Clinician's Guide to Cognitive Rehabilitation in Mild Traumatic Brain Injury:

Application for Military Service Members and Veterans

Working Group to Develop a Clinician's Guide to Cognitive Rehabilitation in mTBI

_____

Index terms: traumatic brain injury, mTBI, cognitive rehabilitation, cognitive-communication

Reference this material as: Working Group to Develop a Clinician's Guide to Cognitive Rehabilitation in mTBI: Application for Military Service Members and Veterans. (2016). *Clinician's guide to cognitive rehabilitation in mild traumatic brain injury: Application for military service members and veterans.* Rockville, MD: American Speech-Language-Hearing Association. Available from http://www.asha.org/uploadedFiles/ASHA/Practice_Portal/Clinical_Topics/Traumatic_Brain_Injury_in_Adults/Clinicians-Guide-to-Cognitive-Rehabilitation-in-Mild-Traumatic-Brain-Injury.pdf

Clinician's Guide to Cognitive Rehabilitation in Mild Traumatic Brain Injury: Application for Military Service Members and Veterans

TABLE OF CONTENTS

Chapter 3 – Set the Stage for Functional Changes

Step 1: Set Goals

Collaborate in Setting SMART Goals

Set Meaningful Goals

Prioritize Goals

Set Functional Goals

Write Measurable Goals

Goal Attainment Scaling (GAS)

Step 2: Select Treatment Approaches and Intervention Strategies

Step 3: Develop a Measurement Plan

Chapter 4 – Make Functional Changes

Step 1: Deliver Therapy

Figure 1. "Gearing Up": Mechanism for Providing Cognitive Rehabilitation to SM/Vs

Step 2: Master the Five Treatment Approaches

Approach #1: Personalized Education

Approach #2: Training Cognitive Strategies

Approach #3: Selection and Training of Assistive Technology for Cognition

Approach #4: Direct Training of Cognitive Processes

Approach #5: Environmental Management

Step 3: Monitor Performance and Goal Achievement

Chapter 5 – Transition to Self-Management

Step 1: Plan for Discharge

Step 2: Measure and Evaluate Outcomes

Why Assess Outcomes?

Types or Levels of Possible Outcomes

Methods or Tools for Outcome Measurement

Summary and Conclusions

Case Studies

References

Appendices

Appendix A: Working Group to Develop a Clinician's Guide to Cognitive Rehabilitation in mTBI: Application for Military Service Members and Veterans (July 2015)

Appendix B: Communicating with Patients

Appendix C: Dynamic Coaching Model for Problem-Solving and Self-Regulation

Appendix D: Example of Script Using Motivational Interviewing to "Hit the Ground Running"

Appendix E: Elements of Functional Goals

Appendix F: Introduction to Goal Attainment Scaling (GAS)

Appendix G: Example of Functional Goal Tracking Dialog

Appendix H: Self-Coaching Journal

Clinician's Guide to Cognitive Rehabilitation in Mild Traumatic Brain Injury: Application for Military Service Members and Veterans

INTRODUCTION

This Guide coaches the process of planning and implementing individualized cognitive rehabilitation interventions for military Service Members and Veterans (SM/Vs) with a history of mild traumatic brain injury (mTBI) or deployment-related symptoms that typically require limited therapeutic interventions. The content is based upon evidence-informed clinical management guidance and assumes clinician competencies including knowledge and skills in delivering traditional cognitive rehabilitation. Funding from the Rehabilitation and Reintegration Division (R2D), U.S. Army Office of the Surgeon General supported face-to-face meetings of a working group of clinicians, researchers, and academicians (see Appendix A). Consensus evolved on how to guide clinical decision-making and empower SM/Vs with mTBI and post-deployment symptoms to recover from or compensate for cognitive challenges. Knowledge gained from SM/Vs' perspectives, research and clinical experience [including the essential integration of multidisciplinary perspectives, insights, and expertise from speech-language pathologists (SLPs), neuropsychologists, and occupational therapists (OTs)] informed best practices advanced in this Guide.

About This Guide

Purpose: This Guide was written for cognitive rehabilitation therapists (hereafter referred to as "clinicians") including SLPs, neuropsychologists, and OTs. The aim of this Guide is to inform and coach clinicians in approaching cognitive rehabilitation with SM/Vs as a patient-centered collaborative process to reduce functional limitations and improve participation in daily activities. SM/Vs present with their own set of circumstances, including pre-morbid status, injuries or illnesses, deployment experiences, comorbidities, and cognitive complaints, which necessitates a patient-centered interdisciplinary/interprofessional approach to rehabilitation. Being respectful of and responsive to each SM/V's individual needs, preferences, and values leads to informed treatment decisions, promotes patient engagement, and supports achievement of desired outcomes.

While mTBI is an important public health concern for SM/Vs, it is important to recognize and appreciate the multifactorial nature of symptoms in many individuals presenting for cognitive rehabilitation treatment. Clinicians, SM/Vs, and caregivers should be cautious about attributing cognitive symptoms to one cause or etiology. Such misattributions can lead to the persistence of symptoms beyond the typical recovery course. Cognitive difficulties reported by SM/Vs may be due to a variety of factors including mTBI, chronic pain, headaches, post-traumatic stress disorder (PTSD), depression, anxiety, sleep difficulties, substance use disorders, and life stressors following return from deployment. These conditions should be addressed by primary care providers and may require treatment by appropriate medical specialists. By recognizing the complexity of the originating condition(s), the clinician creates a more nuanced context for working through the difficulties described by SM/Vs and facilitates the recovery process.

Content: This Guide delineates general principles of cognitive rehabilitation, discusses intervention strategies and rationale, and provides tools for clinicians to help SM/Vs move toward self-management of their cognitive challenges. It focuses on the processes involved in cognitive rehabilitation and guides clinical decision-making from first session contact, goal setting, selecting and implementing intervention approaches, to discharge planning. Given the complexity and likely multifactorial etiology of symptoms, inter-professional collaboration is encouraged to enhance functional outcomes (e.g., SLPs, OTs, neuropsychologists, mental health providers, vision specialists, audiologists, social workers, primary care providers, medical specialists).

How to Use this Guide: This Guide was written to assist clinicians at all levels of proficiency, from beginning through advanced levels of specialization, with planning and delivering cognitive rehabilitation. The stepwise process for cognitive intervention is based upon *Six Guiding Principles* that support patient-centered care with sensitivity to the SM/V population characteristics, culture, and context. *Clinical Pearls* highlight main points, and *Case Studies* or simulations provide instructive examples of the decision-making process with: 1) application of concepts; and 2) implementation of techniques and strategies. *Links to resources* are embedded throughout the Guide. If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar.

Applicability and Limitations: Although this Guide is designed primarily for treating SM/Vs with a history of mTBI, the therapeutic process is applicable to the broader population with or without a history of mTBI who experience nonprogressive cognitive and functional deficits. The principles and strategies for improving cognitive functioning described here are based upon common cognitive complaints, regardless of underlying etiologic correlates. ***However, treatment of cognitive impairments associated with severe traumatic brain injury, penetrating brain injury, stroke or other neurologic conditions in the acute phase of recovery, and dementia is beyond the scope of this Guide, as is the direct treatment of behavioral health comorbidities such as PTSD and depression.***

Clinicians are responsible for evaluating the appropriateness of this Guide for the individual needs of each patient as well as resources and limitations that are unique to each clinical setting or practice.

Basis of Recommendations: This Clinician's Guide consolidates efforts to advance best practices in delivering cognitive rehabilitation to SM/Vs by integrating available resources and expertise. Recommendations for clinical decision-making are based upon best available evidence and consensus of a working group of SLPs, neuropsychologists, and OTs with clinical and research expertise. Contributors to this Guide previously participated in working groups to develop cognitive rehabilitation clinical management guidance, evidence-based practice guidelines, the mTBI Rehabilitation Toolkit, and the SCORE Study Manuals.

CHAPTER 1: ESTABLISH THE FOUNDATION
What Clinicians Need to Know Before Providing Cognitive Interventions to SM/Vs

Understand the Military mTBI Population

A prerequisite to working with SM/Vs who have persistent cognitive challenges that impact their daily functioning following mTBI, is to be familiar with the complexity of the diagnosis. The clinician cannot effectively work with a patient without being well versed in the underlying condition and, in fact, can cause harm by not understanding or misattributing the symptomatology. As stated in the Introduction, the underlying cause of ongoing cognitive symptoms in SM/Vs is likely multifactorial and the relevant factors often interact. Profiles and contributing factors are unique to each individual and require careful consideration so as not to inadvertently encourage symptom magnification, or conversely, ignore organic symptoms. The first step is to become familiar with the population. A basic overview of the SM/V population with a history of mTBI is provided below with a list of resources. The second step is to work from a set of Guiding Principles, which embrace, support and accommodate for the uniqueness and complexity of this population. These principles are presented in the next section of this Chapter.

Mild Traumatic Brain Injury: TBI is one of the most common and significant medical problems confronting military personnel and has been deemed the "signature injury" of combat in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Mild TBI, also called concussion, may occur in as many as 20% of combatants.[1,2,3] Mild TBI is associated with a physical force to the head with resulting alteration in consciousness. Combat assaults involving explosive devices account for a large percentage of combat related injuries and casualties, and are responsible for 56 to 78% of OEF/OIF related injuries.[4,5]

By definition, an individual with a mTBI will have a Glasgow Coma Scale (GCS) score of 13 - 15 within 30 minutes of injury (i.e., typically by the time they are initially assessed by emergency medical personnel). This means that the individual obeys commands, but may be disoriented and may exhibit confused or inappropriate verbal responses. Disorientation and mental confusion, if present, last less than one day.

Many individuals with mTBI experience cognitive deficits and postconcussive symptoms immediately after injury. Common symptom complaints include headaches, balance problems, dizziness, fatigue, depression, anxiety, irritability, and memory and attention difficulties, often without demonstrable structural changes to the brain. Although the majority of individuals with mTBI make excellent neurobehavioral recovery, some continue to report postconcussive symptoms months to years later and may experience significant functional impairment. The prevalence of chronic symptoms, defined as lasting longer than three months, varies across studies, ranging from 15% to 30%.[1,3,6] However, whether these are truly persistent symptoms associated with the mTBI or are related to common comorbidities remains controversial.

Common Comorbidities: In addition to TBI, combat activities may contribute to a wide array of physical and psychological difficulties that extend well beyond one's time in combat. A

significant percentage of combatants return with changes in their personality and behavior patterns, and with a variety of nonspecific symptoms that include sleep problems, fatigue, irritability, headaches, other bodily aches and pains, concentration difficulties, and memory problems. This diffuse symptom pattern is often accompanied by social withdrawal and a sense of emotional numbness or disconnectedness. A smaller subset of SM/Vs meet criteria for a variety of psychiatric diagnoses including adjustment disorder, PTSD, and other anxiety and depressive disorders. Various physical injuries, either minor or more significant, are often associated with these symptoms and conditions.

Treatment of Comorbidities: Since cognitive complaints may be related to a history of mTBI and/or common comorbidities, cognitive rehabilitation is most effective when supported by an interprofessional team utilizing their specialty-specific approaches including:

- Psychoeducation: Psychoeducational approaches empower the SM/V to manage symptoms by providing information about his/her condition, the expected course of recovery, and best approaches for treatment.
- Behavioral Therapy: Behavioral therapies involve helping the SM/V to develop specific patterns of behavior that reduce symptoms for a specific condition. For example, to address sleep disturbance, a sleep hygiene routine may be developed in collaboration with the SM/V that involves environmental management (e.g., removing the television, computer and other distractors from the bedroom) and patterns of behavior (e.g., refraining from caffeine; promoting relaxing activities prior to sleep). The SM/V may be asked to keep a diary of specific symptoms related to sleep or pain as a way of identifying behaviors that worsen or improve those symptoms.
- Cognitive Psychotherapy: Cognitively oriented psychotherapies such as Cognitive Behavioral Therapy (CBT) focus on understanding how thoughts and feelings influence behaviors. The SM/V is taught how to identify and change maladaptive thought patterns that negatively influence his/her behavior. For example, as part of this therapy, the SM/V may be asked to fill out A-B-C sheets (Activating event-Beliefs-Consequences) to describe an event with a negative behavioral outcome, identify the irrational or negative thinking that contributed to the behavior, and then specify a more rational or realistic thinking pattern that would result in more effective behavior.
- Trauma-Focused Therapy: Combat trauma may overwhelm the emotional circuits in the brain in a way that results in the SM/V avoiding rather than processing traumatic events. Trauma focused therapies, including Prolonged Exposure Therapy and Cognitive Processing Therapy, facilitate exposure to the trauma, either by imagining the combat trauma or systematically experiencing situations that remind the SM/V of the trauma. Therapy helps the SM/V to reprocess the thoughts and beliefs associated with trauma memories to reduce anxiety and stress reactions in situations that trigger memories of that trauma.
- Pharmacotherapy: Medication may also be used to manage symptoms related to comorbid conditions.

Cognitive symptoms and associated maladaptive responses may interfere with the treatments for comorbid conditions listed above. For example, problems with memory and distractibility

may affect a person's ability to follow through independently with treatment recommendations. When this occurs, cognitive rehabilitation delivered concurrently with other behavioral therapies may help with compliance and implementation of therapeutic activities such as taking medications, and completing therapy-related assignments.

Recovery from mTBI: Most of what is known of the trajectory of recovery following mTBI is from the civilian population and from sports-related injuries. According to this literature, the overwhelming majority of individuals recover fully from symptoms that were acutely present within a week or two following mTBI. Individuals with a history of mTBI who report chronic symptoms represent an atypical pattern of recovery. Complicating factors such as medical and behavioral health comorbidities, negative expectations, poor coping skills, limited social support, and involvement in compensation claims may contribute to the persistence of symptoms beyond the acute recovery phase. Evaluation and treatment of these individuals must take these complicating factors into account.

Furthermore, typical post-concussive symptoms are commonly experienced by individuals without brain injury and are non-specific such as poor concentration, headache, and sleep disturbance. Other conditions that produce such symptoms may exacerbate or mimic symptoms of mTBI. Co-morbidities or conditions frequently associated with mTBI may persist after concussive symptoms resolve, leading patients and their families to think that the TBI is not resolving.

Regardless of the cause, postconcussive symptoms have the potential to be costly to the military and to the VA, both in terms of continued symptom complaints and healthcare utilization, as well as premature discharge from the military and difficulty with re-integrating into the community. As such, health care providers in both Department of Defense (DoD) and Department of Veterans Affairs (VA) facilities are called to work with SM/Vs and their caregivers to minimize distress and symptoms, and facilitate recovery regardless of etiology. Cognitive rehabilitation, as part of interprofessional treatments, plays a significant role in reducing limitations and improving participation in daily activities.

Understand the Military/Veteran Culture

Clinicians who provide cognitive rehabilitation to SM/Vs need to have a good understanding of, respect for, and sensitivity to military culture. Cultural competence is important in optimizing communication and developing skills that promote a strong therapeutic alliance with the patient, hence contributing to effective clinical care. Core values of military service that may serve as motivation and inspiration during the course of rehabilitation include: 1) commitment to positive change and continuous improvement, 2) doing one's best at all times, 3) personal courage, and 4) doing what it takes to meet the demands of the mission. The physical and psychological strength required to accomplish a mission may now be recruited to persevere through challenges and achieve treatment goals.

Inner strength, mental toughness, and confidence are underscored in resiliency training or "Battlemind" and "inoculation training" for stressors associated with deployments. Resilience refers to inherent protective factors against negative outcomes following stress, tragedy, or

injury. Resilience training is designed to help SM/Vs maintain self-control and balance with a positive perspective, realistic optimism, and adaptive coping behaviors. "Resilience is having the mental, physical, emotional, and behavioral ability to face and cope with adversity, adapt to change, recover, and grow from setbacks" (http://www.army.mil/readyandresilient/).

For those who served in battle, exposure to life-threatening danger and death may alter life perspectives and expectations. Wounds may be not only physical or mental, but also moral, from participating in or witnessing traumatic events. Particularly in the context of moral injuries, clinicians need to be sensitive to the role of spirituality as it relates to resilience, healing, and recovery from the patient's perspective. Spirituality can help in coping with stress, disaster, and the aftermath of trauma. Spirituality supports rebuilding a sense of purpose and meaning by creating an appreciation of life beyond oneself and connecting with others in a supportive unit (e.g., family, friends, community), reflecting on life, and gaining perspective on what is really important. When indicated, including chaplains in patient-centered interprofessional care can optimize outcomes.

The following are links to resources on resilience and spirituality:
http://www.realwarriors.net/active/treatment/spirituality.php
http://www.army.mil/readyandresilient/
https://afterdeployment.dcoe.mil

Apply the Six Guiding Principles (GP) of Therapeutic Interventions

This section describes six principles that guide the clinician through the therapeutic process from enrollment to discharge by incorporating the population characteristics and the contextual factors described above. Discussion of each of the six GPs includes three components: 1) *a brief description*, 2) *examples of therapeutic prompts that support the GP and may be used to facilitate communication in the therapeutic process*, and 3) *therapy examples that incorporate the GP.*

GP1. Recruit Resilience

Clinicians need to be sensitive to the role of personal core values and resilience in the SM/V's ability to withstand stress and overcome adversity. These core values may include cultural (e.g., military culture, ethnicity) and spiritual beliefs and practices that serve to foster and rebuild a sense of purpose and meaning by creating an awareness of life beyond oneself and a connection to others within supportive relationships (e.g., family, friends, battle buddies, community members).

Therapeutic Prompt/Question Example:

"What would you consider to be your source of strength when managing situations in which you feel overwhelmed?"

Therapeutic Management Tips and Examples:

Identify and incorporate core values that are unique to the SM/V in the therapeutic process.

Incorporate techniques established by other members of the team (e.g., apply mindfulness from cognitive psychotherapy to manage hypervigilence that may negatively influence attention and concentration).

Consider group therapy when appropriate to reinforce "unit cohesion" and provide a supportive therapeutic context with opportunities to benefit from shared experiences and collaborative problem-solving.

Resilience serves as a protective factor and promotes positive outcomes. Clinicians can cultivate resilience by: 1) focusing on recovery from setbacks rather than on failure or the problem itself; 2) recruiting internal and external coping resources; 3) anticipating challenges and preparing the SM/V with compensatory strategies to minimize potential negative impact; and 4) highlighting optimism and hope when reinforcing mastery of goals. Resilience can be instilled through the pursuit of meaningful goals to promote a sense of purpose (as in focusing on a military mission). Successful goal achievement in therapy can be reinforced in the bigger arena with the SM/V serving as a positive influence or model to support others in their recovery, and leveraging current problem-solving experiences to manage problems in the future. In fact, choosing to engage in treatment can transform the SM/V's negative experiences into positive outcomes that lead to excelling at levels that may surpass his/her premorbid functioning by using strategies acquired in therapy to increase cognitive proficiency and efficiency in daily routines and activities. Successful experiences can in turn, strengthen resolve and skills to "bounce back" from future adversity.

GP2. Cultivate Therapeutic Alliance

A strong SM/V-clinician partnership provides the foundation for the therapeutic process. Partnerships are built upon trust, a product of transparency and mutual respect. Initially the clinician may assume greater responsibility for guiding the therapeutic process; however, over time the responsibility shifts from the clinician to the SM/V as they collaborate to address reported difficulties and implement strategies to facilitate success in everyday activities. The goal of the partnership is to ultimately transfer responsibility for goal achievement to the SM/V who becomes the expert at solving his/her own cognitive difficulties.

Therapeutic Prompt/Question Example:
   "What would you like to work on in therapy?"
   "What can we do to help you accomplish your goal?"

Therapeutic Management Tips and Examples:

Employ active listening techniques (e.g., motivational interviewing) to learn about the SM/V's core values and what s/he would like to achieve through participation in therapy.
Allow the SM/V's realistic goals to drive the therapeutic process.

Resist the impulse to be *the* expert in the partnership, and avoid engaging in excessive assessment to identify a discrete etiology of the reported problems. The clinician's primary goal is to help the SM/V improve daily functioning.

The challenges in mTBI management (including the difficulties in defining the etiology for the symptoms or most effective treatments) reinforce the need to build strong therapeutic alliances based on trust and credibility among the clinician, the SM/V and his/her family. The clinician's verbal and nonverbal communications reinforce: 1) sincere commitment to helping the SM/V, and 2) belief in the SM/V's ability to accomplish therapy goals; or more simply stated, "You can do it; I can help." A strong therapeutic alliance can positively influence outcomes in post-acute TBI rehabilitation. The SM/V and clinician bring different knowledge and skills to therapy. The patient is an expert in identifying his/her strengths and weaknesses, what s/he wants to achieve, and barriers to successful achievement. The clinician is an expert in mTBI, the impact of mTBI on cognitive skills, comorbidities frequently associated with mTBI, and strategies that may be helpful for achieving goals. The relationship between the SM/V and clinician is a partnership, requiring the clinician to listen to the SM/V in order to support him/her in identifying and achieving relevant goals.

GP3. Acknowledge Multifactorial Complexities

A large body of literature attributes persistent cognitive symptoms after mTBI to problems such as headaches, pain, sleep disturbance, depression, post-deployment stress, or stress disorders. It is often not possible to accurately identify how much each condition contributes to ongoing cognitive difficulties. Regardless of the lack of clarity about the etiology of the problems, the clinician should move beyond symptom attribution and help the SM/V improve his/her ability to function, while collaborating with the interprofessional team to address other difficulties which may contribute to the cognitive problem.

Therapeutic Prompt/Question Example:

"What do you think might contribute to the cognitive problems that you're experiencing?"

"What else might be affecting your memory?"

Therapeutic Management Tips and Examples:

Provide personalized education regarding the multiple factors that may contribute to cognitive and functional difficulties.

Develop a Goal Attainment Scale (GAS) for improving sleep hygiene in collaboration with the team member who is treating the sleep disorder.

Refer to a medical provider for headache management, as indicated.

There is considerable support in the mTBI literature to suggest that the vast majority of individuals who sustain a concussion experience resolution of cognitive symptoms within three months. Why then, do a small subset of SM/Vs present with cognitive problems that persist beyond the typical recovery time? One of the explanations may be that individuals develop negative beliefs and expectations, or maladaptive ways of coping with symptoms (e.g., increased use of ETOH; social withdrawal; reduced participation in healthy activities such as exercise). Taken together, symptoms can have a "snowball effect", perpetuating problems and leading the SM/V to misattribute their difficulties to the mTBI event, rather than working to resolve the associated condition. For example, inattention may be a feature of a behavioral health condition, associated with sleep dysfunction, or the result of headache/pain, or possibly the interaction of all three. In light of the complexity of comorbidities that may contribute to cognitive challenges, interprofessional, patient-centered treatment should be implemented whenever possible. Cognitive therapy should focus on improving participation in daily activities and routines, regardless of potential underlying etiologic correlates.

GP4. Build a Team: There is No "I" in Team

It may be important to include family members and other providers in the SM/V's plan of care to address comorbidities and provide support through the recovery process. When appropriate and as indicated, the clinician may request permission from the SM/V to invite family members to participate in his/her care or refer to other specialists to address comorbid symptoms. In the context of teamwork, it is vital to ensure that all members are "on the same page" when addressing a patient's problems. Competing messages and poorly coordinated care can undermine the SM/V's recovery.

Therapeutic Prompt/Question Example:

"You seem to have questions about your medications that need to be answered so you can start working on taking your meds regularly. Would it be helpful if you spoke to someone who can answer your questions?"
or
"I heard you say how important it is for you to be independent. What if we found an app for your phone that helped you to manage your medications without reminders from your wife?"

