model 2. help patient recognize and accept deficits and benefits of treatment	External
Application	1. improve effectiveness & independence in compensating for deficits 2. promote internalization of strategies	1. External 2. Internal
Adaptation	1. promote transfer of training to tasks including those that are less structured, more novel, complex, and/or distracting 2. promote generalization of skills from the structured therapy setting to less structured environments such as home, community, and work	1. External and Internal 2. External and Internal

Sohlberg & Mateer, 2001

Patient Progress Outcomes

1. Patient never develops necessary awareness to compensate; patient learns to perform simple routine and action sequences procedurally

2. Patient independent with use of external aids; some internalization, but still needs external guidance

3. Patient able to internalize fully-learned strategies; can apply in specific situations or tasks.

4. Patient generalizes learned skills to a range of situations and/or tasks.

A Guide to Treatment Planning and Goal Writing

A Guide to Treatment Planning

How to select best BI-ISIG recommended strategy to address the client's cognitive/functional impairment

Essential Ingredients to consider:

- Hierarchy of deficits

- Severity of injury

- Specific nature of the patient's impairments (and relative strengths)

- Goal of restoration vs. compensation

# Treatment Considerations when Designing Training Procedures
(See Decision Tree pg. 12)

Task specific vs. general approaches

- General Approaches are broad and aimed at an overall domain (e.g., memory)
- Task specific protocols focus on procedural learning for a specific task (e.g., medication)

External vs. Internal Strategies

- Memory Mnemonics (Internal)
- Procedural (External)
- Impairment Level
  - Mild: benefit from both
  - Severe: benefit from external only
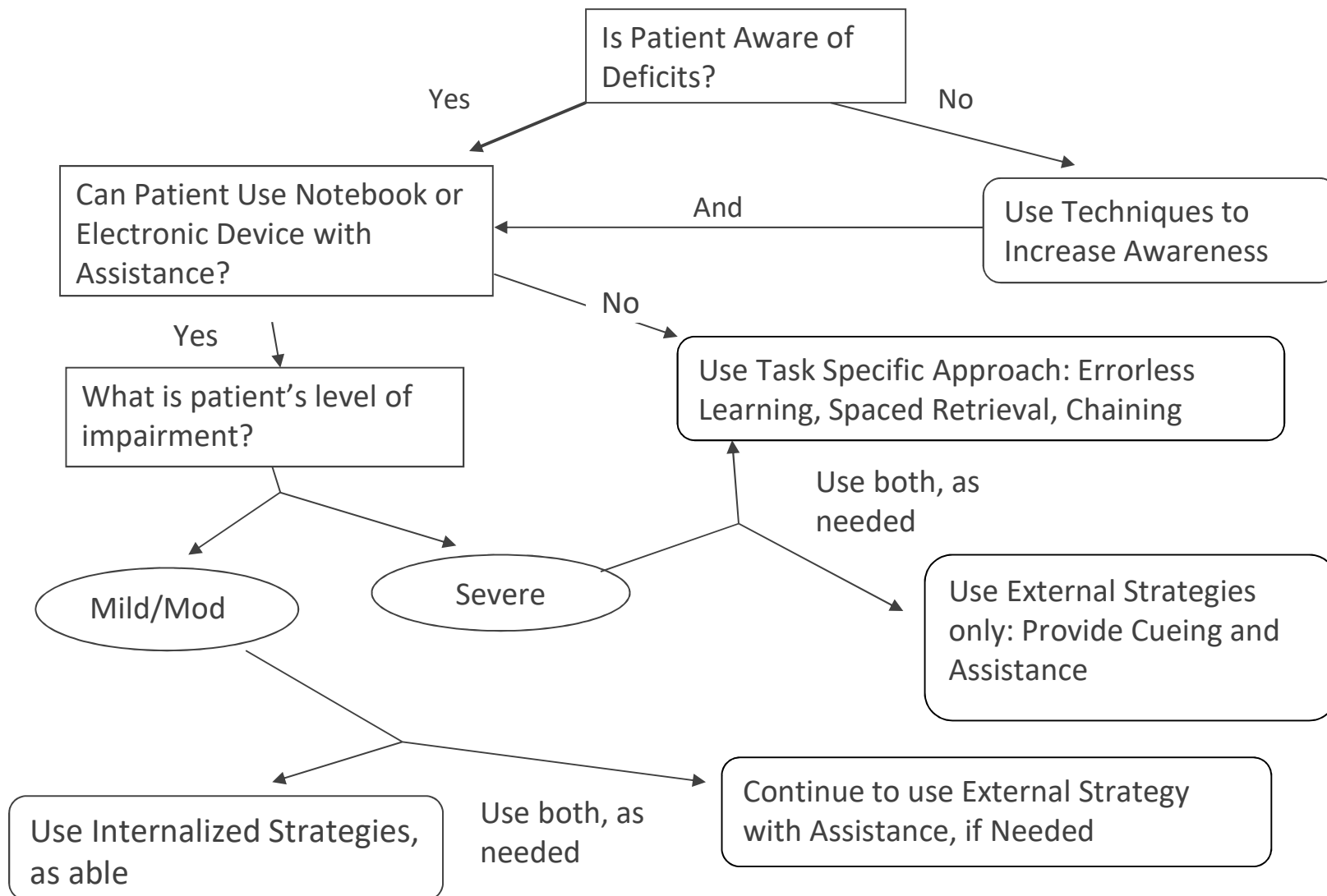
Goal Writing: From Strategies to Tactics

