



TBI-BH ECHO

Traumatic Brain Injury - Behavioral Health ECHO
UW Medicine | Psychiatry and Behavioral Sciences

Cognitive Rehabilitation after TBI

Nickolas Dasher, PhD, ABPP

Clinical Neuropsychologist

Rehabilitation Medicine

University of Washington Medical Center

Fleur Godfried, MS, CCC-SLP, CBIS

Speech Pathology Clinical Specialist

Comprehensive Outpatient Rehabilitation Program (CORP)

Harborview Medical Center



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Speaker disclosures

The following presenters have no conflicts of interest:

Nickolas Dasher PhD, ABPP
Fleur Godfried MS



Objectives

1. Types of Cognitive Rehabilitation
2. Individual vs. Group Treatment
3. Summary & Referral considerations



Restoration vs. Compensation

Restoration: Aims to improve the lost function/skill

Compensation: Uses a strategy to adapt to a loss of function

SPONGE	CANDY	DOLPHIN
PACKAGE	POSTER	LICORICE
ZEBRA	SECTION	CAMOFLAGE
MISTAKE	PORTAL	KNAPSACK
COFFEE	QUAIL	ALPINE
HANDLE	PANTRY	CARPET
EAGER	CELLO	PRESSURE
LLAMA	ORIOLE	ACRID



Individual vs. Group Therapy

Individual

- ▶ 1:1 sessions focused on the unique cognitive needs of individual patient
- ▶ Number of sessions typically dependent upon insurance benefit and progress in therapy
- ▶ Can be part of a team approach to maximize functional outcome

Group

- ▶ Typically 5-8 group members with cognitive difficulties stemming from multiple causes
- ▶ 8 sessions over 8 consecutive weeks, each addressing a specific cognitive area and effective compensatory strategies
- ▶ Group members also learn from each other about effective cognitive strategies



Role of Speech Pathology

What do we evaluate and treat?

Cognition

Attention

Memory

Reasoning

Problem Solving

Executive Functions

Visuospatial

Language

Auditory Comprehension

Verbal Expression

Motor Speech

Reading Comprehension

Written Expression

Pragmatic Communication

Also:

Swallowing

Voice

AAC



SLP Referral Criteria/Considerations

- ▶ Documented neurologic injury (e.g., TBI)
- ▶ Completed work-up (imaging, labs, other tests, etc.)
- ▶ Identified PCP or referring provider who will follow
- ▶ Mood, sleep, pain issues, and/or other psychosocial stressors addressed
- ▶ Availability of family/social support
- ▶ Distance from facility/transportation (telemedicine available)
- ▶ Time post-injury
- ▶ Previous rehabilitation completed
- ▶ Insurance benefits
- ▶ FUNCTIONAL GOALS



Case Presentation - T.K.

- ▶ 17 y/o female s/p TBI + polytrauma due to MVC (restrained driver) on 5/29/21. Brain imaging indicates multi-compartmental ICH with L midline shift, scattered bifrontal and R temporal SAH, thin R hemispheric SDH, moderate IVH. Pt is s/p R decompressive hemicraniectomy 5/30/21; s/p cranioplasty 7/30/21.
- ▶ Social: Lives with her family (mother, father, younger brother) in Seattle.
- ▶ Education: HS graduate. Accepted to Colorado State University but deferred enrollment until Fall 2022.
- ▶ Vocation: Not currently working, but previously worked part-time as a swimming instructor and in retail/fashion consignment.
- ▶ Inpatient Rehab: Magee Rehabilitation 6/29 - 7/30/21; 8/3 - 9/14/21
- ▶ Initiated HMC Comprehensive Outpatient Rehabilitation Program (CORP) in September 2021: PT, OT, SLP, TR, Rehab Psychology, Neuropsychological Evaluation, Vocational Rehab Counseling, MD



Case Presentation - T.K. continued

- ▶ Cognition: Overall moderate impairment in areas of verbal memory, attention, speed of information processing, verbal fluency, visuospatial skills, and higher-level problem solving and executive function skills.
- ▶ Barriers: Vision (using sticky prism)
- ▶ Patient's Goals:
 - ▶ Part-time work (retail)
 - ▶ Attend college in Fall 2022
- ▶ Therapy Goals:
 - ▶ TBI education
 - ▶ Memory compensation strategies
 - ▶ Attention (improving sustained attention)
 - ▶ Executive functions - developing daily schedule/routine



Case Presentation - T.K. continued

▶ Therapy Progress

▶ Memory:

- ▶ Using “EB” = Everything Binder
- ▶ Logbook (planner)
- ▶ Cornell Note-Taking

▶ Attention:

- ▶ Using worksheets or games (Sudoku) targeting reasoning (deduction) and problem solving as homework
- ▶ Reading (books/novels)
- ▶ Aiming for increasing cognitive endurance (sustained attention)

▶ Executive Functions:

- ▶ Online Coursera and Khan Academy courses
- ▶ Podcasts
- ▶ Therapy project - Therapy Dog

▶ Visuospatial:

- ▶ Scavenger hunts
- ▶ Community outings with TR with targeted scanning tasks



Case Presentation - T.K. continued

▶ Therapy Progress

▶ Goal of part-time work:

- ▶ Shifted therapy tasks to include more functional problem solving with cash money transactions, trip planning (executive functions), and functional communication interactions and scanning in retail environment (TR outings)
- ▶ Interview preparation
- ▶ Online job hunt (Indeed)

Got a part-time job at H&M! (March 2022)

▶ Goal of return to school:

- ▶ Khan Academy Algebra class
- ▶ Contacted college's Student Disabilities Center (worked with Voc)
- ▶ Generated list of questions for campus orientation (Spring 2022)
- ▶ Purchased academic year planner
- ▶ Completed NPE for accommodations

Enrolled in Fall semester 2022 at Colorado State University!



Overview of Cognitive Rehabilitation Group

- ▶ Based on the CogSmart Protocol for Compensatory Rehabilitation
 - ▶ 8 weeks that cover domains of prospective memory, attention, memory, and problem-solving strategies
- ▶ While 1:1 sessions are applied more specifically to treating a patient's unique cognitive difficulties, the group format geared as a “grab bag” of different strategies to try and practice
- ▶ Group members often have cognitive difficulties spanning a range of causes (e.g., TBI; Stroke; Brain Cancer) as well as varied histories of experiencing associated difficulties
 - ▶ Helps to create environment that no one is alone and offers opportunity to learn from others as well as the therapy



Cognitive Rehabilitation: Session 1

- ▶ Psychoeducation on neurobehavioral correlates and recovery sequelae of acquired brain injury
- ▶ Overview of strategies to manage symptoms
 - ▶ Avoiding re-injury and limit use of substances
 - ▶ Importance of exercise , proper nutrition, and sleep
 - ▶ Carving out time for self-care and relaxation
- ▶ Abdominal Breathing
- ▶ Teach the principles of cognitive training
 - ▶ Organization strategy for making a “home” for personal items
 - ▶ Establish important short and long term goals for the class



Cognitive Rehabilitation: Session 2-3

- ▶ Overview of prospective memory and associated problems common in those with TBI
 - ▶ Importance of establishing a routine to simplify daily tasks
 - ▶ Types of activities that can be made into routines.
 - ▶ Mundane: prepping meals, getting to and from work, etc.
 - ▶ Important: exercise, studying, and spending time with friends
 - ▶ Seasonal: yardwork, special occasions, and holidays
- ▶ Exercise on prioritizing the important things in life
 - ▶ We spend 80% of our time doing 20% of the tasks that are of the least importance to us in life.
 - ▶ Goal is to reverse this pattern!



Cognitive Rehabilitation: Session 2-3

	Immediate/Deadline	Not Immediate/No Deadline
Important	Emergencies Important appointments Important deadlines	Health & exercise Prevention tasks Imp. Relationships Recreation & self-care
Not As Important	Interruptions Someone at the door Phone is ringing	Some chores Phone messages Busy work



Cognitive Rehabilitation: Session 2-3

- ▶ Methods of organizing space to promote routine
 - ▶ System of organization
 - ▶ Mailing/filing system; Pill containers
 - ▶ Functional Spaces for designated activities
 - ▶ Desk where you work; Personal recreational spaces
- ▶ Organizing your calendar and calendar exercise
 - ▶ Patient given scenario with tasks to complete on certain times
 - ▶ How do organize your day while implementing reminders and taking into account what has to be completed before the next task
 - ▶ i.e., home work is due in class at 3PM so need to carve out time to do the work beforehand
- ▶ Linking tasks to form new habits



Cognitive Rehabilitation: Session 2-3

- ▶ Behavioral analysis of barriers to using strategies, making lifestyle changes, and using the calendar
 - ▶ Patient highlights areas listed that apply to him/her
 - ▶ Question the initial intention of strategy and solution to using it
- ▶ Schedule a weekly planning session
 - ▶ End of the week, carve out time to outline week in advance in calendar.
- ▶ Practice effective planning by organizing a to-do list by high, medium, and low priority