Therapeutic Management Tips and Examples:

Assist SM/V in scheduling an appointment with a primary care provider to discuss his/her medications.

Employ resources such as smartphone reminders, alarms, and apps to manage medications independently (e.g., Making Cognitive Connections: www.id4theweb.com)

In light of the complexity of comorbidities that may contribute to cognitive problems, interprofessional patient-centered treatment is recommended to reduce the risk of missing potential complicating factors that can influence rehabilitation outcomes. Care for SM/Vs with mTBI and cognitive deficits may require interventions provided by a diverse team of health care providers including medical, mental health, social work, and rehabilitation specialists. Team membership is based on the individual needs of the SM/V. A patient-centered treatment plan is formulated in collaboration with the SM/V and his/her family, and reflects the results of interprofessional assessments.

GP5.   Focus on Function

The overarching goal of cognitive rehabilitation after mTBI is to help the SM/V resume valued activities and roles. In assessment and treatment, clinicians aim to understand the individual's strengths, resources, impairments, and comorbid factors within the context of performing daily life tasks and roles.

Therapeutic Prompt/Question Example:

"Tell me about your typical daily activities and what goes well and what doesn't."

"Tell me more about how your memory problems show up in daily life activities that matter to you."

Therapeutic Management Tips and Examples:

Incorporate assessments of self-reported everyday functioning into clinical goals and outcomes measurement.

If the SM/V has a specific cognitive complaint (such as memory), adapt the clinical focus to the daily life implications of that complaint.

Develop Goal Attainment Scales (GAS) to specify anticipated functional outcomes of cognitive rehabilitation.

The concept of effectiveness in rehabilitation typically implies a change in meaningful function – that is, improved ability to engage in important life activities and societal participation. Goals that are meaningful, functional, and attainable are a galvanizing force that can promote engagement and effort in rehabilitation, and motivate the use of strategies. With the emphasis on functional goals for cognitive rehabilitation, research data show little evidence that isolated cognitive drills and exercises offered by workbooks and computers translate into meaningful improvements in everyday life activities. This is especially true for therapies directed at areas involving memory, problem-solving, and social function. Identifying what the SM/V hopes will change as a result of therapy is critical. The clinician should emphasize self-efficacy by focusing on reinforcing strengths that can be recruited to develop strategies that address weaknesses, and highlighting the effectiveness of those strategies in resuming everyday activities.

GP6. Promote Realistic Expectations for Recovery

Promoting positive expectations for recovery is critical for developing self-efficacy and self-determination. Positive expectation translates into engagement in therapy which in turn enhances outcomes. The clinician promotes realistic positive expectations for recovery by providing education about recovery, and highlighting abilities and strengths while validating concerns. In the chronic phase, realistic expectations include the fact that improvement will take time and effort and that the clinician will support and work along with the SM/V to achieve treatment goals.

Therapeutic Prompt/Question Example:

"Would it be helpful to hear a few stories from other SM/Vs who had similar frustrations with memory and made very good recovery?"

"It sounds like you've been struggling with these memory problems for years. What do you think it will take to improve your day-to-day memory? About how long do you think it will take to experience meaningful memory improvement in your daily life?" (i.e., it won't happen in a week or two)

"Are there occasions when you function pretty well and remember important events or activities? Okay, so we need to figure out how to make that happen more often."

Therapeutic Management Tips and Examples:

Share session data that show improvements and ask the SM/V to comment on impressions.

Set goals together that are meaningful to the SM/V.

Discuss a cognitive lapse the SM/V has experienced and provide education about factors that can be modified to improve performance (e.g., competing demands that would result in anyone having that type of "cognitive breakdown").

In delivering cognitive rehabilitation, it is important for clinicians to emphasize the expectation of recovery by providing education regarding positive outcomes, highlighting the SM/V's skills and abilities, and engaging in risk communication whereby the language used creates the expectation for recovery (e.g., avoiding terms such as TBI, impairment, and postconcussion *syndrome* that convey negative connotations - in favor of using terms such as concussion, challenge, and postconcussion *symptoms* that convey more positive implications).

Review Resources

Rehabilitation resources that can be used in conjunction with this Guide include:

VA/DoD Guidance Documents for Cognitive Rehabilitation:
- *DoD/VA mTBI Clinical Practice Guideline* (Feb 2016)
  http://www.healthquality.va.gov/guidelines/Rehab/mtbi/
- *Cognitive Rehabilitation for Military Personnel with Mild Traumatic Brain Injury and Chronic Post-Concussional Disorder: Results of April 2009 Consensus Conference* (Helmick et al., 2010, *NeuroRehabilitation, 26*, 239-255)
- *Mild Traumatic Brain Injury Rehabilitation Toolkit* (Borden Institute, 2015):
  http://www.cs.amedd.army.mil/borden/Portlet.aspx?ID=065de2f7-81c4-4f9d-9c85-75fe59dbae13
  Chapter 7-Cognition Assessment and Intervention (Radomski et al.)
  http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a
  Chapter 9-Performance and Self-Management, Work, Social and School Roles (Davidson et al.)
  http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=7b8e559d-eb34-47eb-b4e8-1528ec56f6a2
  Chapter 11-Health Related Quality of Life/Participation Assessment (Weightman et al.)
  http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=d16f3f5b-4cd9-46e8-9ece-419a81ed3298
- *Speech-Language Pathology Clinical Management Guidance: Cognitive–Communication Rehabilitation for Combat-Related Concussion/Mild Traumatic Brain Injury.* (SLP Working Group, 2012). Borden Institute, 2015.
  http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=94f83bc7-aec0-4039-898d-9dfb8fabd13b
- *Cognitive-Communication Rehabilitation for Combat-Related Mild Traumatic Brain Injury* (Cornis-Pop et al., Sep 2012, Journal of Rehabilitation Research and Development, 49(7), xi-xxxi)
- *Clinical Management Guidance: Occupational Therapy and Physical Therapy for Mild Traumatic Brain Injury*. (OT/OT Work Team, 2012). Borden Institute, 2015.
  http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=459b93ad-f503-49e1-8fc4-1f4f317e1104
- *Occupational Therapy for Service Members with Mild Traumatic Brain Injury* (Radomski et al., Sep-Oct 2009, American Journal of Occupational Therapy, 64, 646–655)
- *SCORE Manuals* (SCORE Study Team, 2015)
  http://dvbic.dcoe.mil/research/study-manuals
- Social Cognition Rehabilitation for Veterans with TBI and PTSD: A Treatment Workbook (McCarron, Dasgupta, Campbell, & Adams. 2014). Washington, DC: DVA. Available from authors: Kelly.McCarron@va.gov, Megan.Dasgupta@va.gov
- CogSMART (Twamley et al., 2008) http://www.cogsmart.com/

Cognitive Rehabilitation in the Civilian Sector (including moderate TBI):

- *Coaching College Students with Executive Function Problems* (Kennedy, M. R. T., 2017). NY: Guilford Publishing. *(available in June, 2017)*
- *Cognitive Rehabilitation Manual: Translating Evidence-Based Recommendations into Practice* (American Congress of Rehabilitation Medicine; Haskins et al., 2012). ACRM Publishing.
- *Optimizing Cognitive Rehabilitation: Effective Instructional Methods* (Sohlberg, M. M., & Turkstra, L. S., 2011). NY: The Guilford Press.
- Practice Guidelines for TBI from the Academy of Neurologic Communication Disorders and Sciences (ANCDS):
  http://www.ancds.org/evidence-based-clinical-research
  - Evidence-based practice guidelines for instructing individuals with acquired memory impairments: What have we learned in the past 20 years? [Elhardt, L., Sohlberg, M. M., Kennedy, M. R. T., Coelho, C., Turkstra, L., Ylvisaker, M., & Yorkston, K. (2008). *Neuropsychological Rehabilitation,18*(3), 300-342]
  - Self-regulation after traumatic brain injury: A framework for intervention of memory and problem solving [Kennedy, M. R. T., & Coelho, C. (2005). *Seminars in Speech and Language,26,* 242-255]
  - Intervention for executive functions after traumatic brain injury: A systematic review, meta-analysis and clinical recommendations [Kennedy, M. R. T., Coelho, C., Turkstra, L., Ylvisaker, M., Sohlberg, M. M., Yorkston, K., Chiou, H. H. & Kan, P. F. (2008). *Neuropsychological Rehabilitation,18*(3), 257-299]
  - Practice guidelines for direct attention training [Sohlberg, M., Avery, J., Kennedy, M. R. T., Coelho, C., Ylvisaker, M., Turkstra, L., & Yorkston, K. (2003). *Journal of Medical Speech-Language Pathology,11*(3), xix-xxxix]
  - Evidence based practice for the use of external aids as a memory rehabilitation technique [Sohlberg, M. M., Kennedy, M. R. T., Avery, J., Coelho, C., Turkstra, L., Ylvisaker, M., & Yorkston, K. (2007). *Journal of Medical Speech Pathology,15*(1)]
  - Reflections on evidence-based practice and rational clinical decision making. [Ylvisaker, M., Coelho, C., Kennedy, M., Sohlberg, M., Turkstra, M., Avery, J., & Yorkston, K. (2002). *Journal of Medical Speech-Language Pathology,10*(3), xxv-xxxiii]

Concussion apps

- The Concussion Coach app for Veterans
  https://mobile.va.gov/app/concussion-coach

CHAPTER 2: GET STARTED

Step 1 - Establish the Therapeutic Alliance

Therapeutic alliance refers to the collaborative partnership between clinician and patient in their efforts to reduce limitations and improve participation in daily activities through the therapy process. Alliance is built on agreement on therapy goals and the actions required to achieve them. The clinician validates the SM/V's concerns and experiences, and applies a risk communication approach whereby the language used creates the expectation for recovery.

Engaging patients in a therapeutic relationship is crucial for achieving enduring behavioral changes. Engagement is comprised of multiple elements including the SM/V's:

Clinical Pearls: A patient-centered approach requires good communication and listening skills to gather information and gain an understanding of the SM/V's perspective. Using motivational interviewing techniques enhances communication. It takes practice to become a good listener.

- attitude toward therapy
- level of understanding or acknowledgement of the need for treatment
- level of active participation in the therapeutic process (e.g., regular, on-time attendance at appointments; completing homework assignments).

It is important for the clinician to determine the SM/V's readiness to engage in and complete therapy. Indications for participating in cognitive interventions may be influenced by comorbid conditions. For example, severe migraine headaches or PTSD symptoms may need to be managed before the SM/V can fully engage in and benefit from cognitive rehabilitation therapy. Setting an appropriate dosage (e.g., frequency, intensity, duration) of therapy relative to the severity of problems, goals, and personal factors may influence the SM/V's engagement. A program that lacks relevance or is too difficult can lead to frustration, failure, and dropout; alternatively, a program that stretches too long may appear diluted and lose its perceived benefit.

Throughout the therapeutic process, the clinician uses tools to facilitate SM/V engagement including motivational interviewing techniques and dynamic coaching.

Motivational Interviewing Techniques: Motivational Interviewing (MI) is a method of engaging the SM/V to explore areas of concern and identify functional goals which provide the focus for rehabilitation. In MI, the clinician adopts a "guiding" communication style, which is between a "following" and "directive" style, to help the SM/V self-identify his/her own challenges. Techniques to facilitate MI are represented by the acronym *OARS* (Open-ended questions, Affirmations, Reflections, Summaries):

- **O**pen-ended questions**:**
  - can be broad and generic (e.g., "What would you like to be doing that you aren't doing right now?")
  - can focus on specific areas (e.g., "Take me through a day at work; what happens?")

- o do not constrain the SM/V's responses and allow him/her to share freely his/her concerns.
- **A**ffirmations:
  - o are important for building rapport
  - o provide validation of the SM/V's strengths, positive actions, and qualities that contribute to feelings of success and self-efficacy (e.g., "You showed determination and creativity in using your strategies when you were on vacation and outside of your routine; that was great work!")
  - o reinforce positive expectations for recovery.
- **Reflections:**
  - o are *more than simply repeating* what the SM/V says during the interview
  - o are not questions
  - o can yield specific information that may be helpful when shaping goals.
- **Summaries:**
  - o are used to gather and connect related information within an interview
  - o can highlight and focus information to identify goals, or strategies to achieve goals
  - o should reassure the SM/V that the clinician heard and understood what s/he said.

(See Appendix B for additional information on communicating with patients using patient-centered or MI techniques)

The mTBI Rehabilitation Toolkit includes a Clinician Tip Sheet on MI (Chapter 7, pp. 223-225)
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a

Dynamic Coaching: Dynamic coaching describes the collaborative problem-solving interaction between patient and clinician where the clinician functions as a coach, modeling and explicitly instructing self-regulation as a process and a way of thinking. Problem-solving requires self-awareness and insight in identifying a need, developing a specific goal, identifying and implementing a strategy that supports that goal, monitoring performance, and evaluating goal attainment. Both the clinician and SM/V are perceived as experts. The SM/V is an expert with extensive knowledge about what motivates him/her, what s/he wants to achieve, the skills s/he possesses and how his/her abilities may have changed. The clinician understands the various conditions that can result in cognitive challenges and is an expert in

Clinical Pearls: Dynamic coaching is based on reciprocal problem solving in a collaborative partnership and is implemented with MI techniques. The clinician functions as a coach and empowers the SM/V to self-regulate his/her actions to achieve a desired goal.

best practices for training compensatory strategies that may effectively be applied to everyday life activities. The SM/V provides the content for treatment in the form of real-world challenges that affect his/her ability to transition back to home, work, or school. The clinician/coach supports the SM/V and encourages self-regulation and active participation in the treatment

process regardless of the specific approach to intervention. ***Ultimately, the goal is for the SM/V to engage in self-coaching*** so that s/he becomes his/her own expert problem-solver.

The process of dynamic coaching is most effective when:
- functional, person-centered goals are generated collaboratively
- strategies are person-centered - that is, they are selected by the SM/V and are congruent with his/her current self-appraisal of skills and abilities
- metacognitive awareness and direct instruction are used to train strategies
- practice is distributed in naturally occurring contexts where the strategy supports meaningful activity - although strategies may be identified and rehearsed in a clinic setting, the objective is to implement them in a real-world context.

(See Appendix C for information on the dynamic coaching process)

Step 2 - Gather Information

The therapeutic process should accommodate the individual SM/V's style or preferences. The initial question asked by the clinician will likely be open-ended to invite the SM/V to explain what brings him/her to the clinic at this time. Subsequent questions may lead him/her to tell his/her "story" related to combat/deployment/injury experience, or focus directly on symptoms and concerns.

The Patient's Story or Patient-Centered Interview: Once the SM/V begins to tell his/her story, the interview is guided by what s/he describes and therefore becomes less structured in nature. Some may already have told their story to multiple health care providers and are no longer interested in retelling their story one more time. In this situation, a patient-centered, semi-structured interview can be used to gather the SM/V's background information.

In a patient-centered interview, the clinician should ask open-ended questions organized from general to more specific, to identify the:
- reason for referral
- chief concern(s)
- history of onset
- pattern of onset, and progression or recovery
- nature and severity of symptoms
- frequency, consistency, contextual effects on symptoms
- functional consequences to work and home life
- how symptoms have been addressed to date (e.g., has the SM/V learned ways to lessen or eliminate symptoms?)
- how the SM/V has coped with or altered daily routines because of symptoms
- other concerns regarding potential comorbidities (i.e., "What else is going on?").

While listening to the SM/V's story or during the interview, the clinician should periodically review understanding of:
- the initial trigger or trauma that led to change in the SM/V's function
- other symptoms and events that may be contributing to or maintaining symptoms

- services received and benefits gained
- how symptoms have impacted the SM/V's participation in daily activities.

Standardized Testing: The majority of SM/Vs with a history of mTBI will not have clear impairments on standardized cognitive testing. In fact, there is often little correspondence between the SM/V's symptoms (e.g., attention or memory problems, slowed or confused thinking) and objective performance on standardized cognitive tests. Similarly, there may be minimal agreement between functional day-to-day cognitive performance and standardized cognitive test performance.

Formal standardized cognitive or neuropsychological testing is not necessary in many cases for the clinician to design and conduct an appropriate cognitive rehabilitation plan. In the absence of evidence from formal cognitive test performance, cognitive rehabilitation addresses day-to-day functional complaints. The assessment processes outlined in the previous sections are designed to assess these day-to-day functional cognitive problems. *The goal of cognitive therapy is to treat the day-to-day dysfunction not the test score!*

When conducted, standardized testing may be used to:

- **Provide education:** Feedback about performance on standardized testing can be used as a starting point in educating the SM/V about cognitive strengths identified through formal testing, and exploring other possible reasons for day-to-day functional problems. Appropriate positive, supportive feedback can be important in avoiding or minimizing disability beliefs.

Clinical Pearls: Don't dispute the patient's complaints of cognitive problems. Accept them as a valid reflection of his/her day-to-day life. Use intact cognitive test scores to educate the SM/V that "your brain can learn and remember (or focus and attend); we need to figure out together why you are having memory problems in your everyday life and then help you deal with them."

- **Identify cognitive strengths:** Formal testing may be useful in identifying specific cognitive strengths upon which a cognitive rehabilitation approach can be developed. For example, good problem solving or organizational skills can help with training compensatory strategies for functional problems.
- **Identify cognitive impairments:** Cognitive sequelae in the areas of attention, executive function, and memory related to a history of mTBI may sometimes be identified on standardized neuropsychological testing.
- **Explore and quantify pre-existing deficits:** Some SM/Vs may have pre-existing attention deficit hyperactivity disorder (ADHD), learning disabilities, or educational limitations. Formal testing and rehabilitation plans should take these prior conditions into account before attributing any current cognitive difficulties to a history of mTBI/concussion.

- **Plan vocational or educational programs:** Formal standardized testing may be important in vocational planning or return to school decisions. For example, results may be used as part of the documentation required to demonstrate a need for educational or work accommodations.

Additional Sources of Information: During the process of conducting the interview, the clinician gathers relevant background information from the SM/V and informally assesses cognitive and communication skills. With patient consent, information from family, friends, and other health care providers can also be beneficial in planning treatment. Sources of information include:
- medical records
- symptom checklists or inventories
- standardized test results
- functional performance scales.

The mTBI Rehabilitation Toolkit includes an in-depth discussion on cognitive assessment, which can serve as a resource (Chapter 7, pp. 178–220)
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a

Put the Pieces Together: The clinician integrates information gathered, sorts through the issues, and begins to formulate the "big picture" of initial etiology, maintaining factors, and comorbidities in order to define:
- functional deficits
- symptom triggers and factors contributing to maintaining symptoms
- situational variables, supports, barriers
- comorbidities affecting symptoms.

The clinician reviews, integrates, and analyzes the information and determines whether it is sufficient to develop a treatment plan with the SM/V. If additional information is needed, the clinician identifies potential sources or strategies for obtaining the information.

> **Decision:** Is information gathered sufficient for getting started? If no, identify additional sources or strategies for gathering information. If yes, move ahead to Step 3.

Step 3 – Engage and Motivate

There are a variety of ways to "hit the ground running" by promoting engagement in the therapy process. Here are some examples:
- encourage "buy-in" by proposing a functional tangible goal that can be reasonably achieved in a short period of time (e.g., teach the SM/V to set alerts on smartphone for appointments or medication thereby eliminating missed appointments or doses, and dependency on others for reminders)
- validate the SM/V's symptoms
- identify and emphasize the SM/V's strengths

- provide personalized education about symptoms and the process of rehabilitation.

(See Appendix D for an example of a script using MI techniques to "hit the ground running" by engaging the SM/V in the therapy process)

Table 1. Clinical Processes and Tools to Manage Cognitive Challenges

Clinical Processes	Key Tools	Actions	Guiding Principles
Get Started	Motivational Interviewing (MI) techniques	• Establish Therapeutic Alliance • Gather Information • Engage and Motivate	GP2: Cultivate Therapeutic Alliance GP3: Acknowledge Multifactorial Complexities
Set the Stage for Functional Changes	Motivational Interviewing (MI) techniques Assessment data may be used as an intervention tool for providing education on individual strengths Goal Attainment Scaling (GAS)	• Set SMART Goals • Select Treatment Approach(es) and Intervention Strategies • Develop a Measurement Plan	GP1: Recruit Resilience GP5: Focus on Function GP6: Promote Realistic Expectations for Recovery
Make Functional Changes	Motivational Interviewing (MI) techniques Dynamic coaching Therapy approach options & tenets	• Deliver Therapy • Master the Five Treatment Approaches • Monitor Performance and Goal Achievement	GP1: Recruit Resilience GP2: Cultivate Therapeutic Alliance GP4: Build a Team GP5: Focus on Function
Transition to Self-Management	Dynamic coaching Goal Attainment Scaling (GAS)	• Plan for Discharge • Measure and Evaluate Outcomes	GP1: Recruit Resilience GP4: Build a Team GP5: Focus on Function GP6: Promote Realistic Expectations for Recovery

CHAPTER 3: SET THE STAGE FOR FUNCTIONAL CHANGES

Step 1 – Set Goals

Collaborate in Setting SMART Goals: During the patient-centered interview, the clinician uses MI techniques and identifies elements that will optimize the development of functional, personally relevant goals with the SM/V (and family when appropriate). The SM/V rarely begins cognitive rehabilitation with well-established goal-setting skills; rather, goals emerge from descriptions of struggles experienced in activities of daily living (e.g., "I need to be able to…"). The clinician leads the SM/V through the process of setting **S**pecific, **M**easureable, **A**ttainable, **R**ealistic, and **T**imely (SMART) goals at the beginning of treatment and facilitates transition to self-reliance in goal-setting as therapy progresses.

Clinical Pearls: In a patient-centered approach to rehabilitation, the clinician and SM/V engage in collaborative goal setting; the clinician supports autonomy rather than determines priorities on behalf of the SM/V.

Information on goal-setting, including creating SMART goals
can be found in the **SCORE Study Manuals** *on pp. 2-12 of* ***Chapter 4: Traditional Cognitive***
Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part IV:
Client Manual for Arm 3 Traditional & Arm 4 Integrated Cognitive Group Interventions
(If clicking on the hyperlink below does not work, copy and paste the link in your browser's address bar)
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part4_Client-Manual-Arm3-Traditional-Arm4-Integrated-Cognitive-Group-Interventions.pdf

Examples of collaborative goal-setting using MI techniques:
- **Open-ended question:** *How can I help you?*→ "I'm really struggling in school, my test grades are terrible."
  - o Context = school
- **Open-ended prompt:** *Tell me how you study.* → "Well, I try and read these chapters and it's a lot harder than it used to be."
  - o Functional Activity = reading college textbooks
- **Reflection:** *It's hard to keep your focus when you're reading.* → "Yes, my mind wanders, my eyes are moving across the page like I'm reading but I'm thinking about something else."
  - o Cognitive Context = distractibility
- **Summary:** *So what I hear you saying is that you're struggling on tests in school because reading the chapters is hard. You lose your focus and become distracted – you can't keep your mind on what you're reading.* → "Yes and it's a huge problem for me."

The identified goal will target school performance (functional context) by working on reading (functional activity) using strategies that will improve attentional focus and limit distractibility (cognitive context).

> **Definition of a Collaborative Goal:** A goal in which the functional and cognitive activity and context are identified through the SM/V's responses to open-ended questions or reflections by the clinician. This information is summarized by the clinician and validated by the SM/V.