Strategic, long-term goals (LTGs)

reflect the general approach taken to the deficit linked with the stage of training and the task or domain being addressed by therapy

Vs.

Tactical, short term goals (STGs)

reflect the specific means by which the strategy is implemented. The intermediate steps to accomplish the LTG

**Both types of goals are necessary and important to the overall success of treatment

Writing Short-term (Tactical) & Long-term (Strategic) Goals

- LT (Strategic) Goal: "improve ability to independently compensate for memory deficits using external aids"

Vs.

- ST (Tactical) Goal: "patient will initiate four simple household tasks with minimal assistance using a memory notebook in 90% of opportunities"

Comprehensive Template for Goal Writing
(see Table 1-2 for examples)

Five Essential Factors	Example "Patient will perform….
Type of Task	household tasks that require scheduling
Complexity of Task	4 tasks that are simple
Level of Cueing or Assistance Needed	with minimal assistance
Type of Strategy Employed	to use a memory notebook strategy
Measurement of Performance (e,g., speed, accuracy)	In 90% of opportunities"

Structure of the ACRM
Cognitive Rehabilitation Manual Goals
(see page 10 and Appendix A)

- ACRM Practice Recommendation

- Long- Term Strategic Goal

- Monthly Strategic Goal

  – Tactical Goals

Collaboration in Treatment Planning and Goal Setting

- Harmony between patient's goals and therapist's goals
- All goal writing needs to be a product of collaboration between the patient and the therapist.
- Goals must be patient-centered, relevant, meaningful.
- Integrate information from all relevant sources to individualize treatment

Measurement of Treatment Progress: Clarity in Goal Writing and Evaluation

- Goals need to be clear, measureable and objective so we know when they've been reached
- Goals need a definite time frame with a beginning and an end
- Monitor and chart (daily, weekly, monthly) the patient's progress
- Collaborative appraisal of progress
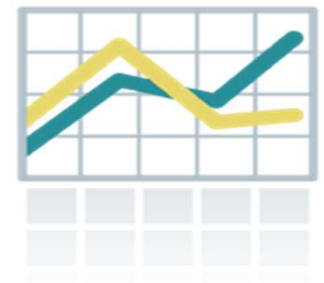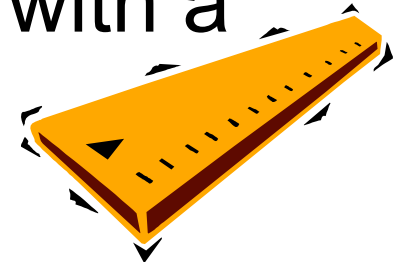
Monitoring Progress Toward Goals: Obstacles to Goal Attainment

- Are the goals attainable, appropriate and clearly communicated?

- Does the patient understand the relationship between long-term and short-term goals?

- Are the strategies appropriate?

- Are the tactics effective in implementing the strategy?

Treatment Obstacles – Therapist Variables that Influence Treatment Process and Outcome

- Lack of, or insufficient communication

- Not incorporating interventions to address emotional factors

- Therapist frustration or other emotional reactions towards the patient

- Not involving the family, caretakers and/or significant others in treatment

1.9 Neurobehavioral and Psychosocial Factors that Influence Process and Outcome

- **Patient Variables**
  – Values and Priorities
  – Coping skills
  – Self-worth and self-efficacy
- **Awareness**
  – Anosognosia
  – Domain-specific
  – Brain Injury Knowledge

- **Severity and Range of Impairment**

- **Emotional Reactions**

- **Premorbid Psychiatric issues**

- **Family Factors**

1.10 Monitoring Cognitive Rehabilitation Progress

Specific task data

"Big Picture" Progress

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