Cognitive Rehabilitation: Session 4

- ▶ Strategies to improve attention and concentration
 - ▶ Mindfulness improves focus
 - ▶ Use of acronyms
 - ▶ **P**reparation - break tasks into smaller parts
 - ▶ **E**nergy Conservation - take breaks to avoid fatigue; self care
 - ▶ **A**ctive Effort - consciously attend to details
 - ▶ **S**elf-talk - say what doing out loud to make task easier; attend to it
- ▶ How to minimize internal and external distractors
- ▶ Paying attention during conversations
 - ▶ **L**isten actively, **E**liminate distractors, **A**sk questions, **P**araphrase



Cognitive Rehabilitation: Session 5-6

- ▶ Overview of learning and memory processes & introduction of memory strategies...
 - ▶ Review of attentional strategies (i.e., acronyms)
 - ▶ **R**emember, **I**mage, **T**ime, **A**ctive
 - ▶ Association strategies
 - ▶ Categorization and chunking
 - ▶ Creativity
 - ▶ Turn info a story; create a bizarre memory; make a song
 - ▶ Visual Imagery
 - ▶ Use of external memory strategies
 - ▶ Calendars, note taking, voice recorders, visual cues, and timers



Cognitive Rehabilitation: Session 5-6

- ▶ Cat
- ▶ Carrot
- ▶ Broccoli
- ▶ Bread
- ▶ Mop
- ▶ Hose
- ▶ Asparagus
- ▶ Milk
- ▶ Sponge
- ▶ Eggs
- ▶ Vacuum
- ▶ Dog
- ▶ Bird
- ▶ Juice
- ▶ Hamster
- ▶ Onion

- ▶ Listen to list of words
- ▶ Study the list of words for one minute
- ▶ Read words and categorize them
- ▶ Read words, categorize them, and create image for each category



Cognitive Rehabilitation: Session 5-6

- ▶ Name learning strategies
 - ▶ Repeat name; Request spelling; Mental imagery
- ▶ Retrieval strategies
 - ▶ Relax
 - ▶ Mentally retrace path
 - ▶ Alphabetical search
 - ▶ Recreate the context
 - ▶ Organization
- ▶ How do these memory strategies help with long-term goals?



Cognitive Rehabilitation: Session 7

- ▶ Planning, Goal Setting, & Brain Storming
- ▶ Identify and re-evaluate priorities regularly
 - ▶ Review priorities because they shift in life
 - ▶ Class exercise to plan day and week with priorities in mind
 - ▶ Define the goal and target steps to complete it
- ▶ Brainstorming Exercise
 - ▶ Create a list of 30 ideas without thought to feasibility
 - ▶ Identify all of the items needed for painting a room
 - ▶ All the ways to get a cat out of a tree



Cognitive Rehabilitation: Session 8

- ▶ Problem solving and cognitive flexibility
- ▶ Overview and practice of the 6-step problem
 - ▶ **Define** the problem
 - ▶ **Brainstorm** solutions to the problem
 - ▶ **Evaluate** each solution
 - ▶ **Select** a solution to try
 - ▶ **Try** the solution
 - ▶ **Evaluate** the solution



Cognitive Rehabilitation: Session 8

- ▶ Self-talk strategies are discussed
 - ▶ Overview of effective use of self-talk to troubleshoot problem solving
 - ▶ Practice exercise: use self-talk to help patients through in-class puzzles
- ▶ Self-monitoring strategies are discussed
 - ▶ Utilizing self-talk as well, monitor the progress of the strategy
 - ▶ If strategy working, then keep using it
 - ▶ If strategy is not working, you need to shift
 - ▶ Gather evidence for and against your current strategy



Cognitive Rehabilitation: Session 8

- ▶ Skills Integration, review, and the next steps
 - ▶ Discuss lifestyle changes one is using
 - ▶ Name at least one strategy patient is using for the following domains...
 - ▶ Organization
 - ▶ Attention
 - ▶ Memory
 - ▶ Planning/Problem solving
 - ▶ How have these been implemented that align with goals?
- ▶ Review other problems associated with TBI:
 - ▶ PTSD, depression, substance abuse, sleep difficulty, and pain
 - ▶ Referral for other services?
 - ▶ Vocational Counseling; Neuropsych Testing; Social Work



Summary

- ▶ Both individual and group-based cognitive rehabilitation services remain available through UW Medicine
 - ▶ Individual sessions run throughout the year through UW/HMC Rehab Speech Therapy
 - ▶ Group offered twice per year through UWMC Rehabilitation Medicine
 - ▶ Both services require a referral from the patient's treating provider
- ▶ When considering referral, important to first address common conditions that impact cognition
 - ▶ Sleep apnea; Substance use; Pain disorder; Significant/acute psychological distress
 - ▶ Cog rehab also more effective after at least 3 months post-mild TBI/concussion
 - ▶ For more moderate-severe TBI, outpatient treatment can start ASAP