Set Meaningful Goals: Goals perceived as meaningful are more likely to generate patient engagement in therapy which, in turn, increases the likelihood of goal attainment. The most frequent cause of "failure" in cognitive rehabilitation is a mismatch between the goals of the individual receiving therapy and the clinician's goals for treatment. Some clinicians perceive themselves as "the expert" and are confident that, based on their knowledge and experience, they are in the best position to select goals for the SM/V. Sometimes, clinicians may acknowledge goals identified by the SM/V, but eventually guide the SM/V toward the clinician-selected goals. In MI, this is referred to as the "righting reflex" and is identified as a significant barrier to developing meaningful goals that will motivate the patient to participate in therapy.

Prioritize Goals: SM/Vs frequently identify several goals during the collaborative goal-setting process. It is helpful to have the SM/V weigh goals by level of importance. Prioritized goals can inform the clinician as to which goals are most relevant and which to target first. Targeting goals prioritized for importance by the SM/V at the beginning of rehabilitation can have a positive effect on overall goal attainment.

Set Functional Goals: The purpose of functional goal setting is to achieve outcomes identified by the SM/V during the patient-centered interview. Positive changes can range from establishing a desirable behavior to extinguishing an undesirable behavior. When developing functional goals, it is important to focus on the desired activity (e.g., taking notes in a college class, preparing dinner, watering plants) rather than the multi-dimensional issues that may be interfering with accomplishing the activity (e.g., attention, distractibility, memory). The aim is to think past the underlying factors and focus on their impact on everyday life situations. Functional contexts, functional activities, and cognitive contexts

Clinical Pearls: Goals that are identified by the SM/V and address the functional, everyday activities s/he most wants to resume are most likely to result in the motivation and sustained effort required for goal attainment.

are elements of a functional goal. (See Appendix E for more information on functional goals)

Write Measurable Goals: Lack of *specificity* is a common error when developing goals. For example: "SM/V will improve reading of college textbooks to receive better grades on exams." While this goal may be relevant and meaningful to the SM/V, there is no clear way of identifying how the goal will be successfully attained. Goals should be written in a way that identifies a measureable activity. For example: *"SM/V will answer textbook questions with 85% to 89% accuracy on weekly quizzes by using the PQRST (Preview-Question-Read-Summarize-Test) strategy to improve reading comprehension."*

> **Model of Functional, Specific, Measureable Goal:**
> (WHO) will do (WHAT) under what (CIRCUMSTANCE) (HOW WELL) by (WHEN) [*optional:* with (WHOM)].

Who: is always the SM/V

What: is the activity; (*Will…*)
> *Examples:* reply to all phone messages from previous day; record all "to do" tasks in daily planner; review all "undone" tasks and confirm updated reminders; water plants; prepare dinner; select a recipe for every night of the week; make a grocery list and purchase all items needed for dinner; take medication; attend appointments; notify spouse of scheduled appointments/changes; take notes during class; record notes during class and develop note cards from recording; type a 5-page document

Circumstance: the situation or environment; strategies/accommodations/cognitive aids
> *Examples:* using a WORD program; using Dragon Dictate; using spell-check; using Evernote/smart pen; using CareZone app; using a checklist; using a reminder; using a written planner; using an alarm; using a timer; using a recipe; with *x* amount of help; without stopping; with 1 break; before the next class; in a quiet place; in a distracting office

How well: percent accurate; number of errors; amount of time required
> *Examples:* without errors; with less than 2 gaps; in less than 1 hour; before the end of the day; by noon; every class; no more than 1 missed class; every night; once a week; every Tuesday

By when: when the goal will be achieved
> *Examples:* for a month; within a month; in 3 months; weekly; daily for 3 weeks; 2x/week for 4 months

With whom (optional): the individuals with whom the SM/V will be interacting during goal completion or individuals who may help monitor goal completion
> *Examples:* spouse, tutor, clinician, instructor

Goal Attainment Scaling: Goal Attainment Scaling (GAS) is an example of a system used to track progress toward achievement of a functional outcome. In GAS, a SM/V defines his/her baseline (i.e., current level of performance) and desired performance levels along a scale, where (-1) is their baseline and (0) is the minimum acceptable level of performance.

(See Appendix F for more information on GAS)

(See Appendix G for an example of tracking progress toward achieving a functional goal)

Clinical Pearl: Goal Attainment Scaling (GAS) is a versatile tool for evaluating functional goal achievement.

Suggested Materials from the mTBI Rehabilitation Toolkit related to GAS are on Chapter 7, pp. 466-468
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
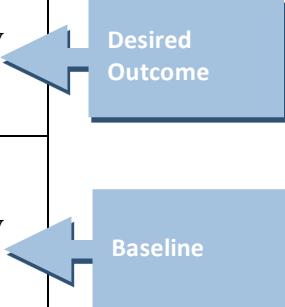
More information about GAS can be found in the SCORE Study Manuals *on pp. 9-17 in Chapter 4, Part II*
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part2_Client-Manual-Individual-Cognitive-Rehabilitation-Interventions.pdf
(If clicking on the hyperlink below does not work, copy and paste the link in your browser's address bar or locate the Chapter and Manual in the general link: *http://dvbic.dcoe.mil/study-manuals*)

A sample GAS goal scale is provided below:

+2 I will enter more than 90% of my appointments into my smartphone calendar every week for the next two months without a reminder from my spouse.
+1 I will enter 75% to 89% of my appointments into my smartphone calendar every week for the next two months without a reminder from my spouse.
0 I will enter 50% to 74% of my appointments into my smartphone calendar every week for the next two months without a reminder from my spouse.
-1 I will enter 25% to 49% of my appointments into my smartphone calendar every week for the next two months without a reminder from my spouse.
-2 I will enter 24% or less of my appointments into my smartphone calendar every week for the next two months. I will need a reminder from my spouse.

Desired Outcome

Baseline

Step 2: Select Treatment Approaches and Intervention Strategies

Most medical conditions can be managed using a variety of valid treatment options. Behavioral changes, pharmacotherapy, and surgery may all be considered for the same condition either singly, in sequence, or in tandem. Cognitive impairments are no different. There are a variety of interventions that may be used to manage changes in attention, memory, and executive functions. They each have their own rationale and method of implementation. Selection of a treatment approach or set of treatment approaches includes patient-specific factors such as

preferences, needs, timelines, previous treatment as well as the symptom profile. The ultimate goal should be to achieve changes in function that are meaningful to the SM/V.

Clinical decision-making requires the clinician to be systematic in considering treatment options. This usually begins with a needs assessment discerning the SM/V's primary concerns, ideas for what has been helpful and unhelpful, and goals. The collaborative interview process and GPs will be critical in selecting a treatment that is a good match for the SM/V's needs, goals, and preferences.

The **following key questions** that are addressed during the collaborative interview process increase the likelihood of selecting the optimal intervention for the individual SM/V:

- *What is the primary cognitive impairment(s)?* The nature of the cognitive impairment is not always clear. For example, the SM/V may describe having a "memory problem" that is more likely an attentional deficit. Careful questioning, and in some cases standardized testing, can help to identify the nature of the problem. Asking the SM/V to describe when the problem occurs can be illuminating. Similarly, asking the SM/V to describe what seems to lessen and worsen the problem can help the clinician understand the cognitive impairment.

- *What types of treatment approaches are most likely to engage the SM/V?* People differ in their disposition toward therapy. We all have certain values or preferences that shape how we respond to different intervention approaches. For example, some individuals are intrinsically motivated to have a structured home exercise plan. Other individuals may have circumstances or issues that prevent them from initially being able to work outside the clinic sessions or may need some counseling to help them get ready to practice new skills outside the clinic. Similarly, individuals who are familiar with technology will respond more favorably to a high tech support solution than someone who is less tech-savvy or less able to afford a particular device. Asking the SM/V to describe what s/he has found most useful in past treatments can inform the clinician about which approaches may be a good match for him/her. If a SM/V is unsure about what might work best for him/her, discussing examples of therapy approaches might provide him/her with insight in the selection process.

> *Clinical Pearls: Selection of specific interventions and strategies is predicated on knowledge of the SM/V's individual strengths and weaknesses. Information gathering is two-way; the SM/V shares information about his/her perception of the injury, its impact, and current strengths and weaknesses. The clinician may share information regarding concussion, comorbidities, and the range of interventions that may be of value. Gathering information through formal testing may also be appropriate. This information, collectively, is used as the basis for selecting interventions.*

- *Is there an accessible external aid that addresses a priority concern?* It can be helpful to begin therapy by introducing a tool that directly addresses a priority concern. In general, commercially available cognitive aids such as apps for smartphones that assist with organizational and attentional issues are easier to master than an internally-generated self-monitoring strategy.

- *What are the available supports?* The context in which the cognitive, somatic, and psychological problems occur is critical for treatment approach selection. During the collaborative interview process, the clinician will want to understand the context in which the cognitive issues become disruptive and to identify contributing factors such as people, specific tasks, and environmental influences. A partner or spouse can be very helpful in supporting a therapy approach designed to improve functioning at home. This would require that the support person be part of shaping the treatment. If a SM/V has a positive support system, this may allow a more involved treatment plan to be generated. Again, the collaborative interview will help identify the supports and obstacles, and inform the selection of the treatment.

Suggested Materials from the mTBI Rehabilitation Toolkit related to selecting intervention approaches include:
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a
  Intervention: Introduction (pp. 220-221); Overview of Cognitive Rehabilitation (pp. 221-222); Intervention Methods (p. 222)
  Clinician Tip Sheets: Principles of Cognitive Rehabilitation (pp. 222-223); Cognitive Intervention Techniques to Promote Patient Engagement, Awareness, and Learning (p. 223)

Step 3: Develop a Measurement Plan

The SM/V and clinician *collaboratively* develop a plan to measure how well the selected therapy is working.

- *Outcome measurement should focus on the functional impact of the goal:* Goal attainment should positively impact the SM/V's life in a meaningful way (i.e., "If this therapy works, what will be different in my life?"). The functional impact relates to the functional context and functional activity specified in goal development and may sometimes involve someone *other* than the SM/V. For example, the SM/V who is forgetting important tasks around the house may inadvertently increase the burden of household management for his/her spouse. In this situation, goal impact may focus on the perceived burden on the spouse related to household management.

> *A measurement plan includes:* 1) **who** will measure progress, 2) **what** will be measured, and 3) **how and when** (frequency) measurement will occur.

- *Who will measure?* Typically, performance on functional activities related to a goal will be measured by the SM/V. However, if the impact of the goal is associated with someone other than the SM/V, that other person may measure the impact of the therapy strategy.
- *What will be measured?* The SM/V and clinician will need to identify a specific, observable, measurable indicator for the functional activity.
  Examples: 1) The SM/V who is distracted when reading college textbooks will mark each moment of distractibility on the margin of the page next to the text. After reading, s/he

can count the marks and determine the frequency of distractibility per number of pages read.

2) A spouse who is experiencing a higher burden of effort related to household tasks will complete a scale related to the perceived burden for completing the tasks. Targeted tasks should be specific to what the SM/V has agreed to assume responsibility for in order to link progress to therapy.

- *When will measurement occur?* A specific plan should be created for how and when measurement will occur. The "how" may involve specific data sheets or a strategy log in which the SM/V records performance data as well as subjective impressions of what therapeutic strategies did and did not work. The "when" will depend on the frequency with which the functional activity associated with the goal occurs. For goals related to high frequency functional activities such as a conversation, specific short time frames may need to be identified to measure the impact of strategies. For example: "*I will be able to remember two facts from a 15-minute conversation with my spouse after dinner and record them in my daily log.*" When people other than the SM/V measure the impact of a strategy as part of a goal, a plan should be created for how and when the behavior will be recorded. It is important to record and discuss this information at regular intervals.

(See Appendix H for a data measurement journal used for tracking strategy use)
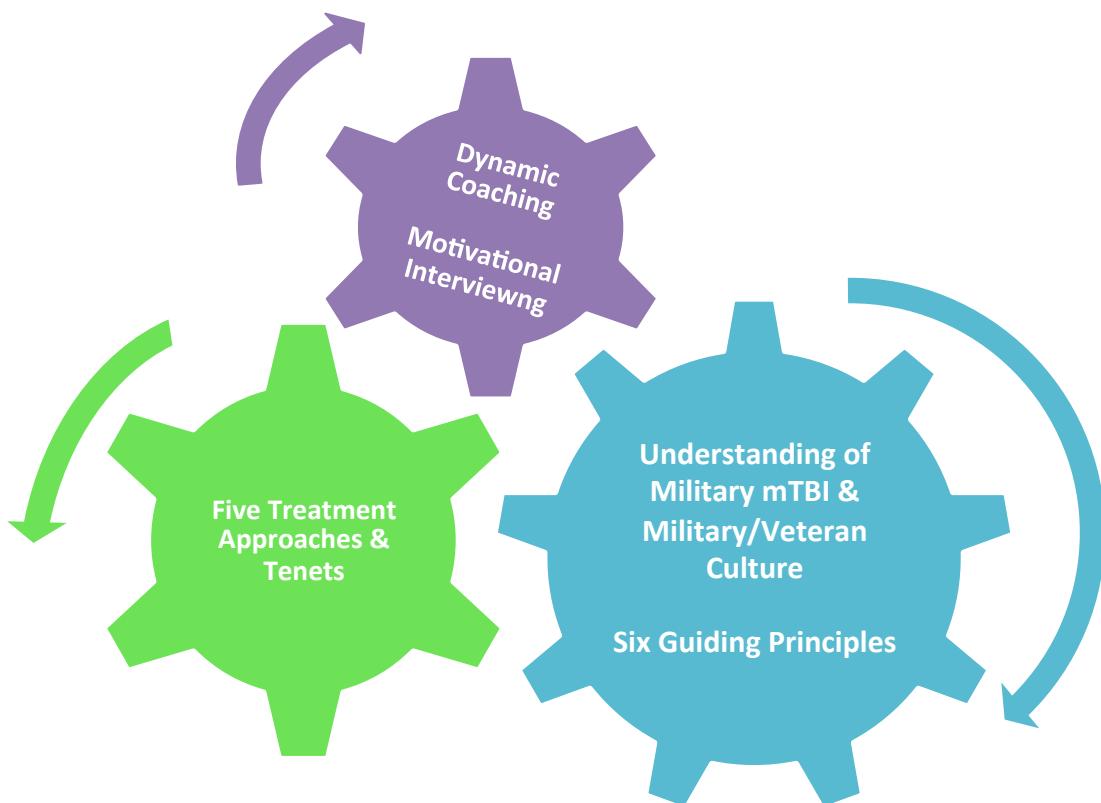
(See Appendix I for a coaching session form)

CHAPTER 4: MAKE FUNCTIONAL CHANGES

Step 1: Deliver Therapy

Preparedness for engaging with SM/Vs in the therapeutic process includes understanding of the military mTBI population, common comorbidities, expected course of recovery, military/veteran cultural competence, and knowledge and skills in treatment approaches to cognitive rehabilitation. The clinician and SM/V work collaboratively to identify which of the five treatment approaches described in the next section will facilitate goal attainment based on personal preferences and the nature of the goal selected for intervention. The six GPs, MI techniques, and dynamic coaching will facilitate patient engagement and self-monitoring for the durability of gains achieved in treatment. The following diagram illustrates the synergistic relationship of these therapy tools.

Figure 1. "Gearing Up": Mechanism for Providing Cognitive Rehabilitation to SM/Vs

Step 2 – Master the Five Treatment Approaches

This guide conceptualizes five treatment approaches and associated tenets that may be used to help SM/Vs manage everyday cognitive challenges: (1) *personalized education*; (2) *cognitive strategy training*; (3) *selection and training of assistive technology*; (4) *direct training of cognitive processes*; and (5) *environmental management*. For each approach, a general description of the implementation is provided with examples of in-session measurements and functional outcomes. Approaches include examples of what a clinician could say and do to strengthen the

therapeutic alliance with the SM/V (GP2), and maximize engagement and follow-through. Regardless of the approach selected, the clinician can use dynamic coaching to organize therapy and empower the SM/V to self-regulate in order to achieve a desired goal and fully engage with the mutually agreed upon therapy intervention.

Approach #1 - Personalized Education: Increasing the SM/V's understanding of the issues surrounding mTBI is a part of EVERY therapy program. As described, mTBI is complex and multifactorial (GP3). Most SM/Vs will benefit from *increasing their understanding of the factors that may be contributing to their symptoms and how treatment may alleviate their problems.* Another purpose for education is to *correct possible misperceptions or misinformation* about the nature of mTBI (e.g., mTBI is the same as a severe TBI). The following tenets will optimize the effectiveness of personalized education:

Tenet 1: Have a clear understanding of the PURPOSE of the educational exercises
There are different reasons why personalized education may be selected as a therapy approach; the specific reason dictates how the intervention is implemented. The most common reasons include: (1) increase awareness of difficulties in order to provide rationale for implementing compensatory tools or strategies; (2) validate symptomatology to decrease symptom magnification or anxiety; (3) increase understanding of the condition to provide support and decrease isolation; and (4) provide education about specific symptoms that are associated with specific behavioral health practices or therapies. Note that some of the reasons might encourage "normalizing" symptoms while other reasons might encourage highlighting the condition (GP5). One of the first tasks is to determine the SM/V's information need. The purpose of the educational exercises is clarified during the collaborative interview process. The purpose of the education or awareness training drives how the information is presented.

Identifying the purpose of education training allows the clinician to evaluate therapy progress. For example, the clinician may be measuring learning of content or the implementation of compensatory strategies as a result of the education/awareness training.

Tenet 2: Personalize the information
People learn and remember best when information is relevant to them. It is important to make the information personal in order to encourage the SM/V to use the information (GP1). The information or educational need guides the selection of the mode of presentation. Information is presented either (1) verbally through discussion, (2) via exposure to written or visual materials or (3) experientially involving opportunities to experience or observe conditions. The provision of a generic handout rarely produces change in behavior or affective state without supplementary application.

The first two modes of presentation use tools such as conversation, therapeutic interviewing, video, website reviews, handouts and readings that are selected by the clinician. Examples of how to personalize the information include activities such as asking the SM/V to:
- highlight (or note) information most relevant to his/her situation
- write the next paragraph or edit the material based on his/her own experience, or

- complete an "Agree and Disagree" assignment.

Examples of how to personalize experiential exercises might consist of different "noticing" or "observational" exercises such as asking the SM/V to:
- log or record instances of a symptom, behavior or feeling that is relevant to the educational goal
- query supportive significant others about their perception of information being presented and compare insights to those of the SM/V, and
- try some compensatory tool or system and report on perceptions of usability and impact.

The idea is to avoid presenting information as a static set of facts or concepts that the clinician selects. Creating ways to have the SM/V engage with the material and make it relevant increases the likelihood that the educational experience has a positive impact.

Tenet 3: Balance education about strengths and weaknesses
It is difficult for most people to discuss limitations or changes in functioning. Whenever providing education and awareness, it is important to pay attention to what has been preserved or *not* interrupted *in addition to* reviewing information about areas of concern. This can be done by incorporating strengths, or "intact" or "unaffected" life skills, roles, etc. into discussions and exercises. It is important that the SM/V participates in generating the list of strengths and weaknesses.

> ***An example of tenets 1, 2, and 3:*** Clinician says, "You mentioned that you have trouble concentrating at work. Has anyone mentioned that attention problems are quite common, especially when other physical problems like pain are bothersome?" "Would it be helpful to review this sheet describing different kinds of attention?" "Great, let's go through this together and talk about the ones that are and are not problematic. Perhaps we can come up with some relevant examples from your own life." (GP3)

Measurement. Session measurements may include a variety of subjective and objective metrics pertaining to the personalized educational exercises. The clinician should monitor the use of or engagement with the materials and completion of agreed upon assignments that may involve logs of whether the SM/V tried a strategy or completed an exercise. Ultimately, the clinician monitors the impact of the therapy. Examples of outcome measurements are listed below:
- improvement in mood: *SM/V received an improved rating on the XXX anxiety scale*
- increased self-efficacy: *SM/V followed through with agreed upon weekly goals for three out of four weeks*
- adoption of a behavioral health routine: *SM/V reported improved ratings of sleep quality and quantity on the XXX measure.*

> ***An example of measurement:*** Clinician says: "Okay, show me how you did at 'checking in' to log your concentration at work. You tracked this in the morning and the afternoon. Do you see any pattern across days here?"
>
> SM/V says: "Well, according to this, I lose concentration mid-morning and mid-afternoon."
>
> Clinician says: "Right, so let's figure out why that is and what you can do about it."

Refer to the **SCORE Study Manuals**

Chapter 2: Psychoeducational Interventions for Persistent Post-Concussion Symptoms Following Combat-Related mTBI for Patient Education Information:
Overview and Review of the Literature
Persistent Symptoms Following Concussion: A Client's Guide to Recovery
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter2_Psychoeducational-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)

Suggested Materials from the **mTBI Rehabilitation Toolkit** *related to* **Personalized Education***:*
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a
Cognition Education (pp. 227–228); Improving Attention and Speed of Processing (p. 230); Compensating for Memory Inefficiencies (pp. 237-238); Improving Executive Functions (pp. 243-244); Social Communication (pp. 257-258)
Clinician Tip Sheets: How to Explain Human Information Processing (pp. 228-229); Inventory of Attention/Speed-of-Processing Difficulties (p. 231); Experiencing Attention Levels (pp. 231-232); Fatigue Management–Factor and Strategy Awareness (p. 347); Post-Deployment Symptoms That Can Influence Academic Performance (pp. 368-369); College Accommodations for Students with Cognitive Disabilities (pp. 373-375)
Patient Handouts: Understanding Human Information Processing (p. 269); Understanding the Multifactor Model of Functioning After Concussion (pp. 270-271); Change Begins with Awareness (p. 264); Understanding Hierarchy of Attention Levels (p. 272); Ten Ways to Improve Your Memory (p. 295); Understanding Executive Functions (p. 296); Rating Your Executive Function Skills (p. 297)

Suggested Materials from the **SCORE Study Manuals**
Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part II: Client Manual for Individual Cognitive Rehabilitation Interventions
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part2_Client-Manual-Individual-Cognitive-Rehabilitation-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)
Patient Handouts: The Memory System (p. 21); What is Attention (p. 22); Attention Energy Management (p. 27); Daily Effects of Memory and Attention Difficulties (p. 36); Executive Functions (pp. 55-56); Prospective Memory-What is It? (p. 68)

Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part IV: Client Manual for Arm 3 Traditional & Arm 4 Integrated Cognitive Group Interventions
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part4_Client-Manual-Arm3-Traditional-Arm4-Integrated-Cognitive-Group-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)
Patient Handouts: Setting Goals (p. 2); Benefits of Setting Goals (p. 5); Internal & External Distractions (p. 14); Tips to help if you have problems with planning, time management and organization (p. 39)

Approach #2 - Training Cognitive Strategies: Training cognitive strategies is another common approach in most cognitive rehabilitation regimens. Cognitive strategies refer to both internal thinking processes and external actions that help a person self-monitor and regulate their actions in order to achieve a desired goal. Strategies may be general and designed to be implemented across tasks and contexts or they may be task- or domain-specific. Internally-generated, general cognitive strategies help an individual monitor his/her own thinking such as *Goal Management Training, Internal Self Talk,* or *Time Pressure Management*. Internally-generated, domain-specific cognitive strategies are mnemonic strategies such as *Visualizing Target Information* or *Creating Acronyms*. External strategies include engaging in self-regulatory behavior such as *Taking a Break, Asking for Help,* or *Relaxation Breathing* that may be applied to specific situations or used across contexts.

Training cognitive strategies as an intervention approach is selected when better self-regulation or self-monitoring would increase the odds for successful task completion. The SM/V needs insight into the problem and motivation to improve in order to initiate strategy use. If these prerequisites are not in place, a period of personalized education may be helpful prior to, or in conjunction with, implementing strategy training. The following tenets integrate the process of dynamic coaching and reinforce the mindset that the SM/V's preferences are critical to the selection and success of the strategy.

Tenet 1: Strategy selection and introduction need to be thoughtful and systematic
- Be aware of the range of strategy options that have been studied in the literature in order to select those that are optimal for an individual SM/V.
- Selection of strategies needs to be a collaborative process based on identified problems as well as the SM/V's preferences and past inclinations. People will use strategies that are most familiar, and build on their existing routines. The SM/V will often be able to generate a preferred strategy via a collaborative interview.
- Provide support for ensuring the SM/V has *knowledge* of *how, when,* and *why* to use strategies (GP2, GP5).

Tenet 2: Therapy should provide appropriate practice for using the strategy
- Emphasize practicing *use* of the strategy once the SM/V shows clear *knowledge* of *how, when,* and *why* to use the strategy.
- Identify and incorporate into practice the different antecedents or triggers for when strategy use should be initiated.
- Plan for practice using the strategy in naturalistic contexts and situations.

Tenet 3: Evaluation of strategy use should determine type and amount of practice
- Take session data on the SM/V's *knowledge* and *recall* of *how, when,* and *where* to use strategies.
- Take session data on the SM/V's ability to recall and implement strategy with decreasing feedback and support.
- Take data on strategy use in naturalistic environments using either self and/or significant other report.
- Take data on the impact of strategy use on the target problem.

> **Example of tenets 1, 2 and 3:** Clinician says, "Let's try these two note-taking strategies to see which one works best for you." SM/V tries reading while writing down key words in the margin, and reading while writing down summary phrases. The latter takes longer without better recall of the material. Clinician and SM/V then discuss when and how s/he will use key words when reading the new policy and procedure manual for work.

Measurement. Tenet 3 reminds the clinician to engage in ongoing monitoring of learning, use, and impact of the cognitive strategy. The SM/V and his/her supports can assist with this monitoring process as appropriate. The monitoring process itself can lead to increased self-regulation. Examples of outcome measures for using a cognitive strategy include:

- the number of mistakes on a data entry task in a vocational setting will decrease after learning the self-checking strategy
- family will report improved communication on the XXX scale after the SM/V learns the "Think, Then Talk" strategy
- the number of memory failures on the self-log will decrease after learning the verbal mediation strategy.

Suggested Materials from the **mTBI Rehabilitation Toolkit** *related to* **Training Cognitive Strategies:**
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a

> **Clinician Tip Sheets:** AAA Self-Reflection Form (p. 225); Methods to Promote Compensatory Strategy Learning (p. 225); Core Cognitive Strategy Recommendations Grid and Working Log (pp. 225-227)
> **Patient Handouts:** "AAA" Self Reflection (pp. 267-268); Core Cognitive Strategy Recommendations Grid (pp. 265-266)
> **Clinician Tip Sheets:** Overview of Strategies to Cope with Attention and Speed-of-Processing Difficulties (pp. 232-233); Strategies to Improve Attention–Identifying High- and Low-Demand Tasks (p. 233); Menu of Strategies Based on Attention Hierarchy (p. 233); Practice Tasks for Attention Strategy Rehearsal and Transfer (pp. 233-236)
> **Patient Handout:** Strategies to Improve Attention–Identifying Your High- and Low-Demand Tasks (pp. 281-283)
> **Clinician Tip Sheets:** Intervention for Memory Impairment (pp. 238-239); Practice Tasks for Memory Strategy Rehearsal and Transfer (pp. 241-243)
> **Patient Handouts:** Compensatory Memory Strategies–Internal and External Options (pp. 289-291); Memory Strategy–Intentional Reading (p. 294)
> **Clinician Tip Sheets:** Strategies to Improve Self-Regulation-Pausing (p. 247); Strategies to Improve Initiation (pp. 247-248); Generative Thinking Strategies (p. 249); Project Planning Strategy–Divide and Conquer (p. 251); Problem Solving Process (pp. 251-252); Strategy–Prioritization (p. 252); Menu of Strategies to Manage Executive Function Inefficiencies (pp. 252-253); Practice Tasks for Executive Functions Strategy Rehearsal and Transfer (pp. 253-257)
> **Patient Handouts:** Strategies for Problem Identification (p. 298); Emotional Self-Management Worksheet (p. 299-300); Strategies to Improve Self-Regulation–Pausing (p. 301); Strategies to Improve Initiation (p. 302); Generative Thinking Strategies (p. 304); Project Planning Strategy–Divide and Conquer (pp. 305-306); Problem-Solving Process (pp. 307-308); Strategy–Prioritization (p. 309); Taking Breaks (pp. 396-397); Pacing (pp. 398-399)
> **Clinician Tip Sheets:** Treatment Suggestions for Specific Problems with Social Communication (pp. 259-260); Helping Patients Learn and Implement Fatigue Management Strategies (p. 348)

Clinician Tip Sheets: Reading Strategies (pp. 370-371); Note Taking (pp. 371-372); Test-Taking Strategies (pp. 372-373)

Patient Handouts: Study-Reading Systems (p. 431); Note-taking Strategies (pp. 432-433); Test-taking Strategies (p. 434)

Suggested Materials from the <u>**SCORE Study Manuals**</u>

Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part II: Client Manual for Individual Cognitive Rehabilitation Interventions

http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part2_Client-Manual-Individual-Cognitive-Rehabilitation-Interventions.pdf

(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)

Patient Handouts: Optimizing Attention: environmental strategies (p. 24); Attention Energy Management (p. 27)

Intervention: Identifying Distractions (p. 25); Attention Energy Demands with Tasks (p. 29)

Patient Handouts: Internal Memory Strategies (p. 37); External Cognitive Aids to Improve Memory and Learning (p. 47); Examples of Using External Strategies (p. 48); Intentional Reading Form (p. 49); PQRST & SQ3R (p. 50)

Intervention: Word Recall (pp. 38-39); Everyday Ways to Use Internal Memory Strategies (pp. 40-41); What Would You Do (p. 45); Practice Makes Perfect (p. 46); Functional Memory Activity (pp. 53-54)

Patient Handouts: Executive Functions (pp. 55-56); Goal, Plan, Do, Review (p. 63); Problem Solving Strategy (p. 64)

Intervention: Planning Your Day (pp. 57-60)

Patient Handouts: Prospective Memory-What is It? (p. 68); External Memory Strategies (pp. 69-70)

Intervention: Juggling Duties Challenges (p. 83)

Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part I: Clinician Guide to Individual Cognitive Rehabilitation Interventions

http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part1_Clinician-Guide-Individual-Cognitive-Rehabilitation-Interventions.pdf

(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)

Intervention: Functional Memory Activity (pp. 27-28)

Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part IV: Client Manual for Arm 3 Traditional & Arm 4 Integrated Cognitive Group Interventions

http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part4_Client-Manual-Arm3-Traditional-Arm4-Integrated-Cognitive-Group-Interventions.pdf

(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)

Patient Handouts: Setting Goals (p. 2); Benefits of Setting Goals (p. 5)

Intervention: Are These Good Goals (p. 7); Setting Personal Goals (p. 8); SMART Goal Checklist (p. 9); Keep Your Eye on the Prize (p. 11);

Patient Handouts: Internal and External Distractions (p. 14)

Intervention: Identifying Distractions (p. 16)

Patient Handouts: PQRST & SQ3R (p. 22)

Intervention: PQRST & SQ3R Reading Activity (pp. 23-26); PQRST/SQ3R Project Guidelines Example (pp. 27-29)

Approach #3 - Selection and Training of Assistive Technology for Cognition (ATC):   There are a multitude of tools and devices that help individuals compensate for cognitive impairments either by limiting demands on a person's impaired ability or by modifying the task or environment to match the SM/V's abilities. In this technological age, the options for ATC are numerous and increasing.

Devices exist on a continuum from highly technical (e.g., specialized computers or software) to low tech (e.g., paper/pencil calendars, a watch with an alarm). Tools may be used to complete a specific task such as a GPS system to assist with navigation; or they may be multifunctional such as a smartphone with calendar, phone, camera and calculator capabilities. The selection of ATC as a therapy approach depends on the identified needs of a patient and whether there are tools that can meet the need. For example, difficulties with initiation, organization, and scheduling can often be addressed with a calendar and task completion tools. If a target need is a specific task such as note taking for class lectures, then the clinician may explore tools such as a recording pen. If a SM/V is reluctant to use a device because s/he perceives it as a "crutch" or that it may call attention to his/her "weakness", MI techniques may be helpful in addressing such concerns.

Effective training of ATC hinges on similar tenets as cognitive strategy training. Key tenets are reviewed below in the context of ATC.

Tenet 1: Device selection and introduction need to be thoughtful and systematic
- Be well versed on the range of ATC options in order to select devices that are optimal for an individual SM/V.
- Selection of tools needs to be a collaborative process based on the identified problem as well as the SM/V's preferences; people prefer tools that are familiar and build on their existing routines.
- Consider tools that match the SM/V's physical and learning abilities. For example, consider the ability to hear alarm beeps, see small screens, manipulate controls, and master device operation.
- Provide support for ensuring the SM/V has *knowledge* of *how*, *when*, and *why* to use the device.

Within the therapy process, the clinician and SM/V collaboratively select the tool to address an area of concern (GP1, GP2, GP3, GP5). The clinician may offer a set of choices or ideas that match the SM/V's needs and then involve the SM/V in selecting the best option. Together, the clinician and SM/V set goals or clarify what the SM/V anticipates will improve as a result of using the tool. This constitutes the outcome measure(s). Examples are given below under *Measurement*.

Tenet 2: Therapy should provide high dose practice for using the tool
- Emphasize practice in *using* the ATC tool once the SM/V shows clear *knowledge* of *how, when* and *why* to use the tool.
- Identify and incorporate into practice the different antecedents or triggers for when device use should be initiated.
- Plan for practice using the device in naturalistic contexts and situations.
- Instruction and practice in using a device may be accomplished in a few sessions for SM/Vs with mTBI.

Tenet 3: Evaluation should incorporate device knowledge, use, and impact
- Take session data on the SM/V's knowledge and recall for *how, when* and *where* to use the device.
- Take session data on the SM/V's ability to recall how to operate the ATC with decreasing feedback and support.
- Take data on tool use in naturalistic environments using reports from self and/or significant others.
- Take data on the impact of device use on the target problem.

Measurement. Adhering to Tenet 3 requires ongoing monitoring of learning, use, and impact of the ATC tool. Session data may involve observing the SM/V using the tool and recording the number of steps correctly executed or the level of independence. Outcome data typically reflect the overall goal or desired impact of using the tool. Examples of outcome data include:
- increased percentage of weekly appointments (or to do items) successfully completed with use of a calendar app
- higher course grade with use of a homework and study app
- improved reading comprehension as measured by quizzes following use of an *e*-reader text-to-speech program.

Suggested Materials from the **mTBI Rehabilitation Toolkit** *related to* **Training ATC:**
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a
Clinician Tip Sheets: Training Hierarchy for Memory Strategies (p. 239); Electronic Memory and Organization Aids (pp. 239-241)
Clinician Tip Sheet: Using a Smartphone or Planner to Help Manage Money (p. 355)
Patient Handout: Using a Smartphone or Planner to Manage Money (p. 415)

Suggested Materials from the **SCORE Study Manuals**
Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part II: Client Manual for Individual Cognitive Rehabilitation Interventions
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part2_Client-Manual-Individual-Cognitive-Rehabilitation-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)
Patient Handouts: External Memory Strategies (pp. 69-70); Tips for Technology (pp. 71-72)
Intervention: Selecting a System (p. 73); External Cognitive Aids to Improve Memory and Learning (p. 47)

Approach #4 - Direct Training of Cognitive Processes: Direct training of cognitive processes is primarily used when assessment, including standardized testing, reveals cognitive impairments that are not the result of co-morbidities. The premise is that cognitive processes can be improved by providing structured opportunities for exercising particular aspects of cognition. Treatments typically involve having the SM/V complete a series of repetitive drills or exercises that are graded in difficulty to facilitate recovery in a specific cognitive area. The tasks are not usually functional in and of themselves but are designed to stimulate discrete neural networks. Direct training of cognitive processes is always carried out in conjunction with other therapeutic interventions such as education and strategy instruction.

As in most of cognitive rehabilitation, direct training of cognitive processes relies on the principles of neuroplasticity. Neuroplasticity refers to the ability of our neural system to change in response to experience or environmental modification, or in this case, therapy exercises. The most common type of direct training for cognitive processes that has been evaluated in the literature is attention or working memory training where exercises address specific components such as sustained attention, working memory (holding onto incoming information) and selective attention. Similarly, exercises practicing certain executive functions such as impulse control and problem solving have been used with success. There is no research supporting the direct training of memory. In other words, exercises that help people practice recalling different types of information such as paragraph or list recall have ***not*** been shown to enhance memory.

The following tenets are critical to implementing direct training of cognitive processes:

Tenet 1: Therapy tasks should be organized according to a theoretical model
- Specific tasks should be based on a model of how the cognitive process that is being targeted is represented in the brain. For example, a theoretical model of attention processes that is supported in the literature includes sustained attention, selective attention, alternating attention, and divided attention. There are other models that are also valid.
- Ensure a scientific basis for the treatment hierarchies by working from a theoretical model.
- Computer program or workbook stimuli should be based on a model of cognition and supported by evidence from objective sources (i.e., not solely from the manufacturer or author). Areas of impairment may be identified by performance on a standardized cognitive or neuropsychological test and are targeted with corresponding tasks.

Tenet 2: Provide sufficient repetition
- Sufficient intensity of training is critical for facilitating reorganization of brain networks and/or establishing a cognitive skill so that it becomes automatic.
- The SM/V will likely need a method to practice exercises outside of the therapy session.

Tenet 3: Use patient performance data to direct therapy
- Track performance on exercises to make informed decisions about when to start, stop, or modify a therapy program.

- Measures that may be relevant to task performance include accuracy, latency, time to completion, or pattern of errors (e.g., more at the beginning or end of a task).
- Performance on exercises may improve due to practice effects so it is critical to measure and evaluate generalization to functional goals.

Tenet 4: Combine drills with strategy training
- It is important to integrate cognitive exercises with *strategies that facilitate task completion.* The SM/V should not simply be placed at a computer to complete computer drills. The clinician should train use of target strategies (e.g., self-talk, pacing, breathing) in combination with the drills.

Tenet 5: Identify and measure functional goals
- The clinician and SM/V should identify functional, naturalistic tasks or activities that they feel should improve with the cognitive exercises (GP5, GP6). The ultimate measure of success of any cognitive rehabilitation program is improvement in an individual's ability to manage work, daily living, or leisure time activities; not simply improvement on practiced therapy tasks.
- Tracking performance of associated functional tasks allows the clinician to measure generalization, modify the program accordingly, and provide feedback to the SM/V (GP6).
- Goal Attainment Scaling (GAS) is an excellent method of identifying functional goals. Together, the clinician and SM/V create goals with clear criteria so that the SM/V can evaluate whether or not s/he is reaching the target.

Measurement: Session measurements include task performance on drills, strategy use during the drill, review of the SM/V's perception of any cognitive change, and monitoring of functional goals or activities that might be part of therapy. The treatment outcome measures may also include performance on standardized cognitive or neuropsychological tests that were administered pre-treatment in addition to changes on functional goals. Examples of functional goals that might serve as outcome measures for an attention training program include:
- increased number of minutes the SM/V can work on school assignments without needing to take a break
- decreased number of "forgetting experiences" on weekly log filled out by spouse and SM/V
- decreased number of self-recorded attention lapses during class lecture
- ability to cook dinner when children are at home.

Suggested Materials from the **mTBI Rehabilitation Toolkit** *related to* **Direct Training of Cognitive Processes:**
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a

Table 7-3 – Examples of Attention-Related Practice Tasks (pp. 235–236); Table 7-10 – Sample Executive Function Strategy Practice Tasks (pp. 254–256)

Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part II: Client Manual for Individual Cognitive Rehabilitation Interventions
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part2_Client-Manual-Individual-Cognitive-Rehabilitation-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)
Patient Handout: (to accompany Attention Process Training) APT-3 Generalization Form (p. 18)

Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part I: Clinician Guide to Individual Cognitive Rehabilitation Interventions
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part1_Clinician-Guide-Individual-Cognitive-Rehabilitation-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)
Clinician Tip Sheet: (to accompany Attention Process Training) APT-3 Generalization Form Examples (pp. 8-9)

Approach #5 - Environmental Management: Environmental management refers to any restructuring or alteration of the environment to decrease the impact of cognitive impairment on everyday life. This therapy approach is often used in conjunction with training the use of a cognitive strategy or ATC tool. Examples of environmental modifications to assist executive function or organizational impairments involve establishing a space or system within the home to carry out tasks such as bill paying/mail management or family communication. Designing and implementing a bulletin board for the family daily schedule or a specific workspace with an organized file system may be part of a therapy plan. Environmental management may also involve lifestyle changes such as arriving earlier to meetings to set up for note taking or changing seats in a classroom to avoid distractions.

One of the most common mistakes that clinicians make when implementing environmental modifications is failure to train the SM/V to attend to the environmental alteration or system. Often, environmental modification requires explicit teaching. The basic steps for teaching the use of an ATC tool should be applied to environmental modifications as shown below:

Tenet 1: Identification and design of the environmental system or modification should be collaborative and based on observation of the SM/V in natural settings
The SM/V and relevant stakeholders are vital in identifying potentially effective supports (GP1, GP2, GP4).

Tenet 2: Therapy should provide practice using or attending to the system with generalized practice in natural environments facilitated by natural supports
This requires self-monitoring (or significant other monitoring) using some type of log or reporting system. These logs are a way of determining if the environmental change is effective.

Tenet 3: Evaluation of environmental management should include the SM/V's use or attention to the system or tool as well as the impact on the target issue

While logging implementation is critical, logging the *"usefulness" of the system or tool* is as important. The collaborative interview reveals the goal or desired outcome of the environmental modification, which serves as the ultimate outcome measure.

Measurement. Similar to previous intervention approaches, the clinician and SM/V should monitor use and impact of the environmental modification. Outcome measures specify the overall impact of the system. Several examples are offered below:

- all monthly bills will be paid (for a person who had help in setting up an office file)
- there will be consistency in remembering to take lunch, keys or bus pass when leaving the house (for a person who had help in posting a "getting out the door list").

Suggested Materials from the **mTBI Rehabilitation Toolkit** *related to* ***Environmental Management:***
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a

Clinician Tip Sheet: Overview of Strategies to Cope with Attention and Speed of Processing Difficulties (pp. 232-233)
Patient Handouts: Strategies to Improve Your Attention–Modifying Your Approach and Workspace (p. 284); Strategies to Improve Attention–Managing Interruptions and Multiple Tasks (p. 285); Coping with Slower Speed of Processing–Using the Auditory System (p. 286); Coping with Slower Speed of Processing–Using the Visual System (p. 287)
Clinician Tip Sheet: Building Habits and Routines (pp. 248-249)
Patient Handout: Building Habits and Routines (p. 303)
Intervention: Medication Management (pp. 345-346)
Clinician Tip Sheet: Intervention Planning for Medication Management (pp. 349-352)
Patient Handouts: Medication Management Self-Report Questionnaire (p. 392); Medication Summary and Schedule (p. 400)
Clinician Tip Sheet: Reengaging in Household Roles and Activities (pp. 365-366)
Intervention: Bill Paying and Money Management (pp. 346-347)
Patient Handouts: Establishing a Budget; Budget Planning Worksheet; Budget Tracking Worksheet; Bill Paying; Money Management (pp. 402-414)
Clinician Tip Sheet: Organizing the Mail (p. 353)
Patient Handout: Organizing the Mail (p. 401)

Suggested Materials from the **SCORE Study Manuals**
Chapter 4: Traditional Cognitive Rehabilitation for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 3) Part II: Client Manual for Individual Cognitive Rehabilitation Interventions
http://dvbic.dcoe.mil/files/DVBIC_SCORE-Study-Manual_Chapter4-Part2_Client-Manual-Individual-Cognitive-Rehabilitation-Interventions.pdf
(If clicking on the hyperlink does not work, copy and paste the link in your browser's address bar)
Patient Handouts: Optimizing Attention: environmental strategies (p. 24); Attention Energy Management (p. 27)
Intervention: Identifying Distractions (p. 25); Attention Energy Demands with Tasks (p. 29); Enhance Your Space (pp. 32-34)
Intervention: Organizing Personal Papers (p. 66)
Patient Handout: External Memory Strategies (pp. 69-70)
Intervention: Where are My Car Keys (pp. 77, 79)

Step 3: Monitor Performance and Goal Achievement

In therapy sessions following the dynamic coaching model, the SM/V is asked to:

- *Review progress since the last session*: What actions did s/he complete that were part of the intervention plan? What were challenges to completing the actions? What might make it easier?
- *Evaluate effectiveness of the intervention:* Did the predicted result of a particular action match the actual result? Some therapy approaches may take more time to produce change and it may be helpful to review expected timetables. What worked well and what was challenging? What was the level of effort required to remember and implement the intervention program? What happened when the program wasn't followed?
- *Identify next steps*: If the intervention approach worked well, where else might it be used? How might it be adapted or modified to increase its effectiveness? If the program seemed ineffective, should it be abandoned and a new strategy be developed?

(See Appendix I for an example of a form that can used to record information in a coaching session)

The treatment process described in this Guide is recursive and designed to address the functional complaints of the SM/V. The process can accommodate multiple simultaneous goals that may be at different stages of the therapeutic process. For example, one goal may be nearly achieved and another goal may be partially achieved when assessment is initiated for a new goal. The clinician transfers increasing responsibility for goal achievement to the SM/V with each new goal. For some problems, it may be appropriate to refer to other providers (GP3, GP4) to treat the underlying causes of the cognitive difficulties (e.g., behavioral health disorder, chronic pain, sleep dysfunction, substance use). Recall that the clinician is encouraged to build a team to address comorbid symptoms or conditions in order to meet the complex needs of the SM/V.

CHAPTER 5: TRANSITION TO SELF-MANAGEMENT

Step 1: Plan for Discharge

At the onset of therapy, the clinician and the patient should reach a mutual agreement about discharge from treatment when goals have been achieved or progress is not made as anticipated. Several scenarios may be considered when planning for discharge from treatment. The clinician may offer to leave the door open for future collaboration on an as-needed basis in order to provide a therapeutic safety net. In other cases, the clinician and SM/V may choose to schedule follow-up to gauge the stability of treatment gains and to ensure continued successful use of strategies and ATC tools. If a strong therapeutic alliance has developed in the course of treatment, the SM/V will likely feel comfortable to request a follow-up appointment should cognitive problems arise that s/he is unable to resolve independently. For example, the SM/V may be promoted, assume a new position, or enroll in additional college courses and need assistance to develop new cognitive strategies, learn different skills, or accommodate a heavier academic load. There may be some individuals who wish to continue therapy after achieving their treatment goals. It is appropriate to wean these individuals from therapy through a declining schedule of appointments that involve a frank discussion of what can and cannot be achieved through treatment. Once the SM/V has achieved his/her goals and the ability to self-manage cognitive difficulties, it is important to avoid iatrogenesis or learned helplessness by continuing to schedule regular appointments.

Clinical Pearls: A major strength of the treatment process described in this Guide is that discharge planning is an integral part of the therapeutic process.

Step 2: Measure and Evaluate Outcomes

Clinical assessments and outcome evaluations are bookends of an integrated process where the SM/V progresses from referral for evaluation and treatment to termination/completion of treatment. Outcome measures are administered at the point of discharge from treatment (perhaps with additional follow-up at a later point in time). The typical approach is to compare pre- and post-treatment scores on various assessment tools. This differential score is considered a proxy for symptom/functional/participation improvement. Outcome measures of effectiveness, efficiency, and patient satisfaction are increasingly required by both the health care industry and savvy consumers who make decisions about care and reimbursement. Effectiveness in rehabilitation typically implies a meaningful change in function—that is, improved ability to engage in important life activities and societal participation. Sometimes *follow up assessment* is also conducted to determine the stability of treatment gains.

Why Assess Outcomes? Assessing outcomes and demonstrating improvements can have many benefits in health care settings including:
- demonstrating to SM/Vs and their families that they have made important and significant improvements

- demonstrating to administrators the need for additional resources to expand successful services and programs
- program accreditation and re-accreditation by accrediting agencies
- program evaluation and improvement; if programming changes are made, outcomes can be evaluated before and after the change to see if expected improvements were achieved.

Types or Levels of Possible Outcomes: "Performance Improvement" outcome measures can and should reflect outcomes on multiple levels:
- *Patient*: Assessing outcomes at the level of the patient is generally the most important measure. Possible patient outcomes might include:
  - decrease in symptoms
  - increase in day-to-day functioning
  - increase in participation in work, school, social, or other activities
  - number of treatment goals achieved
  - improved quality of life
  - satisfaction with different aspects of the treatment.
- *Provider*: Outcome assessment at the provider level might include:
  - access issues such as wait times for an initial appointment or time before treatment sessions can be scheduled
  - effectiveness outcomes such as number of sessions needed to achieve various treatment goals
  - satisfaction outcomes such as satisfaction with service provided, professional demeanor, information/education provided, treatment goals achieved, involvement of family or significant others, etc.
- *Clinic/Program*: Outcome measures at the clinic/program level might include similar outcomes to those assessed at the provider level, but now reflecting clinical program outcomes:
  - access issues such as wait times for initial appointment or time before treatment sessions can be scheduled
  - effectiveness of treatment with different types of patients such as number of sessions to achieve treatment goals
  - satisfaction outcomes.

Methods or Tools for Outcome Measurement: There are a number of resources for identifying and selecting possible outcome measures for mTBI. In 2010, recommendations were published for the use of common outcome measures in TBI research https://talkbank.org/TBIBank/articles/wilde10.pdf.

Listed below are frequently used TBI outcome measures classified by their scope:
  - Method/Tools: **Goal Attainment Scaling (GAS)** (as discussed in this document under "Setting Goals") can be used to develop a set of individual-specific goals which can be tracked over the course of treatment, converted to standardized T-

Scores and then used as an outcome assessment measure (http://www.cckm.ca/CPSLPR/pdf/Schlosser2004.pdf).

- o Patient Reported Outcomes (PRO): **NIH PROMIS** website. PROMIS stands for Patient Reported Outcome Measurement and Information Systems and contains a wide range of PRO measures and research related to patient reported outcome measures. (http://www.nihpromis.org)
- o Standardized measures: The **COMBI** site (http://www.tbims.org/combi/list.html) provides access to many commonly used outcome measures including:
  - ▪ Participation: **Mayo-Portland Adaptability Inventory (MPAI)**, which assesses three subscales (Ability, Adjustment, Participation). The Participation subscale includes participation in self-management, work/school, and social activities. (http://www.tbims.org/combi/mpai/)
  - ▪ Function:
    - o **Functional Independence Measure (FIM)**; http://www.rehabmeasures.org/Lists/RehabMeasures/DispForm.aspx?ID=889 is one commonly used measure in moderate-to-severe TBI outcome assessment. However, it may be limited in assessing mTBI outcomes.
    - o **Disability Rating Scale (DRS)** (http://tbims.org/combi/drs/) is another commonly used measure of function in assessing moderate-to-severe TBI outcomes.
    - o **Health-related Quality of Life (HR-QOL)** measures: These tools are more appropriate for mTBI/concussion outcome assessment. Examples include:
      - ✗ A variety of health-related quality of life (HR-QOL) outcome measures. Some of these are available through the NIH Toolbox (http://www.nihtoolbox.org/Pages/default.aspx).
      - ✗ **Key Behaviors Change Inventory (KBCI)** (https://www.researchgate.net/publication/10886669_Development_of_the_Key_Behaviors_Change_Inventory_a_traumatic_brain_injury_behavioral_outcome_assessment_instrument) is another HR-QOL measure that has been used in mTBI outcome assessment.
      - ✗ **Neurobehavioral Functioning Inventory (NFI)** (http://www.tbims.org/combi/nfi/index.html) this is similar to the KBCI and potentially useful in mTBI outcome assessment.
  - ▪ Specific Abilities: If specific cognitive abilities are a target of treatment, standardized measures of those abilities would be appropriate outcome tools. For example, this might include functional measures of reading or math abilities.
  - ▪ Symptoms: The **Neurobehavioral Symptom Inventory (NSI)** is a postconcussive symptom self-report measure commonly used in the DoD and VA in evaluation and treatment of mTBI. It can be obtained at: (http://dvbic.dcoe.mil/sites/default/files/attachments/articles/Neurobehavioral%20Symptom%20Inventory%20form.pdf)
  - ▪ Satisfaction surveys: These may be particularly useful in assessing outcomes at a provider or clinic/program level.

*Suggested Materials from the **mTBI Rehabilitation Toolkit** related to **Outcomes Measurement** are on pp. 457-472*
(If clicking on the Toolkit hyperlink does not work, copy and paste the link in your browser's address bar)
http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=e454f2ce-00ae-4a2d-887d-26d5474c8d1a

SUMMARY AND CONCLUSIONS

This Guide provides a pathway for clinicians to coach SM/Vs in the *process* of resolving cognitive problems through use of strategies and skill improvement. The process relies on therapeutic alliance and dynamic coaching to promote self-efficacy and foster confidence in the SM/V's ability to manage cognitive problems independently.

Emerging from this Guide are the following tenets of successful therapeutic engagement:
- Establishing collaborative treatment goals will promote meaningful change in the SM/V's daily life.
- A strong therapeutic partnership will support the SM/V through the process of developing the self-management skills necessary to handle cognitive difficulties independently.
- Personalized education about the complex factors that contribute to cognitive difficulties will help the SM/V build the professional and personal support systems that will sustain him/her through making the changes necessary to improve his/her life.
- Promoting a positive expectation for recovery and cultivating resilience will lead the SM/V to experience increased self-efficacy for the activities and tasks targeted during treatment, and an increased overall confidence in his/her ability to independently resolve new cognitive difficulties that may arise.

The aim of this Guide is to empower clinicians to approach cognitive rehabilitation as a collaborative process and to deliver patient-centered treatments. The Guide was developed out of a perceived need to reframe traditional cognitive rehabilitation to ensure appropriate and effective treatment for SM/Vs. Patients present with their own set of circumstances, including pre-morbid status, injuries or illnesses, deployment experiences, comorbidities, and cognitive complaints, which necessitates a patient-centered interprofessional approach. The ideals of *personalized medicine* are embraced to honor each SM/V's unique needs in order to make more informed treatment decisions, promote patient engagement, and yield a higher probability of achieving desired outcomes.

Best practice in cognitive rehabilitation is being advanced by research initiatives and the work of this consensus group focused on enabling military SM/Vs to return to duty or civilian careers, succeed in college, fulfill and enjoy their roles within their family and community, and improve their overall quality of life. In addition to SM/Vs, other individuals with cognitive impairment will benefit from new knowledge gained through this work.

CASE STUDIES

This section presents four case studies or simulations to demonstrate the process of planning and implementing cognitive interventions incorporating the six GPs, five treatment approach options and tenets, motivational interviewing techniques, and dynamic coaching. The SM/V and clinician collaborate to select realistic, achievable goals, and compensatory strategies that capitalize on metacognitive beliefs including self-knowledge of skills and abilities. Action steps are formulated and initiated and the SM/V monitors his/her performance and outcomes. Strategies are modified as needed based upon self-evaluation and self-regulation to achieve self-efficacy.

CASE STUDY #1

This case highlights the importance of *considering co-morbidities in planning treatment* and *promoting patient engagement to optimize outcomes.* It incorporates examples of motivational interviewing (MI) techniques, goal attainment scaling (GAS), and dynamic coaching.

Preface: One of the most common post-deployment cognitive complaints is memory lapse, which often disrupts daily activities and may lead to negative perceptions of self-efficacy.

Background Information: JD, a 28-year-old male active duty staff sergeant was referred for cognitive rehabilitation because of memory complaints. He was exposed to IED blasts during his first two deployments. He recalled being dazed without loss of consciousness after both exposures. Guidance was followed for rest, educational intervention, and progressive return to activity following his second acute concussion/mTBI. He has been receiving mental health services for PTSD after returning from his third deployment a year ago. JD is married and has two young sons.

THERAPEUTIC PROCESS

Get Started

Gather information

The clinician reviewed JD's medical records including results of neuropsychological assessment which indicated no performance deficits, and his Neurobehavioral Symptom Inventory. The clinician engaged JD in a patient-centered interview to explore his complaints and gain an understanding of his perspective to guide intervention. JD stated the following:

"I don't take my meds."
"I can't remember what my wife tells me to get at the store."
"I lose my keys, I.D. card, and phone, even in the house."

mTBI Rehabilitation Toolkit *resource: Chapter 7- Section on "Cognitive Intervention Techniques to Promote Patient Engagement, Awareness, and Learning" (p. 223); Clinician Tip Sheet on "Motivational Interviewing" (pp. 223-225)*

Put the pieces together

In probing underpinnings for his complaints, memory lapse was identified as the primary contributing factor. Refer to the Epilogue section at the end of this case study for examples of other potential factors that were ruled out.

Set Goals

Set, prioritize, and select doable goal(s)

Through the process of collaborative goal-setting, JD decided that his priority was to remember to take his medications as prescribed (refer to Addendum 1 for an example of collaborative goal-setting). The following Goal Attainment Scale (GAS) was formulated:

Level of Attainment	Goal
+2 much more than expected	*I will remember to take my medications at the correct time 7/7 days each week using a pillbox organizer and an app on my smartphone to remind me.*
+1 somewhat more than expected	*I will remember to take my medications at the correct time 6/7 days each week using a pillbox organizer and an app on my smartphone to remind me.*
0 expected level of outcome	*I will remember to take my medications at the correct time 5/7 days each week using a pillbox organizer and an app on my smartphone to remind me.*
-1 somewhat less than expected	*I will remember to take my medications at the correct time 4/7 days each week using a pillbox organizer and an app on my smartphone to remind me.*
-2 much less than expected	*I will remember to take my medications at the correct time 3/7 days each week using a pillbox organizer and an app on my smartphone to remind me.*
Comments	Timeline: two weeks Strategies: JD will keep his paper log to chart his compliance. He will call the clinician in one week with results for the first week.

mTBI Rehabilitation Toolkit *resource: Chapter 11 - Section & Clinician Tip Sheet on "Goal Attainment Scaling" (pp. 466-468)*

SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handout on "Goal Attainment Scaling" (pp. 9-14)*

Make Functional Changes

Develop and implement plan

JD participated in treatment planning to improve his everyday functioning. To set the foundation for change, the clinician and JD engaged in a dialog to assess the

importance of his goal and his confidence in achieving the goal (refer to Addendum 2 for the script of the dialogue).

Information from the dialog and patient-centered interview was used to develop a therapy plan which fostered JD's investment in its implementation. Options for treatment approaches were considered. JD and the clinician collaboratively selected the following four approaches to optimize goal attainment with supports, strengths, and preferences:

- **Approach #1: Personalized Education**

  Education was provided to validate and normalize JD's symptoms, and gain understanding and insight into factors that contributed to his memory problems. Personalized education included discussion of negative consequences of not taking his medications as prescribed (e.g., chronic headaches resulting from lack of effective management with pharmacotherapy may lead to decreased tolerance and high irritability).

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section on "Medication Management" (pp. 342-344)*

- **Approach #2: Training Cognitive Strategies**

  JD paired his medications with established routines (e.g., take morning meds after brushing his teeth; take mid-day meds with meal; take evening meds at bedtime).

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Clinician Tip Sheets on "Medication Management" (pp. 349-352)*

- **Approach #3: Selection and Training of Assistive Technology for Cognition (ATC)**

  JD selected a smartphone app for medication reminders based upon his needs, strengths, and personal preferences including ease of use. The clinician provided instruction and training in programming alerts. JD established a routine of keeping his smartphone available and fully charged, and adhering to alerts to take his medication. He promptly updated reminders when his prescriptions were modified.

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section on "Compensating for Memory Inefficiencies" (pp. 239-240)*
  SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handouts on "External Memory Strategies" (pp. 69-70); "Tips for Technology (pp. 71-72)*

- **Approach #5: Environmental Management**

  JD identified desired features for a pillbox organizer (e.g., fits in his uniform pocket; accommodates 2-week supply to match the length of his typical field training; each compartment large enough to hold several pills). After purchasing the organizer, he developed routines for its use (e.g., refill the pillbox on the same day of each week; have it available when needed). JD also established locations to keep his medications to facilitate compliance where it is not only conveniently placed and accessible, but serves as a visual reminder (i.e., bathroom counter for morning and evening meds, in his pocket or on the kitchen table for his mid-day meds).

Initially, the clinician provided instruction and coaching. With successful experiences over time, support from the clinician decreased, and JD's independence in self-coaching increased. He connected the process of problem-solving in therapy to problem-solving at work.

SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handout on "Where Are My Car Keys" (pp. 77 & 79)*

Self-monitor performance

JD monitored his use of strategies and the level of effort it required. He tracked the consistency of his performance (i.e., number of times he took his medications as prescribed versus number of times he missed).

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Clinician Tip Sheet on "AAA Self-Reflection Form" (p. 225); Patient Handout on "'AAA' Self-Reflection" (pp. 267-268)*
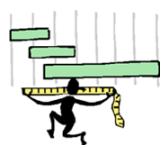
Evaluate goal achievement

JD compared his actual performance with his predicted performance. He took his medications as prescribed using his strategies 4 out of 7 days without reminders from his wife.

JD reviewed what worked and what did not work and determined that his 3 lapses resulted from not hearing his smartphone alerts when eating in noisy dining facilities.

Adjust plan or goal and implement changes

Since his goal was not met on JD's first attempt, Approach #3 was modified to accommodate noisy environments: 1) the volume of his smartphone alerts was increased, and 2) a vibrate feature and text were programmed to accompany audio alerts.

Evaluate goal achievement

After four weeks (or two cycles of self-monitoring), JD's compensatory strategies were established as habits in his daily routine.

Transition to Self-Management

With increased adherence to his pharmacotherapy, JD discovered that his headaches decreased in frequency and intensity. He felt that he was able to use relaxation techniques more effectively to manage his anxiety, and he achieved more restful sleep at night. As a result, he felt more energized to attend family outings, and his ability to focus and concentrate improved. He was able to keep track of his personal items by generalizing use of routines (i.e., established a routine of placing his keys, I.D. card, and smartphone in a central location upon returning home and retrieving them before leaving home). He generalized use of his smartphone as an assistive device for memory by recording audio reminders (i.e., shopping lists from his wife).

When JD no longer required reminders from his wife to take his medications, he felt empowered by his self-management. On rare occasions when he missed a dose, his increased awareness of the positive effects of the medication served as an internally-generated reminder; that is, when he experienced negative symptoms that were not managed as a result of missing a dose, his motivation for medication adherence increased.

JD was discharged from therapy as he demonstrated self-efficacy. He was invited to schedule a follow-up if needed since he was planning to enroll in a college program to advance his career.

Note: If JD did not perceive positive effects of adherence with pharmacotherapy as expected or predicted, or if he experienced negative side effects, then a referral to the prescribing physician would be appropriate to discuss outcomes and to consider adjusting the therapy (medication or dose), or to consider non-pharmacologic treatment options. This is an example of partnering with other specialists for patient-centered interdisciplinary treatment (GP4).

Epilogue

As discussed in the *Clinician's Guide*, cognitive rehabilitation with service members and veterans (SM/Vs) is a patient-centered collaborative process that considers each individual set of circumstances such as personal preferences and values, pre-morbid status, injuries or illnesses, deployment experiences, and comorbidities. The following are alternatives to information presented in the case study that would guide other options in clinical decision-making:

Other potential factors (with indicative statements) that could contribute to JD's complaints:

- Memory lapse ("I try to remember, but sometimes I just forget")

- Organizational challenges ("I can never find my keys and phone when I leave the house 'cause I have too much stuff all over the place")

- Time management ("I'm just too busy"; "I have so much to do, I always seem to miss something")

- Intentional omission or ambivalence ("I don't like to take a lot of meds"; "I don't know what it's for so I don't take it")

- Negative experiences ("The meds don't help"; "I feel worse when I take it"; "I couldn't get up in the morning because it knocked me out so I missed morning formation")

- Lack of motivation or incentive ("You know, it really didn't bother me that I forgot to take my meds, but now I know that I should, and I'd like to do it")

- Sleep or fatigue issues ("I'm too tired to remember"; "I just don't have the energy to remember")

- Depression, or stress, or substance use

- Normal forgetfulness ("My wife tells me that I always lose my stuff"; "I could never remember all the things I needed when shopping")

Example of patient-centered interview leading to an alternate plan for addressing complaint:

C = Clinician
JD = SM/V

C: I understand that you're having difficulty with medications.

JD: I don't take 'em.

C: You're not taking your meds.

JD: I forget sometimes.

C: What are your medications for?

JD: I don't know. All I know is that whenever I say something, they give me another pill.

C: *So, you're not sure what the medications are for.*

JD: Well, there's one for my headaches, one because I don't sleep, one for anxiety and there's one that I have no idea what it's for.

C: *It sounds like there are about 4 medications that you're supposed to take every day.*

JD: Yeah.

C: *How do they work?*

JD: The headache medication works but I don't need it everyday, and it makes me feel like I'm not as sharp as I need to be.

C: *How about the sleep med? How does that work?*

JD: It helps me fall asleep, but it doesn't do much about the nightmares. That's really the bigger problem because I don't want to go back to sleep after I wake up.

C: *And the anxiety med?*

JD: I don't know. I'm not sure I'm taking it right, or I'm missing it too many times. That's what the doc said.

C: *So you think the way you take the med might prevent it from helping you as much as it might.*

JD: Maybe.

C: *How do you feel about medications in general?*

JD: I'm not that comfortable with taking all these pills. I'm real concerned about getting addicted to them, and I don't know how they'll affect me later on.

C: *So, there's a lot about the medications that you don't understand.*

JD: Yeah.

C: *So, let me know if I have this right. You're prescribed a number of medications but you're not sure about what they're for, how they work, their side effects, and their long term effects on your health. Also, it sounds like you're concerned about becoming addicted to them. Is that right?*

JD: Yeah.

C: *How do you think memory plays a role in your medication difficulties?*

JD: I remember to take them when I need 'em. Like when I have a headache or when I haven't slept in a few days, I take the sleeping pill. But the rest of the time, I try not to take them.

C: *So maybe memory isn't the problem. You remember the pills when you need them. Do you think the problem might be more related to how you feel about the medications?*

JD: Yeah. I mean, I'm not just blowing all this off to be difficult. I want to get better. I just don't want to take this stuff if I really don't need it.

C: *What would help you figure out which medications you can take safely and which ones you don't really need to take?*

JD: I don't know.

C: *Would you mind if I make a suggestion?*

JD: No. Go ahead.

C: *How about we find someone, maybe a pharmacist or your primary care doctor, who can tell you about your medications, how they work, their side effects, their long-term effects, their interaction with each other, and their potential for addiction? Would that help?*

JD: Yeah, that would be helpful.

C: *Do you think you would be able to take a medication more regularly if you understood why and how it might help you?*

JD: Yeah. When I was in Iraq, I could keep track of everything. I knew every med that my guys were on and if they took them or not. I think I can do this for myself.

C: *I recognize that you're a staff sergeant and have the capacity to manage your own care. It seems like once you have a clear idea about which meds you want to take, then you can work out a way to take them. Is that right?*

JD: Yeah, that's right.

C: *Would it be okay if we touch base after you speak to a pharmacist or doctor just to make sure that you have all the information that you need?*

JD: Yeah, that would be great. Thanks.

Comment: A staff sergeant is an individual who has been identified as having leadership qualities and, as such, should be able to manage his medication regimen. It is possible that this SM/V has been unable to generate a strategy to increase consistency of adherence to his med regimen; however it seems more likely that his "lapses" are associated with ambivalence about medications. The clinician and SM/V will revisit strategies to improve consistency after he receives appropriate education from a pharmacist or primary care provider. *Note that education can be provided by a professional other than the SLP.*

Addendum 1: Example of Collaborative Goal-Setting

C = Clinician
JD = SM/V

C: *I understand that you're having difficulty with medications.*

JD: I don't take 'em.

C: *You're not taking your meds.*

JD: I forget sometimes. I have 4 pills I'm supposed to take, but I can't always remember to take 'em.

C: *So there are 4 medications that you're supposed to take.*

JD: Yeah.

C: *When do you take your medications?*

JD: I'm supposed to take one in the morning, one during the day, and one at night. I take one only when I need it for my headache.

C: *What do you do to help you remember?*

JD: I have my pills on the counter in my kitchen so I can see them.

C: *Do you use a pillbox?*

JD: No, I just keep them in the containers that I get from the pharmacy.

C: *Would you mind if I make a suggestion?*

JD: No. Go ahead.

C: *I recognize that you're a staff sergeant and have the capacity to manage your own care. It seems like if we can figure out a system to help you remember to take your medications, you should be able to do it. Is that right?*

JD: Yeah. I mean, I'm not just blowing all this off to be difficult. When I was in Iraq, I could keep track of everything. I knew every med that my guys were on and if they took them or not. I think I can do this for myself. I just haven't been doing it consistently, and now I want to do better.

As a result of engaging in this dialogue with the clinician, JD formulates a goal to remember to take his medications as prescribed. A Goal Attainment Scale (GAS) is developed collaboratively (refer to the GAS in the case study).

Addendum 2: Example of Patient Dialog to Assess Importance of Goal and Confidence in Achieving the Goal

C = Clinician

JD = SM/V

C: *On a scale of 1 to 10 where 10 is extremely important and 1 is not important, how important is taking your medications regularly?*

JD: A 9.

C: *Why a 9 and not a 7?*

JD: Because these problems, headache, sleep, and anxiety, make it difficult to do anything. I need to start making changes in my life or I'll end up 20 years down the line with these same problems. I just want to get back to feeling more like I used to feel. The only thing that stops it from being a 10 is that I only want to take the headache med when I absolutely need to. I'm pretty set on this.

C: *On a scale of 1 to 10 where 10 is extremely confident and 1 is not confident at all, how confident are you that you can take your medications as scheduled?*

JD: Probably an 8.

C: *Why an 8 and not a 5?*

JD: Well, I remember to take my medications more than 50% of the time or 4 times a week. But that's not enough for me to function as best as I can and to do my job well.

C: *What do you need to help you become more consistent with the sleep and anxiety meds?*

JD: Probably some sort of routine. Just like everything else in the Army.

C: *So you would link it to a routine.*

JD: Yeah, like when I wake up in the morning, when eating lunch, and before I go to sleep. At night, I'll add the sleep med.

C: *So you could set up a routine of linking med times to waking, eating lunch, and sleeping.*

JD: Yeah.

C: *What's a reasonable guess of how successful you'll be during the week? Over the course of 7 days, how many days will you take your meds using this routine?*

JD: I'll probably miss something in there. So maybe 5 days.

C: *Okay. You predict that you'll take your meds on schedule 5 out of the 7 days of the week.*

JD: Yeah.

C: *Will you need anything to help you achieve this?*

JD: I'll probably leave the morning and evening meds in the bathroom so I'll see them when I wake up and before I go to sleep. I'll keep the lunchtime meds with me on weekdays when I go to work, and on the kitchen table on weekends.

C: *How will you track whether you take them or not?*

JD: Maybe I could leave a pencil and a pad of paper in the bathroom so I could check off each day before I go to bed.

Other potential treatment approaches and strategies:

- **Approach #2: Training Cognitive Strategies**
  - Use self-talk or verbal repetition (e.g., "remember your meds - remember your meds")
  - Highlight self-regulatory behaviors (e.g., focus on feeling of wellness, calmness, or absence of headache as a result of taking medication as prescribed)

- **Approach #5: Environmental Management**
  - Develop a consolidated schedule of all prescribed medications for JD to post in his home
  - Use post-it notes on refrigerator to serve as reminder when preparing meals, or on JD's computer screen at work

CASE STUDY #2

This case study underscores the ***importance of the interdisciplinary team in addressing post deployment co-morbidities that impact cognitive functioning.*** It focuses on attention/ concentration challenges that impact academic performance.

Preface: Many SM/Vs use their educational benefits to enroll in school in order to qualify for promotions, retool their skills, or pursue new careers.

Background Information: CH, a 39 year-old male combat veteran, retired from the military and is currently a full-time college student. He was referred for cognitive rehabilitation because of attention/concentration lapses, which negatively affect his academic performance. He has a history of multiple exposures to IED blasts during two deployments. His persisting symptoms of migraine headaches, chronic lower back pain, and anxiety are being managed by his interdisciplinary team of providers.

THERAPEUTIC PROCESS

Get Started

Gather information

The clinician engaged CH in a patient-centered interview to explore challenges that he perceived as barriers to passing his college courses and earning his degree. CH reported that his difficulty in maintaining attention/concentration is a major barrier to learning new information.

C = Clinician
CH = SM/V

C: *How has it been for you being back in school?*

CH: It's harder than I expected and I'm getting slammed!

C: *What are your biggest challenges in school?*

CH: I can't concentrate and remember what I hear in lectures so I'm failing my quizzes. I need to read things three or four times in order to get it."

C: *What helps you to concentrate in class or while you're reading?*

CH: It helps if I think of this as a mission and not just school. For me, failure is not an option so I keep giving it my all.

C: *What seems to make it more difficult to concentrate?*

CH: I'm on guard all the time, and I get distracted by any sound or movement inside and outside of class. I can't afford to fail my courses. I know I'm falling behind, but I can't seem to keep up, so it stresses me out, and I can't focus.

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section on "Cognitive Intervention Techniques to Promote Patient Engagement, Awareness, and Learning" (p. 223); Clinician Tip Sheet on "Motivational Interviewing" (pp. 223-225)*

A review of medical records indicated no cognitive deficits on CH's post deployment neuropsychological testing, and his audiologic evaluation was within normal limits.

The following assessment tools were used:
- Self-assessment survey that prompted CH to rate his academic skills and predict his success in college. He identified difficulty with listening and paying attention to the instructor; taking notes while listening to lectures in class; and focusing while reading. Strengths included completing homework assignments on time; asking instructors questions for clarification; making oral presentations in class; and staying motivated to put best effort into school for the entire semester.

    mTBI Rehabilitation Toolkit *resource: Chapter 9 - Clinician Tip Sheet on "Return to School Needs Assessment" (p. 368); Patient Handout on "Return to School Needs Assessment-Essential Skills for College Success" (pp. 429-430)*

- *Attention Process Training Test (APT-Test)* (Sohlberg & Mateer) to screen components of attention based on a clinically derived taxonomy of attention skills (focused, sustained, selective, alternating, and divided attention). CH scored within ± 1 standard deviation of the mean for his age group on all subtests.
    http://www.lapublishing.com/apt-attention-process-training-test/

Put the pieces together

Based on information gathered, the clinician determined that CH's difficulties were likely associated with his co-morbidities and engaged with his interdisciplinary team members to develop a treatment plan.

Set Goals

Set, prioritize, and select doable goal(s)

CH expressed his goal as: "I want to earn passing grades on my quizzes."

Through the process of collaborative goal-setting, a functional, specific, measurable goal was formulated and the following Goal Attainment Scale (GAS) was developed:

Level of Attainment	Goal
+2 much more than expected	*I will improve my attention with use of therapy strategies during class and when studying in order to learn new information and answer questions with more than 90% accuracy on weekly quizzes without assistance.*
+1 somewhat more than expected	*I will improve my attention with use of therapy strategies during class and when studying in order to learn new information and answer questions with 85% to 89% accuracy on weekly quizzes without assistance.*
0 expected level of outcome	*I will improve my attention with use of therapy strategies during class and when studying in order to learn new information and answer questions with 80% to 84% accuracy on weekly quizzes without assistance.*
-1 somewhat less than expected	*I will improve my attention with use of therapy strategies during class and when studying in order to learn new information and answer questions with 75% to 79% accuracy on weekly quizzes without assistance.*
-2 much less than expected	*I will improve my attention with use of therapy strategies during class and when studying in order to learn new information and answer questions with 74% or less accuracy on weekly quizzes without assistance.*
Comments	Timeline: one semester with weekly assessments on quizzes Strategies: CH will use strategies to decrease distractions and increase attention and concentration in order to learn information from lectures and assigned readings.

mTBI Rehabilitation Toolkit *resource: Chapter 11 - Section & Clinician Tip Sheet on "Goal Attainment Scaling" (pp. 466-468)*
SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handout on "Goal Attainment Scaling" (pp. 9-14)*

Develop and implement plan

CH and the clinician developed a plan to optimize goal attainment based on information from the patient-centered interview, recommendations from the interdisciplinary team, and consideration of treatment approach options.

A measurement tool was developed to track performance outcomes. A counselor from the Office of Students with Disabilities was included in discussions to provide information on and advocacy for appropriate disability access services on campus.

The following treatment approaches were selected:

- **Approach #1: Personalized Education**

  Education was provided to explain assessment results (no deficits in test performance), provide reassurance and positive expectation for self-efficacy, and increase CH's understanding of how migraine headaches, back pain, and anxiety can affect his attention and concentration. Symptoms were validated, and the rationale for using compensatory strategies was reinforced.

- **Approach #2: Training Cognitive Strategies**

  The clinician and CH selected the following strategies to optimize attention during lectures and while studying:

  o Schedule study tasks that require high level of attention at peak cognitive times and when pain is optimally controlled with minimal negative side effects.
  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Clinician Tip Sheet & Patient Handout on "Strategies to Improve Attention – Identifying High- and Low-Demand Tasks" (p. 233 & pp. 281-283); Patient Handout on "Understanding the Multifactorial Model of Functioning After Concussion (pp. 270-271)*

  o Use a timer while studying to prompt 5-minute breaks every 30 minutes to "recharge" and maintain alertness and attention across an extended period of time to complete study tasks.
  mTBI Rehabilitation Toolkit *resource: Chapter 9 - Patient Handout on "Taking Breaks" (pp. 396-397)*

  o Use active note taking skills:
    - engage by questioning and connecting new concepts with acquired knowledge;
    - use Cornell format to structure systematic note taking and create a study guide;
    - review written notes with audio recordings after class to edit and fill in missing information.

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Information on "Possible Strategies Based on Patients' Vulnerabilities Associated with Specific Levels of Attention" (p. 234)*
  SCORE Study Manuals *resource: Chapter 4, Part II: Patient Handout on "PQRST & SQ3R" (p. 50)*

- **Approach #3: Selection and Training of Assistive Technology for Cognition (ATC)**

Low and high tech tools were considered to manage anxiety and to optimize learning new information during lectures and while reading/studying.

- o The clinician and CH practiced use of a recording pen for note taking during simulated and recorded lectures (e.g., "Ted Talks" accessed on YouTube). With demonstrated benefits in practice trials, CH contacted his counselor in the Office for Students with Disabilities on campus to request permission from professors to record lectures for note taking and studying with his smartpen.

  SCORE Study Manuals *resource: Chapter 4, Part II* **-** *Patient Handout on "External Cognitive Aids to Improve Memory and Learning" (pp. 47-48)*

- o The clinician introduced the CampusReader app to formulate and coach individualized reading comprehension strategies. With guided practice, CH gained proficiency in using the app and reported active engagement in the reading process including metacognitive awareness (e.g., assessing and monitoring readiness for the task, level of attention, internal distractions); interaction with reading material (e.g., font characteristics, option for text-to-speech); focus of activity (e.g., reading to learn new information versus leisure reading); and managing environmental variables that support or impair the reading process (e.g., noise, lighting, external distractions).

- o CH and the clinician collaborated with his primary care physician to design a tool to track compliance with prescribed pain medication and record information on dosage adjustments to optimize benefit (i.e., effectiveness, presence and degree of negative side effects, and impact on CH's attention).

- o The mental health provider introduced a set of choices for stress-reduction apps to complement psychophysiologic biofeedback training. Based upon a series of trials, CH made a selection from the options provided. Additional instruction incorporated practice in using the app in response to triggers in daily routines and natural environments. CH tracked his use of the app and its effectiveness in managing his anxiety. He reported good results after three weeks of daily use in response to antecedent events that triggered his anxiety.
  The National Center for Telehealth and Technology (T2) developed apps for SM/V including: *Breathe2Relax, Life Armor, PE Coach, PTSD Coach, T2 Mood Tracker, Tactical Breather*

- **Approach #5: Environmental Management**

The following environmental modifications were recommended to eliminate or minimize distractions when studying at home:
- o turn off electronic communication devices during study periods (e.g., email, text, social media);
- o use noise cancellation headsets when needed;

- select a quiet, non-distracting area for studying to avoid competition for attention or temptation to attend to other tasks (e.g., watching television, eating).

The following disability access accommodations were requested and approved through the college's Office for Students with Disabilities:
- preferential seating in the classroom to minimize distractions and reduce anxiety;
- proctored exams in distraction-reduced space on campus.

mTBI Rehabilitation Toolkit *resource: Chapter 9 - Section on "Accommodations for Students with Disabilities" (pp. 373-375)*

SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handout on "Optimizing Attention: Environmental Strategies" (p. 24)*

Self-monitor performance
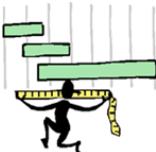
CH used his written measurement tool to assess, rate, and monitor use and effectiveness of strategies in maintaining attention in the classroom and while studying. He tracked his grades on quizzes over a two-week period.

Evaluate goal achievement

CH compared his actual performance with his predicted performance. At the end of two weeks, he earned 75% and 78% on his quizzes (score -1 on GAS; goal not met).

Adjust plan or goal

In reviewing what did and did not work, CH and the clinician concluded that persistent headaches interfered with attention, despite good compliance with medical therapy as prescribed by his primary care physician.

Further discussion identified a pattern of increase in frequency and intensity of headaches with his change in activities and routines since returning to school, including: 1) extensive reading and intensive studying which often resulted in eyestrain, and 2) prolonged exposure to bright light which seemed to trigger his headaches (e.g., morning and afternoon sun when driving to and from campus, fluorescent lights in the classroom, glare from the computer screen). Based upon this finding, the clinician contacted his primary care physician to discuss a referral for consultation with an eye specialist. After his evaluation, CH's treatment plan was modified to incorporate recommendations to reduce eyestrain and manage light sensitivity.

mTBI Rehabilitation Toolkit *resource: Chapter 4 - Section on "Glare/Photophobia Management" (pp. 139-140)*

Evaluate goal achievement

With the addition of an eye specialist on CH's interdisciplinary team and compliance with the recommended management strategies, CH noted a decrease in headaches. After tracking his performance over a three-week period, he noted improvement in his attention and concentration, which enabled him to optimize his study periods. He reported good outcomes with his interdisciplinary treatment program and he earned an average score of 83% on his quizzes (0 on GAS; goal met).

Transition to Self-Management

By the end of the semester, CH established routines and habits to ensure daily use of therapy strategies and compliance with his prescribed medication regimen. As a result, he noted improvement in his attention and concentration. Although he reported the need for focused effort and self-discipline to maintain consistent use of strategies, he acknowledged that improvement in his grades and performance in class strengthened his motivation, reinforced his efforts, and increased his confidence in his ability to earn his degree.

The clinician facilitated transition from dynamic coaching to self-coaching and reinforced CH's focus on his overall "college mission"(e.g., completing courses successfully, earning his degree, expanding his career options, ensuring financial support and opportunities for his family). In preparation for self-management, the clinician provided guided practice with the 9-step problem-solving process (refer to Appendix C in the *Clinician's Guide*) with emphasis on self-monitoring his performance and modifying his plan as needed to ensure goal achievement. The importance of self-advocacy was highlighted to address academic issues that may arise in the future (e.g., seek help when needed from instructors or his counselor in the Office for Students with Disabilities).

Discharge planning and recommendations included continued engagement with interdisciplinary team members to manage his comorbidities and enhance participation in school and family activities.

Resources for Return to School

Defense and Veteran Brain Injury Center (DVBIC) - *Back to School: Guide to Academic Success After Traumatic Brain Injury*
http://dvbic.dcoe.mil/back-school-guide-academic-success-after-traumatic-brain-injury

Ellis D. *Becoming a Master Student*. 15th ed. Stamford, CT: Cengage Learning; 2014.

Kennedy MRT. *Coaching College Students with Executive Function Problems.* NY: Guilford Publishing; 2017.

mTBI Rehabilitation Toolkit *Chapter 7 – Cognitive Assessment and Intervention* and *Chapter 9 – Performance and Self-Management, Work, Social, and School Roles; Section 3: Return to School* (pp. 366-375; pp. 429-434).

CASE STUDY #3

This case study demonstrates the ***process of dynamic coaching to empower SM/Vs to problem solve and self-regulate goal directed behaviors.*** It highlights the importance of executive functions in fulfilling work and family responsibilities.

Preface: SM/Vs often report challenges when returning to work after deployment. Executive function skills are critical for meeting high cognitive demands in daily activities, particularly in the work setting.

Background Information: SK, a 38 year-old female combat veteran was referred for her second course of cognitive rehabilitation. After she returned from deployment six years ago, she received treatment for deficits in attention and concentration, and anxiety. Following separation from the military, she enrolled in college and earned her baccalaureate degree in Business Administration. For the past five months, SK has been employed as an office manager for a small business. She reported difficulty in fulfilling work, family, and personal responsibilities. SK is married and has two daughters in middle school.

THERAPEUTIC PROCESS

Get Started

Gather information

The clinician engaged SK in a patient-centered interview to explore her challenges and sources for resilience.

C = Clinician
SK = SM/V

C: *You've been working for five months, how is that going for you?*

SK: I didn't think it would be this hard. I can't keep up, and it's so stressful.

C: *What are challenges that you're dealing with at work?*

SK: I have to take care of so many things. I waste a lot of time looking for things on my desk and in my files. I don't know where to begin. I lose track of what to do and don't always finish what I start. It's impossible to keep up with my responsibilities at work. I've also noticed these problems at home.

C: *What does a good day at work look like?*

SK: On good days, I feel productive because I'm meeting my deadlines.

C: *Can you think of things that you do to help yourself on these good days?*

SK: I get back to basics – I write notes and a list of things to do. When I start new projects, I get organized and make a plan.

C: *You've figured out many ways to help yourself. What seems to interfere with you doing them?*

SK: I try new strategies sort of at random so I haven't figured out what works best. Once I get overwhelmed – it's hard to think clearly.

C: *Would it help if we explore approaches to solving problems and systematically select solutions that might work for you?*

SK: Yes, but I wonder if my work is just too hard for me.

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section on "Cognitive Intervention Techniques to Promote Patient Engagement, Awareness, and Learning" (p. 223); Clinician Tip Sheet on "Motivational Interviewing" (pp. 223-225)*

The following assessment tools were used:

- Self-report of executive functions to understand SK's perceived challenges and strengths. *Behavior Rating Inventory of Executive Function – Adult Version (BRIEF–A)* www4.parinc.com/Products/Product.aspx?ProductID=**BRIEF-A**

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Patient Handout on "Rating Your Executive Function Skills" (p. 297)*

- Self-analysis of situations in which SK experienced difficulties with emotional regulation to identify triggers, contexts, and reactions.

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Patient Handout on "Emotional Self-Management Worksheet" (pp. 299-300)*

  The following is a sample of SK's self-analysis:

Patient Handout: "Emotional Self-Management Worksheet"

Before the Reaction	Context	My Reaction
I realized I missed a deadline	*Work*	*All day I kept thinking about a mistake I made…I know I could have done it right - if only I had prioritized. It took a while for me to refocus.*
I couldn't find the instructions and forms to complete a task	*Work*	*I spent the day going through piles of paperwork, and ignoring calls and e-mails. I started the next day feeling paralyzed, knowing that I was worse off than the day before because I needed to catch up on e-mails, and I may have missed some important calls.*
I started but didn't complete plans for a social function for my daughter's class	*Home*	*I felt bad that I lost track of something that I really wanted to do and started worrying about other things that I didn't complete.*

Put the pieces together

Integration of gathered information indicated primary difficulties with completion of multiple tasks. Strengths included identifying problems, self-monitoring, and making decisions. Analysis of emotional regulation identified cognitive challenges as triggers for negative emotional reactions at work and home, which compromise her performance and undermine her self-efficacy.

Set Goals

Set, prioritize, and select doable goal(s)

After weighing her needs, SK selected her first goal: "I want to meet deadlines." Through the process of collaborative goal setting, a functional, specific and measurable goal was formulated and a Goal Attainment Scale (GAS) was negotiated:

Level of Attainment	Goal
+2 much more than expected	*I will meet deadlines for assigned work tasks 90% or more of the time using a 9-step problem-solving process without any assistance.*
+1 somewhat more than expected	*I will meet deadlines for assigned work tasks 85-89% of the time using a 9-step problem-solving process without any assistance.*
0 expected level of outcome	*I will meet deadlines for assigned work tasks 80-84% of the time using a 9-step problem-solving process without any assistance.*
-1 somewhat less than expected	*I will meet deadlines for assigned work tasks 75-79% of the time using a 9-step problem-solving process without any assistance.*
-2 much less than expected	*I will meet deadlines for assigned work tasks less than 74% of the time using a 9-step problem-solving process without any assistance.*
Comments	Timeline: two weeks Strategy: 9-step problem-solving process

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section & Clinician Tip Sheet on "Goal Attainment Scaling" (pp. 466-468)*

SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handout on "Goal Attainment Scaling" (pp. 9-14)*

Make Functional Changes

Develop and implement plan

The dynamic coaching model was used to engage SK in learning and applying a systematic approach to improving executive functions.

The following two treatment approaches were selected:

- **Approach #1: Personalized Education**

Personalized education focused on: 1) developing understanding of executive functions, 2) validating SK's symptomology that may interfere with work performance, 3) reinforcing her strengths, and 4) promoting positive, realistic expectations for recovery.

  o Discussed SK's self-rating of executive functions;
     mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section on "Improving Executive Functions" (pp. 243-244); Clinician Tip Sheet on "Treating Executive Dysfunction" (pp. 244-245); Patient Handout on "Understanding Executive Function" (p. 296)*

  o Prompted SK to reflect on past experiences with successful self-management (e.g., productive days at work, college prep, military operations) to promote self-efficacy.

- **Approach #2: Training Cognitive Strategies**

The 9-step problem-solving process described by Kennedy (refer to Appendix C in the *Clinician's Guide*) was selected as the meta-cognitive strategy to enable SK to plan, self-monitor, and self-regulate goal-directed behaviors.

The clinician used dynamic coaching to engage SK in the learning process; personalized prompts were formulated to facilitate transition to self-coaching.

Step 1: Identify specific challenges.

> *Personalized prompt: What am I struggling with? (identify problems)*
>
> *Organizing, prioritizing, and completing tasks*

Step 2: Select a doable goal. The clinician restated SK's comment during the patient-centered interview, "I haven't figured out what works best" to highlight the importance of setting a well-defined goal to help assess progress in strategy use and its effectiveness. The clinician provided examples of specific and measurable goals.

> *Personalized prompt: What is my goal? (be specific)*
>
> *I will complete 80% of tasks on my to-do list to improve organization within 2 weeks*

Step 3: Identify potential approaches or supports. Clinician and SK developed a list of possible options to improve organization. SK reflected on personal experiences to identify strategies that worked for her (e.g., write notes and a list of things to do, organize and plan projects). Clinician suggested additional approaches (training cognitive strategies, training in assistive technology for cognition, and environmental management)/options to organize her work space, tasks, and time).

> *Personalized prompt: THINK about multiple solutions to make work easier.*
> 1. *What can I do?*
> 2. *What can I use?*
> 3. *What can I modify in my environment?*
>
> - *Establish a system to locate, collect, and organize information needed to complete a task*
> - *Develop a project planning system to log, plan, and track major tasks with deadlines and specific actions to complete tasks (e.g., forms, spreadsheets, project management software)*
> - *Create "to do lists" to log and check-off accomplishments*
> - *Manage time with a calendar to schedule goal-directed and time sensitive tasks*
> - *Create "dashboard" for quick view of projects and reminders*

mTBI Rehabilitation Toolkit resource: *Chapter 7 - Clinician Tip Sheet: "Electronic Memory and Organizational Aids" (pp. 239-241)*

SCORE Study Manuals resource: *Chapter 4, Part II - Patient Handouts & Exercises on "Planning Your Day"; "Goal, Plan, Review" & "Organizing Personal Papers" (pp. 57-60, 63, & 66)*

Step 4: Select optimal approach and back-up. Clinician guided SK in comparing strategies (e.g., easy vs. difficult to implement, specific vs. global benefits, low vs. high tech) before making final selections.

> *Personalized prompt: Choose the best solution*
>
> - *Establish a system to locate, collect, and organize information needed to complete a task*
> - *Develop a project planning system to log, plan, and track major tasks with deadlines and specific actions to complete tasks (e.g., forms, spreadsheets, project management software)*
> - *Manage time with a calendar to schedule goal-directed and time sensitive tasks*

Step 5: Create steps for implementation. Clinician and SK selected a project planning worksheet as an external aid to formulate stepwise actions to accomplish major tasks.

Below is an example of how the first organizational strategy was achieved:

Personalized prompt: Write a list of steps (To Do List)

Use Project planning worksheet.

TASK	DEADLINE
1. **Establish a system to locate, collect, and organize information needed to complete a task**	In 2 weeks
Action: Gather materials : in/out box, 5 binders, 5 sets of index tabs, and label maker	
Action: Organize and label binders (i.e., Purchase Orders, Checks & Deposits, Timesheets, Personnel, Contracts)	
Action: Find receipts, instructions, memos, e-mails, etc. to organize in binders	
Action: Designate place within my workspace to file binders	
Action: Organize new information on daily basis	

mTBI Rehabilitation Toolkit resource: *Chapter 7 - Clinician Tip Sheet & Patient Handout on "Project Planning Strategy-Divide and Conquer" (pp. 251 & 305-306)*

Step 6: Initiate treatment plan. SK selected the optimal day to initiate her plan; the clinician reinforced her rationale for decision-making.

Personalized prompt: Do it!

Start on a day when I don't have meetings or office events that could interfere with focused effort and time to begin tasks

Step 7: Monitor implementation. With guidance from the clinician, SK selected a method to self-monitor strategy use and its effectiveness.

Personalized prompt: Take data on what I plan to do

- Check off actions as I complete them
- Write notes on what worked and didn't work
- Bring journal to next session for review

Step 8: Monitor outcome. Clinician prompted SK to review and evaluate use and effectiveness of strategies (e.g., What have you done since our last session? Let's compare the percent of actions you completed with your goal. Let's reflect on what worked and what didn't work.).

Personalized prompt: How well did I do and did my plan work?

- *I completed 84% of actions to get organized, exceeded my goal of 80%!*
- *Project planning worksheet kept me on track. Little steps were doable. I could see that I was productive when I checked off tasks. Reviewing deadlines helped me to prioritize.*
- *Filing system was easy and quick to file and find information when I needed to work on a task.*
- *Calendar sync helped me to manage my time and track deadlines at work. However, with increased attention on work, I almost missed my daughter's evening school activity.*

Refer to Clinician's Guide for discussion of dynamic coaching and sample forms to use in therapy sessions.

Step 9: Adjust goal or approach. Clinician provided cues to assist SK in modifying her plan.

Personalized prompt: Make adjustments

- *Add family and personal events/responsibilities to calendar.*
- *Schedule time in the morning and afternoon to organize.*

Self-monitor performance

Over the next two weeks, SK tracked her performance incorporating the adjustment in her plan.

Evaluate goal achievement
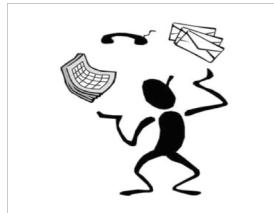
SK met deadlines for assigned work tasks 82% of the time using the 9-step problem-solving process during the tracking period (score 0 on GAS). With SK's demonstrated success, the clinician reinforced self-coaching.

Transition to Self-Management

SK was successful in self-coaching the 9-step problem solving process to increase her work efficiency which enabled her to participate fully in personal and family activities.

Upon discharge from therapy, she expressed confidence in self-management to resolve challenges in her daily routine and activities.

CASE STUDY #4

This case highlights *the collaborative process in assessing and treating post-deployment cognitive-communication challenges*. It emphasizes the importance of honoring the SM/V's military culture, values, preferences, and social supports including family members, to optimize reintegration and recovery.

Preface: SM/Vs frequently report irritability as a major concern that taxes their emotional regulation and affects their communicative interactions after returning from deployment.

Background Information: RP, a 54-year-old male active duty sergeant major was referred for cognitive-communication challenges. He was exposed to IED blasts during his deployments over a course of 6 years. His last concussion was 21 months ago. Persistent symptoms include headaches and other bodily pain that worsened with intense cognitive and physical activity, fatigue, anxiety, and irritability. Active treatments include pharmaceutical trials for chronic headaches, physical therapy, pain management, and therapy with his mental health provider to regulate his mood and manage hypervigilance. RP is in the process of retiring from the military and relocating to be closer to his extended family. For successful reintegration, he acknowledges the need to overcome his communication challenges in order to participate in social activities.

THERAPEUTIC PROCESS

Get Started

Gather information

The clinician engaged RP and his wife in a patient-centered interview to explore their concerns. RP invited his wife to participate in this process because he valued her perspective.

RP/Wife: "It's hard for us to engage in conversations."

RP: "I'm not in terested in talking – too much talk about nothing."

Wife: "He doesn't want to get involved in our social activities."

[mTBI Rehabilitation Toolkit](#) resource: Chapter 7 - Section on "Cognitive Intervention Techniques to Promote Patient Engagement, Awareness, and Learning" (p. 223); Clinician Tip Sheet on "Motivational Interviewing" (pp. 223-225)

Put the pieces together

Collaborative information was used to sort multifactorial issues that may or may not be contributing to problems.

Multiple factors seem to influence RP's communicative interactions:

- Headache, pain, and fatigue: After a full day of appointments, RP looks forward to returning home to rest "mentally and physically." He attributed his complaints primarily to chronic headaches, pain, and fatigue that drain him of energy and interest to interact. His wife added that "forcing discussion" exacerbates his symptoms and worsens the situation.
- PTSD, irritability, and numbing/detachment: RP's wife described him as "always serious." Talking about "little everyday things" or "problems or complaints" seem to irritate him. RP explained that he is often distracted by intrusive thoughts related to his deployment and he struggles through emotions "like being on a roller coaster ride."
- Communication style: RP's wife described him as "blunt" and "uninterested" in what others have to say. She shared that their daughter doesn't appreciate how he manages problems by "giving orders." He responded, "If they ask me about something, I tell them what I think and how to fix it - problem solved." However, RP was motivated to improve his communicative interactions because he values his family bond and relationships that are pillars for his resilience.

To cope with problematic social situations, RP avoids or disengages from conversations to prevent exacerbation of his headache or irritability.

The clinician partnered with RP and his wife to engage them in the therapy process, recruit supports, and cultivate their readiness for change.

Set Goals

Set, prioritize, and select doable goal(s)

As his first goal, RP chose to improve conversations with his wife and daughter in order to resume family roles and participate in valued activities. RP and the clinician collaboratively formulated a functional, specific, and measurable goal and developed a Goal Attainment Scale (GAS):

Level of Attainment	Goal
+2 much more than expected	*I will use strategies to start a minimum of 9 or more conversations per day with my wife or daughter 7 out of 7 days.*
+1 somewhat more than expected	*I will use strategies to start a minimum of 7-8 conversations per day with my wife or daughter 7 out of 7 days.*
0 expected level of outcome	*I will use strategies to start a minimum of 5-6 conversations per day with my wife or daughter 7 out of 7 days.*

-1	somewhat less than expected	*I will use strategies to start a minimum of 3-4 conversations per day with my wife or daughter 7 out of 7 days.*
-2	much less than expected	*I will use strategies to start a minimum of 1-2 conversations per day with my wife or daughter 7 out of 7 days.*
	Comments	Strategies: manage high- and low-demand tasks

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section & Clinician Tip Sheet on "Goal Attainment Scaling" (pp. 466-468)*
SCORE Study Manuals *resource: Chapter 4, Part II* **-** *Patient Handout on "Goal Attainment Scaling" (pp. 9-14)*

Make Functional Changes

Develop and implement plan

Through a collaborative process, the clinician and RP selected two treatment approaches and strategies to achieve his goal.

- **Approach #1: Personalized Education**

  The clinician, RP, and his wife engaged in discussion to gain perspective of factors that facilitated or hindered communication. RP and his wife agreed that conversations were spontaneous, amicable, and interactive when he was "rested and relaxed." While his focus on conversations could be interrupted by flashbacks, he felt that pain and fatigue were primary obstacles to social communication. Multiple factors that can affect communication were discussed. Information was personalized to validate symptomatology and its impact on social interactions. The clinician reinforced RP's engagement with other team members (e.g., neurologist for headache; physical therapist; pain management; and mental health provider for PTSD). He was encouraged by examples of strategies the clinician discussed which promoted realistic expectations for recovery.

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Patient Handout on "Understanding the Multifactor Model of Functioning after Concussion" (pp. 270-271)*

- **Approach #2: Training Cognitive Strategies**

  Manage high- and low-demand tasks: RP identified high-demand (i.e., difficult tasks) and low-demand tasks (i.e., easy tasks) and matched them with best times or circumstances to optimize his participation in conversations.

Worksheet of High- and Low-Demands	
Difficult or High-demand tasks: *Conversation*	**Situations when I feel rested and my pain is least distracting:** *After rest* *During and after evening meal* *Before bed*
Easy or low-demand tasks: *Pack gym bag* *Water garden* *Sort mail* *Prepare meals* *Exercise at home*	**Situations when my fatigue and pain may be present but tolerable:** *After work and appointments* *Early morning before taking medications*

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Clinician Tip Sheet & Patient Handout on "Strategies to Improve Attention – Identifying High- and Low-Demand Tasks" (pp. 233, 281-293)*

RP and his wife developed a script to defer conversations (as a coping strategy) that would not be perceived as abrupt.

- They agreed to focus on essential information to make timely decisions if a conversation could not be deferred to a more optimal time because of urgency (i.e., time sensitive decision making).
- Family scenarios were created with various antecedent events to trigger use of strategies. RP engaged in role-playing to practice strategy use.

Examples of Role-Play Practice
You enter the house after a long day that required physical and cognitive demands - you see your wife and daughter - what could you say?   *RP answered, "Hi. I had a really tiring day and need to rest for a while. Can we talk during dinner?"*
You just woke up from a nap and are feeling groggy and stiff - your daughter asks for immediate help to fill out a financial application - what could you say?   *RP answered, "I'll need a few minutes to wake up, and then let's talk about it." or "Let's settle the most pressing questions that require an answer now."*
You and your wife are lead coordinators for a church function in two weeks - what could you do/say?   *RP answered, "I'll make plans with her to start organizing the event some time after dinner when we're both rested and relaxed."*

Self-monitor performance

Over a two-week period, RP recorded strategy use, effectiveness of strategies in initiating conversations, and additional comments for self-awareness and management.

Evaluate goal achievement

At the end of two weeks, RP achieved his goal. He initiated a minimum of 5-6 conversations per day with his wife and daughter 7/7 days (0 on GAS). The need to defer conversations decreased as RP's awareness of high-/low-demands increased to anticipate, prioritize, and plan for communicative interactions. RP reported that while initiating conversations was easier, maintaining conversations was difficult.

- o RP found himself "checking-out" when he perceived information as "trivial."
- o He reported poor tolerance for "too much information", "complaints" (vs. action plans), and "off topic" remarks.
- o RP's wife reported that he tended to "give orders." RP explained that his intention was to "fix situations" and admitted to feeling irritated when conversations continued on a problem that he perceived as resolved. His wife preferred that he "listen" first before attempting to "fix" problems.

Adjust goal or plan and implement changes

Although RP met his expected performance, he noted that communication difficulties still occurred despite effective management of his pain and fatigue. Barriers to maintaining conversation were explored to identify factors that seemed to influence the quality of his communication.

RP expanded his goal to maintain conversation and developed a GAS. Options were considered and optimal treatment approaches and strategies were selected to achieve 0 on the GAS.

Level of Attainment	Goal
+2 much more than expected	*I will use strategies to maintain a minimum of 9 or more conversations per day with my wife or daughter 7 out of 7 days.*
+1 somewhat more than expected	*I will use strategies to maintain a minimum of 7-8 conversations per day with my wife or daughter 7 out of 7 days.*
0 expected level of outcome	*I will use strategies to maintain a minimum of 5-6 conversations per day with my wife or daughter 7 out of 7 days.*
-1 somewhat less than expected	*I will use strategies to maintain a minimum of 3-4 conversations per day with my wife or daughter 7 out of 7 days.*

-2 much less than expected	I will use strategies to maintain a minimum of 1-2 conversations per day with my wife or daughter 7 out of 7 days.
Comments	Timeline: two weeks Strategies: implement "GOAL" (**G**o with the flow, **O**pen conversation, **A**ccept thoughts of others, **L**isten) Maintain conversations = minimum of 3 follow-up responses from RP unless listener closes interaction

- **Approach #1: Personalized Education**

  The clinician positively reframed "Battlemind" as necessary coping and adaptive survival reflexes during deployment that may become maladaptive if behaviors persist after returning from deployment:
  - While highly effective on the battlefield, obeying orders, minimizing mistakes, high accountability, mission essential communication on a "need to know" basis, and extreme emotional control could result in ordering/demanding behaviors, intolerance of mistakes, inflexible interactions, withholding information, detachment, and social withdrawal at home.
  - RP's wife and daughter participated in discussions to increase their understanding of and sensitivity to "occupational communication" on the battlefield.
  - Communication exchanges at home were discussed, validated, and normalized in the context of "Battlemind."

  Resource: http://fhp.osd.mil/pdhrainfo/media/battlemind_brochure.pdf

  The clinician discussed active listening techniques. Based on RP's and his wife's reflections, specific behaviors were highlighted:
  - be aware of your biases and opinions to avoid pre-judging
  - follow the speaker's topic even if it may not be as important to you as it is for others
  - validate the statements of others and express support
  - listen to and understand the views of the speaker before sharing your views.

- **Approach #2: Training Cognitive Strategies**

  First letter mnemonics: RP created the acronym "GOAL" (**G**o with the flow, **O**pen conversation, **A**ccept thoughts of others, **L**isten) that was personally relevant to serve as a reminder and trigger for initiating conversations and using active listening techniques. He practiced strategies with the clinician and participated in role-playing and reviewing video-taped interactions to increase self-awareness, self-reflection, self-monitoring, and self-evaluation.

  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Patient Handout on "Compensatory Memory Strategies: Internal and External Options" (p. 289)*

Self-monitor performance

For an additional two weeks, RP recorded strategy use, effectiveness of strategies in initiating and completing conversations, and additional comments for self-awareness and management.

Evaluate goal achievement

RP compared his actual performance with his predicted performance. At the end of the additional two weeks, he exceeded his predictions of initiating and maintaining a minimum of 9 conversations per day with his wife or daughter 7 out of 7 days (+2 on GAS to initiate and maintain conversations).

Transition to Self-Management

RP and his family reported an increase in frequency and quality of their conversations, which improved his communication, interactions, relationships, and participation in activities.

Follow-up sessions focused on generalizing strategies to enhance communicative interactions with friends and new acquaintances in community settings. His participation in group therapy provided opportunities to practice skills, receive feedback, and engage in problem-solving with peers. At the time of discharge, he felt productive and gratified in fulfilling his roles and participating in family functions and activities.

Epilogue

As discussed in the *Clinician's Guide*, a variety of interventions may be used to manage problems. Selection of a treatment approach or set of approaches is a collaborative process that systematically considers patient-specific factors such as preferences, strengths, needs, symptom profile, and previous treatment (e.g., what has and has not been helpful). The following are additional options or alternatives to information presented above in the case study to reinforce the importance of clinical decision-making that is based upon the collaborative interview.

Other potential factors (with indicative statements) less likely to contribute to RP's complaints:

- Attention ("After a couple minutes of listening my mind wanders" "It's harder for me to hold a conversation when other people are talking nearby"; "I lose track of what I'm talking about with interruptions"; "I shut down when everyone talks at the same time")

- Memory lapse ("It's hard for me to remember what the other person said, so I find myself asking the same questions; it's embarrassing when I can't even remember what I'm talking about")

- Speed of processing ("I can't keep up with conversations – it seems like everybody's talking so fast, by the time I think of a response the topic has changed")

- Impulsivity and disinhibition ("People tell me that I interrupt and speak out of turn"; "My friends say I talk too much")

Other potential treatment approaches and strategies:

- A**pproach #1: Personalized Education**
  - RP and his wife review a video of them initiating and maintaining conversations to highlight strengths and increase awareness of difficulties
  - RP and his wife watch video vignettes of others starting and maintaining conversations to increase their awareness of productive and counterproductive conversational behaviors

- **Approach #2: Training Cognitive Strategies**
  - Optimize personal factors (e.g. medication, sleep hygiene, exercise, rest breaks, nutrition)
  - Develop routines to practice mindfulness to replenish "mental and physical" reserve for tolerating conversation
  - Use relaxation breathing or positive self-talk or verbal mediation (e.g., "take time to talk")
    mTBI Rehabilitation Toolkit *resource: Chapter 7 - Patient Handout on "Emotional Self-Management Worksheet" (p. 299)*
  - Self-regulate with pause strategy
    mTBI Rehabilitation Toolkit *resource: Chapter 7 - Clinician Tip Sheet & Patient Handout on "Strategies to Improve Self-Regulation—Pausing" (pp. 247 & 301)*

- Create mental picture (e.g., think of a happy face with a big mouth for talking and big ears for listening) to help recall and prompt use of conversational strategies
  mTBI Rehabilitation Toolkit *resource: Chapter 7 - Patient Handout on "Compensatory Memory Strategies – Internal and External Options" (p. 289)*

- **Approach #3: Selection and Training of Assistive Technology for Cognition (ATC)**
  - Use apps to help in self-regulation (e.g., meditation, mindfulness, relaxation breathing, music)
  - Use tools (e.g., watch, smartphone) to alert, remind, or trigger use of strategies
    mTBI Rehabilitation Toolkit *resource: Chapter 7 - Section on "SmartPhone Apps" (pp. 240 & 241)*

- **Approach #4: Direct Training of Cognitive Processes**
  - Not indicated for social communication

- **Approach #5: Environmental Management**
  - Cool or heat room to a comfortable temperature and place chairs in the room that are relaxing to reduce physical stress
  - Situate seating that fosters a sense of safety and control for RP (e.g., placing his chair against a wall and facing the doorway)

    SCORE Study Manuals *resource: Chapter 4, Part II - Patient Handout on "Optimizing Attention: Environmental Strategies" (p. 24)*

Resources for Group Interventions:

Dahlberg CA, Cusick CP, Hawley LA, et al. Treatment efficacy of social communication skills training after traumatic brain injury: A randomized treatment and deferred treatment controlled trial. *Arch Phys Med Rehabil.* 2007; 88:1561-1573.

Hawley LA, Newman JK. Group interactive structured treatment (GIST): A social competence intervention for individuals with brain injury. *Brain Injury.* 2010; 24(11): 1292-1297.

McCarron K, Dasgupta M, Campbell C, Adams A. *Social Cognition Rehabilitation for Veterans with TBI and PTSD: A Treatment Workbook.* Washington, D.C: Department of Veterans Affairs; 2014.

mTBI Rehabilitation Toolkit *resource: Chapter 7 - Clinician Tip Sheet on "Assessment and Treatment of Social Communication" (p. 258)*

REFERENCES

1. Hoge CW, McGurk D, Thomas JL, Cox AL, Engel CC, Castro CA. Mild traumatic brain injury in U.S. soldiers returning from Iraq. *New England Journal of Medicine.* 2008; 358(5): 453-463.

2. Tanielian T, Jaycox LH (Eds). *Invisible wounds of war: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery.* Santa Monica, CA: RAND Corp; 2008.

3. Terrio H, Brenner LA, Ivins BJ, et al. Traumatic brain injury screening: Preliminary findings in a US Army Brigade Combat Team. *J Head Trauma Rehab.* 2009; 24(1): 14-23.

4. Owens BD, Kragh JF Jr, Wenke JC, Macaitis J, Wade CE, Holcomb JB. Combat wounds in Operation Iraqi Freedom and Operation Enduring Freedom. *J Trauma.* 2008; 64(2): 295-299.

5. Sayer NA, Chiros CE, Sigford B, et al. Characteristics and rehabilitation outcomes among patients with blast and other injuries sustained during the Global War on Terror. *Arch Phys Med Rehab.* 2008; 89(1): 163-170.

6. Schell TL, Marshall GN. *Survey of Individuals Previously Deployed for OEF/OIF.* Santa Monica, CA: RAND Corp; 2008.

Additional References and Resources

Bovend'Eerdt TJ, Botell RE, Wade DT (2009). Writing SMART rehabilitation goals and achieving goal attainment scaling: A practical guide. *Clinical Rehabilitation.* 2009; 23(4): 352-361.

Brenner LA, Vanderploeg RD, Terrio H. Assessment and diagnosis of mild traumatic brain injury, post-traumatic stress disorder, and other polytrauma conditions: Burden of adversity hypothesis. *Rehabilitation Psychology.* 2009; 54(3) 239-246.

Deci EL, Ryan RM. The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry.* 2000; 11(4): 227-268.

Hersh D, Worrall L, Howe T, Sherrat S, Davidson, B. SMARTER goal setting in aphasia rehabilitation. *Aphasiology.* 2012; 26(2): 220-233.

Hoge CW, Goldberg HM, & Castro CA. Care of war veterans with mild traumatic brain injury – Flawed perspectives. *New England Journal of Medicine.* 2009; 360: 1588-1591.

Iverson, GL. Outcome from mild traumatic brain injury. *Current Opinion in Psychiatry.* 2005; 18(3): 301-317.

Kennedy MRT, Krause MO. Self-regulated learning in a dynamic coaching model for supporting college students with traumatic brain injury: Two case reports. *J Head Trauma Rehab.* 2005; 26(3): 212-223.

Kennedy MRT. *Coaching College Students with Executive Function Problems.* NY: Guilford Publishing; 2017.

Kiresuk TJ, Smith A, Cardillo JE. *Goal Attainment Scaling: Applications, theory, and measurement.* Hillsdale, NJ: Lawrence-Erlbaum & Associates, Inc; 2009.

Kortte K, Falk L, Castillo R, Johnson-Greene D, Wegener S. The Hopkins Rehabilitation Engagement Rating Scale: Development and psychometric properties. *Archives in Physical Medicine and Rehab.* 2007; 88(7): 877-884.

Medley AR, Powell T. Motivational Interviewing to promote self-awareness and engagement in rehabilitation following acquired brain injury: A conceptual review. *Neuropsychological Rehabilitation: An International Journal.* 2010; 20(4): 481-508.

Miller WR, Rollnick S. *Motivational Interviewing: Helping People Change, 3rd ed.* NY: The Guilford Press; 2013.

Schwarzer R. Optimism, goals, and threats: How to conceptualize self-regulatory processes in the adoption and maintenance of health behaviors. *Psychology & Health.* 1998; 13(4): 759-766.

Scobbie, L., McLean, D., Dixon, D., Duncan, E., & Wyke, S. (2013). Goal setting and action planning in the rehabilitation setting: Development of a theoretically informed practice framework. *Clinical Rehabilitation, 25,* 468-482.

Sohlberg MM, Turkstra L. *Optimizing Cognitive Rehabilitation: Effective Instructional Methods.* NY: The Guilford Press; 2011.

Turner-Stokes L. Goal Attainment Scaling (GAS) in rehabilitation: A practical guide. *Clinical Rehabilitation.* 2009; 25:362-370.

Van Dillen TA. *Resilience Related to TBI in the Military: An Overview.*
From Brain Injury Professional, the official publication of the North American Brain Injury Society. 2010; *Vol. 7,* Issue 3. Reprinted with permission of NABIS and HDI Publishers. For more information or to subscribe, visit: www.nabis.org.

Vanderploeg RD, Belanger HG. Screening for a remote history of mild traumatic brain injury: When a good idea is bad. *J Head Trauma Rehabil.* 2013; 28(3): 211-218.

Vasterling JJ, Brailey K. Neuropsychological findings in adults with PTSD. In Vasterling, JJ, Brewin CR (Eds.) *Neuropsychology of PTSD. Biological, Cognitive, and Clinical Perspectives* (pp. 178-207). New York, NY: The Guilford Press; 2005.

Appendix A: Working Group to Develop a Clinician's Guide to Cognitive Rehabilitation in mTBI: Application for Military Service Members and Veterans (July 2015)

1. **Douglas B. Cooper, Ph.D., ABPP-CN**
   Defense and Veterans Brain Injury Center (DVBIC)
   Department of Neurology
   San Antonio Military Medical Center

2. **Micaela Cornis-Pop, Ph.D., CCC-SLP**
   National Manager, Polytrauma System of Care
   VA Central Office, Rehabilitation and Prosthetic Services
   Richmond VA Medical Center

3. **Shari Goo-Yoshino, M.S., CCC-SLP**
   Speech Pathology Section
   Tripler Army Medical Center

4. **Carol Smith Hammond, Ph.D., CCC-SLP**
   Research Speech Pathologist, Durham VAMC
   Department of General Internal Medicine, Duke University

5. **Mary R. T. Kennedy, Ph.D., CCC-SLP, BC-ANCDS**
   Professor, Communication Sciences and Disorders
   Chapman University

6. **Don MacLennan, M.A., CCC-SLP**
   Chief, Speech Pathology Section
   Polytrauma Transitional Rehabilitation Program
   Minneapolis VA Health Care System

7. **R. Kevin Manning, Ph.D., CCC-SLP**
   Brain Injury Rehabilitation Service
   San Antonio Military Medical Center - North
   Joint Base Fort Sam Houston, Texas

8. **Pauline Mashima, Ph.D., CCC-SLP**
   Chief, Speech Pathology Section
   Tripler Army Medical Center

9. **Leslie Nitta, M.S., CCC-SLP**
   Speech-Language Pathologist
   Formerly with the Greater Los Angeles VA Healthcare System

10. **Linda M. Picon, M.C.D., CCC-SLP**
    VA Senior Consultant
    TBI Liaison to the Defense Centers of Excellence for Psychological Health and
       Traumatic Brain Injury
    VA Central Office, Rehabilitation and Prosthetic Services

11. **Mary Vining Radomski, Ph.D., OTR/L**
    Courage Kenny Research Center, part of Allina Health
    Minneapolis, MN

12. **Melissa Ray, M.S., CCC-SLP**
    Brain Injury Rehabilitation Service
    San Antonio Military Medical Center

13. **Carole R. Roth, Ph.D., CCC-SLP, BC-ANCDS**
    Division Head, Speech-Language Pathology
    Department of Otolaryngology, Naval Medical Center San Diego
    Associate Professor, Uniformed Services University of the Health Sciences

14. **Maile Singson, M.S., CCC-SLP**
    Speech-Language Pathologist
    VA Pacific Island Health Care System

15. **McKay Moore Sohlberg, Ph.D., CCC-SLP, BC-ANCDS**
    Professor, Communication Disorders & Sciences
    University of Oregon

16. **Rodney D. Vanderploeg, Ph.D., ABPP-CN**
    Neuropsychology/Polytrauma Supervisory Psychologist
    James A. Haley Veterans Hospital
    Clinical Professor
    Department of Psychiatry & Behavioral Neurosciences, Department of Psychology
    University of South Florida

Reviewers: David X. Cifu, M.D., Chairman and Herman J. Flax, M.D. Professor, Department of PM&R, Virginia Commonwealth University, Senior TBI Specialist, U.S. Department of Veterans Affairs; **Emi Isaki, Ph.D.**, Associate Professor, Department of Communication Sciences and Disorders, Northern Arizona University; **Diane R. Paul, Ph.D.**, Director of Clinical Issues in Speech-Language Pathology, American Speech-Language-Hearing Association; **Lyn Turkstra, Ph.D., BC-ANCDS,** Professor, Department of Communication Sciences and Disorders, University of Wisconsin-Madison.

Appendix B: Communicating with Patients (Based upon: Miller & Rollnick, 2013)

Listening Skills

A *patient-centered approach* or *motivational interviewing* requires good listening skills to gather information and gain an understanding of the patient's perspective. It takes practice to become a good listener.

Good listening involves:
- undivided attention -- no multitasking!
- eye contact -- which may be influenced by cultural differences
- being at a comfortable distance and in a comfortable seating arrangement
- facial expressions that mirror the emotions conveyed by the patient's message or communicate concern.

Good listening is **NOT**:
- ordering, directing, or commanding
- warning, cautioning, or lecturing
- judging, criticizing, or moralizing
- humoring, ridiculing, or labeling.

Listening empathetically builds trust and helps the clinician to recognize and affirm the patient's strengths.

Communicating with OARS

Communication with patients is enhanced by asking **O**pen-ended questions, **A**ffirming, **R**eflecting, and **S**ummarizing. The acronym **OARS** helps to remember these skills.

Open-Ended Questions: An open-ended question invites the patient to share information about what s/he is thinking or feeling. The question "opens the door" and does not restrict the answer.

Examples of *open-ended* questions:
> "What happened during your day?"
> "What are you thinking about?"
> "What do you think you'll do about this problem?"

Examples of *closed* questions:
> "What did you do today?"
> "Are you thinking about your son?"
> "Why don't you just tell your boss that your co-worker is dumping on you?"

> Chaining *closed questions* can stifle a conversation because it becomes an interview with the clinician playing the role of expert. *Open-ended questions* allow the patient to feel that his/her thoughts are *heard* and *respected.* Open-ended questions also allow the clinician to obtain information about the *patient's* perspective.

Affirmations: Affirmations are positive statements that *convey respect* and are associated with *empathy,* an ability to understand and share the feelings of another. Affirmations should be *genuine* to avoid sounding *patronizing* or *belittling.*

General guidelines for affirmations:
- Affirmations are about the patient, not the clinician. Statements begin with the word *"you"* rather than *"I".*
- Affirmations are positive comments about the patient. Be aware of, recognize, and acknowledge the patient's positive acts and attributes.

Examples of affirmations:
> "You really accomplished a lot this week."
> "Your intentions were good even if it didn't work out."
> "You work hard at being a good mother."

Affirmations are guided by culture, personality, and the relationship between the clinician and patient. Affirmations communicate recognition and appreciation of the patient's positive qualities and actions.

Reflection: A reflection is a guess of what the clinician believes the patient is communicating. Reflective listening allows the clinician to confirm the meaning of the patient's message.

General guidelines for reflections:
- A reflection should not be longer than the statement that it follows. *Shorter is better. Keep it simple.*
- The purpose of reflective listening is to understand what the patient is *thinking* or *feeling.* While it may seem to be an inefficient method of obtaining information (rather than asking directly for information), the clinician is likely to gain a better understanding of the patient's perceptions.
- If it feels as though the conversation is going around in circles or going nowhere, the clinician's reflections are probably too simple (e.g., just repeating what the patient has said).

Example of a reflection:
> *Patient*: *"I've had a really tough day."*
> Clinician's Reflection: "You're upset."

Notice that the reflective statement is ***not*** a question. It merely represents a guess about what the patient is expressing.

In response to a ***reflection,*** the patient provides feedback on the accuracy of the statement, and will have a sense that the clinician is engaged and attempting to facilitate the expression of his/her feelings and thoughts.

Avoid **overshooting** when reflecting. For example:

> *Patient: "I've had a really tough day."*
> Clinician's Reflection: "Your job is really too much for you."
> *Patient: "No, it's not that. I just had a little bit of trouble today. It was really nothing."*
> In this example, when the clinician overstates the problem or emotion, the patient restates his/her comment as a natural reaction to overstating the intensity of the problem or emotion.

Undershoot when reflecting, to encourage continuation of the discussion:

> *Patient: "I've had a really tough day."*
> Clinician's Reflection: "You're a little annoyed by something."
> *Patient: "Yeah, I had to cover for Anne who called in sick today. She's always calling in sick, and I'm tired of doing her work for her."*

Summaries: Summaries are basically a collection of reflections that allow the patient to see that the clinician has listened and understands his/her perspective. Summaries can be affirmations because the clinician can highlight the patient's positive attributes and actions.

Example of a summary:
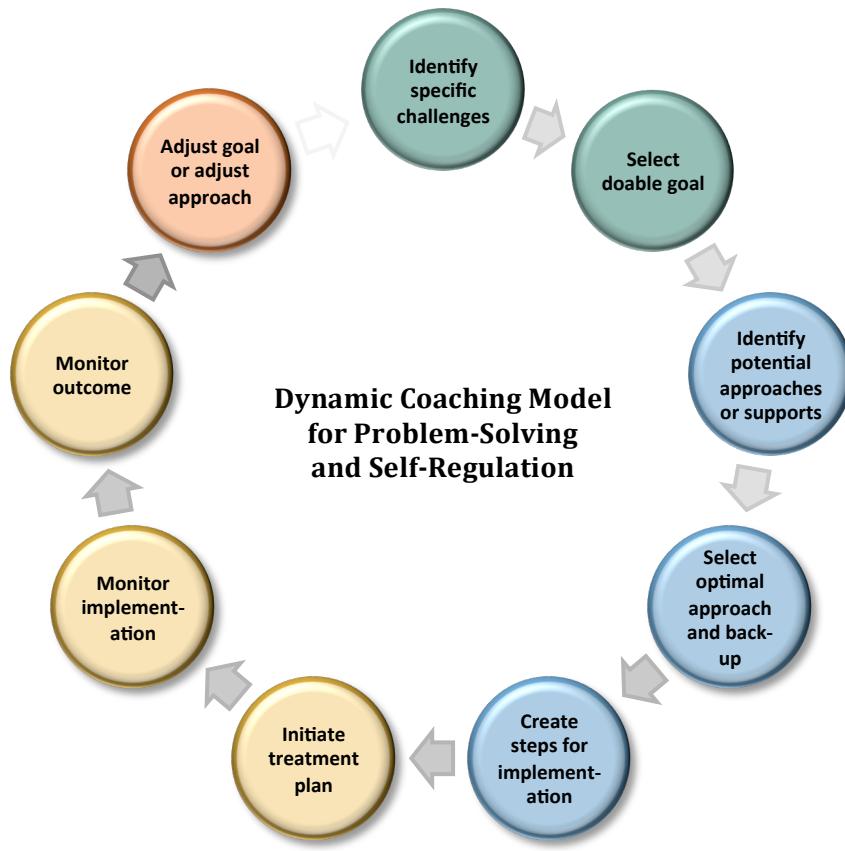
> "So, you mentioned that work is more difficult because your co-worker is absent a lot and you're asked to do her work in addition to your own. She has a lot of medical problems, and you understand that this isn't her fault. Still, this situation is beginning to affect your own health because the stress of doing the work of two people is too much. You've done a great job of helping her out over the past few months. What do you think you should do to improve the situation?"

This summary begins with a collection of reflections, includes an affirmation, and concludes with an open-ended question.

> **Summaries** organize a conversation and eliminate the need for the patient to repeat information because the clinician demonstrates understanding of what the patient has said. Summaries can be used to link information provided at different points of the conversation, transition to another phase of the topic, or wrap up a conversation.

_____

From: Miller WR, Rollnick S. *Motivational Interviewing, 3rd ed.* NY: The Guilford Press; 2013.

Appendix C: Dynamic Coaching Model for Problem-Solving and Self-Regulation

Dynamic Coaching Model for Problem-Solving and Self-Regulation

(Circular diagram with steps: Identify specific challenges → Select doable goal → Identify potential approaches or supports → Select optimal approach and back-up → Create steps for implementation → Initiate treatment plan → Monitor implementation → Monitor outcome → Adjust goal or adjust approach)

The Process of Dynamic Coaching

Step 1. *Identify specific challenges that concern the SM/V.* The patient-centered interview and use of MI techniques can be used to identify areas of desired change that are meaningful to the SM/V.

Step 2. *Select doable goals.* Goals should be meaningful, functional, measurable, and attainable. Goal attainment scaling can be a very useful process for this step.

Step 3. *Identify potential treatment approaches or intervention supports to address the identified challenges and goals.* This is a collaborative discussion between the clinician and SM/V with the clinician asking about previous supports that worked and did not work, and describing other options when given permission or when the SM/V expresses an interest in learning about treatment approaches.

Step 4. *Select the optimal treatment approach and identify a backup option in case the first approach is not successful in meeting goals.* A collaborative discussion of the merits and challenges of different approaches can empower the SM/V and promote investment and buy-in. If using a new strategy, this step would include learning and practicing the strategy.

Step 5. *Create the steps for implementing the agreed upon treatment plan.* A plan includes a list of materials, actions, and schedules.

Step 6. *Initiate the treatment plan.*

Step 7. *Monitor implementation and performance.* Monitoring will include session data looking at usage, implementation and generalization. Types of monitoring for different intervention options are described in the section on five different types of intervention approaches.

Step 8. *Monitor outcome.* Compare to goal and the SM/V's prediction of performance; review what worked and what did not work.

Step 9. *Adjust goal and or adjust intervention approach.*

Reference: Kennedy, M.R.T. (2017). Coaching college students with executive function problems. NY: Guilford Publishing. *(available in June, 2017)*

Appendix D: Example of Script Using Motivational Interviewing to "Hit the Ground Running"

C = Clinician
SM/V = Service Member/Veteran

C: *Earlier, you mentioned that you forget appointments unless your wife calls or texts you.*

SM/V: Yeah. I forget.

C: *You forget.*

SM/V: Yeah. I have a lot of appointments and it's hard to keep them straight so she keeps track of them for me.

C: *How do you feel about this system, receiving reminders from your wife about when you're supposed to be somewhere?*

SM/V: I don't like being told what to do all the time.

C: *How well did you perform your military duties? How was your memory for those duties and appointments?*

SM/V: That was different. I did a good job, but it's not like anyone was going to let you forget what you're supposed to do. Either there was some sort of routine or there was someone who would let you know if you weren't making it. I made sure to keep every appointment because there was usually a negative consequence if I didn't.

C: *How does your wife feel about having to manage your appointments and provide all the reminders now?*

SM/V: Sometimes it annoys her because she thinks I'm not trying or that I'm just lazy.

C: *What do you think?*

SM/V: I guess she has a point.

C: *So it wasn't that long ago that you found a way to remember when you were supposed to be somewhere.*

SM/V: Yeah, I guess so.

C: *Why do you think that is?*

SM/V: I don't know.

C: *What do you think you can you do to regain control over your schedule so that you could be more independent and give your wife and yourself a break?*

SM/V: I've been told that I could use my cellphone but I'd rather remember things in my head like I used to.

C: *So let me see if I have this right. You rely on your wife to remind you of your appointments, but sometimes this upsets her because she thinks that you should be able to keep track of your own appointments. Her reminders bother you because you don't like being told what to do. You have a cellphone that could provide reminders, but you don't want to use it because you prefer to try to keep things that you need to remember in your head. I think you said that when you were in the military, you did a good job of keeping track of your duties and appointments yourself. What do you think you could do to achieve more control over your own schedule?*

SM/V: I don't know.

C: *Would you mind if I told you about a strategy that has been helpful to other Veterans with similar difficulties?*

SM/V: Sure, go ahead.

C: *Some Veterans use a reminder or calendar app on their cellphones to remind them of upcoming appointments. They tend to feel that being able to control their schedule makes them feel more in control of their lives.*

SM/V: Hmmm. I didn't know that other people were having this same problem. It sounds like something I could try, but I don't know how to use my cellphone to remind me.

C: *Would it be helpful if we worked on finding an app that that could do this for you?*

SM/V: Yeah. It's probably time to do something to help my wife out. She has enough to do without having to tell me every time I need to go somewhere or do something. I wouldn't mind getting back to being more reliable but I'll need some help.

C: *We can look up some apps for your smartphone now and when you find one that you like, I can help you master it. How's that?*

SM/V: Sounds good. I guess now is as good a time as any to get started.

Appendix E: Elements of Functional Goals

Functional contexts are real-world contexts in which cognitive challenges undermine a person's activities:

- "I'm not passing my tests in English." (*functional context* = school)
- "I don't hear what my wife tells me and she gets irritated when I don't do what she's asked me to do." (*functional context* = home)
- "My boss gives me six things to do and I only remember to do three." (*functional context* = work)

Functional activities are real-world activities that are impacted by cognitive challenges:

- "I read my textbooks but I lose my focus and have to reread passages over and over" (*functional activity* = read college textbook)
- "When I'm talking with my wife, I find I'm in and out of the conversation and don't always hear what she says" (*functional activity* = maintain conversational focus)
- "My boss gives me six things to do and I only remember to do three" (*functional activity* = complete tasks)

Cognitive contexts are underlying cognitive challenges that undermine the performance of a functional activity:

- "When I read textbooks, I find I'm distracted by noises I hear or by my own thoughts – my mind just kind of wanders" (*cognitive context* = sustained attention, distractibility)
- "When I'm talking with my wife, I just zone out into my own thoughts" (*cognitive context* = sustained attention, distractibility)
- "When I'm at work, my boss gives me things to do but it seems by lunch time I only remember about half of the things he told me" (*cognitive context* = memory)

Appendix F: Introduction to Goal Attainment Scaling (GAS) (Adapted from: Kiresuk, Smith, & Cardillo; 1994/2009)

Goal Attainment Scaling (GAS) was originally developed by Kiresuk and Sherman to evaluate the results of mental health treatment. It has been adopted by a wide variety of disciplines because of its utility in assessing change that occurs *through rehabilitation*. GAS is primarily an intra-individual method of measurement based upon the unique goals of the individual. It provides a structure for collaborative goal-setting in which SM/Vs use their personal goals to drive the intervention process. The SM/V predicts an achievable goal and the conditions under which the goal can be met, and develops a plan to achieve his/her goals in a manner that provides insight into performance. Thus, GAS can become a component of intervention while serving as a means to promote self-efficacy and establish meaningful outcomes measures.

Method: First, the SM/V predicts an achievable goal and the conditions under which the goal can be met (0 = 75-85% of daily tasks in four weeks, with use of a PDA). The clinician and SM/V then negotiate levels that are somewhat more and much more, and somewhat less and much less. Scores of +1, +2, 0, -1, and -2 are assigned to each of the levels. Cognitive intervention will support achievement of this goal. For the example above, intervention may include provision of a PDA, identifying a "to-do" list/reminder app that the SM/V prefers, and training to use the app. The outcome will be reviewed in 4 weeks and will be assigned a *t*-score (0 = *t*-score of 50.00). A GAS scoring table is available online (rounded to the nearest integer) that also accommodates multiple goals. Complete tables are found in the Kiresuk, Smith, and Cardillo manual (see Additional References and Resources section).

Goals are SMART: **S**pecific, **M**easurable, **A**chievable, **R**elevant, and **T**imed. The plan is based upon the SM/V's goal and promotes self-efficacy. If the goal is not achieved, the clinician is presented with an opportunity to help the SM/V increase awareness of his/her performance and commitment to the goal; *GAS becomes a component of intervention.*

Example of Goal Setting and Goal Attainment Scaling:

SM/V: **"***There's about a million things to do around the house. It's terrible because I don't do anything but stay in my room and my wife has to do everything. It's not a matter of not being able to do stuff, I just don't do it. I'd like to do more so she's not so angry all the time. I'd like to do more to show her that I really do appreciate everything she does for me, for all of us. Mostly I want to do something just to remind me that I'm not a total vegetable."*

Possible underlying reasons for problem: Disengagement/disinterest that makes it difficult to initiate/complete tasks that are not vivid or sufficiently meaningful; fatigue; irritability/reduced frustration tolerance/being overwhelmed by demands; pain/headache; medication-related grogginess; depression; perfectionism that results in getting stuck on a task; substance abuse that limits general participation.

Here is an example of a goal attainment guide that observes the "spirit" of GAS, but measures more than one parameter and uses more authentic or less clinical language to describe a goal that is negotiated by the clinician and SM/V.

Level of Attainment	Goal
+2 Much more than expected	Will complete all tasks on my daily to-do list within the day
+1 Somewhat more than expected	Will start all the tasks on my daily to-do list and complete more than 3/4 of them.
0 Expected level of outcome	Will start at least 3/4 of the tasks on my daily to-do list and will complete at least half of the tasks that I start.
-1 Somewhat less than expected	Will start at least 1/2 of the tasks on my to-do list and will complete at least 3/4 of the tasks that I start.
-2 Much less than expected	Will start at least 1/4 of the tasks on my to-do list and will complete at least 1/2 of the tasks that I start.
Comments/Timeline	Support: smartphone apps (or white board) Will move tasks that aren't finished to next day's to-do list. Readiness = 10; Commitment = 10; Confidence = 10 Timeline: 2 weeks. Will measure day 14 based upon presumption that progress will be demonstrated over 2-week period. Outcome: At the end of two weeks, starts 5/8 of tasks on to-do list and finishes all of them Score: 0. T-*score = 50.00.* Goal met.

Appendix G: Example of Functional Goal Tracking Dialog

C = Clinician
SM/V = Service Member/Veteran

Clinician: *How have you done this week with entering your appointments into the calendar app on your smartphone?*

SM/V: I did okay.

Clinician: *What do you mean by "okay"?*

SM/V: Well, sometimes, I don't enter my new appointment before I leave the doctor's office, and I forget about it later.

Clinician: *What causes you to remember to enter a new appointment after some doctor visits but not others?*

SM/V: I don't know, but sometimes if I stop to enter a new appointment, it causes me to be late for my next appointment.

Clinician: *That has to be really frustrating. Let's look at your goal. Do we need to modify it in any way?*

SM/V: No. I want to be able to do this on my own.

Clinician: *That's great! Okay, let's think of a way you can remember to enter the appointment into your calendar at a later time. Have you ever used the MP3 recorder on your smartphone?*

SM/V: Yeah.

Clinician: *What do you think about making a voice recording for the next appointment? You can set an alarm to check your voice recordings at a time when you're planning for the next day.*

SM/V: Okay. That sounds like it might work

Clinician: *Good. Let's practice it before you leave today.*

Appendix H: Self-Coaching Journal (From: Don MacLennan, Minneapolis Veterans Administration Medical Center)

Self-Coaching Journal: _____ **Week of : _____** **Mission: Statement:**									
Goals									
1									
2									
3									
4									
5									
Strategies		**Mon**	**Tues**	**Wed**	**Thur**	**Fri**	**Sat**	**Sun**	
1									
2									
3									
4									
5									

Journal

Monday   **Strategies Used:**
What worked/didn't work?
Tuesday   *Strategies Used:*
What worked/didn't work?
Wednesday   **Strategies Used:**
What worked/didn't work?

Appendix I: Coaching Session Form (From: Don MacLennan, Minneapolis Veterans Administration Medical Center)

<div align="center">

Coaching Session Form

</div>

Participant: **Date:**

Process	Response
Review: • What have you done since last session? • Where did you use strategies? • Where did you not use strategies? • How did you remember to use strategies? • Under what circumstances did you forget to use strategies?	**Rating:** 4 = Patient supplied all info in session 3 = Clinician provides education – patient makes all decisions 2 = moderate prompting for decisions 1 = maximum prompting for decisions
Evaluate: • Did the strategy prediction match the outcome? • What worked well with the strategy? • What did not work well with the strategy? • What was the level of effort to use the strategy? • What happened when the strategy was not used?	**Rating:** 4 = Patient supplied all info in session 3 = Clinician provides education – patient makes all decisions 2 = moderate prompting for decisions 1 = maximum prompting for decisions
Identify Next Steps: • If strategy worked well, where else might the strategy be used? • If strategy was partially effective, how might it be modified? • If strategy was ineffective, is a new strategy indicated? • Are there any new areas of difficulty – new goals?	**Rating:** 4 = Patient supplied all info in session 3 = Clinician provides education – patient makes all decisions 2 = moderate prompting for decisions 1 = maximum prompting for decisions
Feedback	**Overall Rating:** 4 = Patient supplied all info in session 3 = Clinician provides education – patient makes all decisions 2 = moderate prompting for decisions 1 = maximum prompting for decisions

Appendix J: List of Acronyms

A-B-C: Activating event-Beliefs-Consequences

ADHD: attention deficit hyperactivity disorder

APT: Attention Process Training

ATC: assistive technology for cognition

CBT: Cognitive Behavioral Therapy

DCoE: Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury

DoD: Department of Defense

DVBIC: Defense and Veterans Brain Injury Center

ETOH: ethyl alcohol (alcoholic beverage)

GAS: Goal Attainment Scaling

GP: Guiding Principles (of Therapeutic Interventions)

MI: motivational interviewing

mTBI: mild traumatic brain injury

OARS: open-ended questions, affirming, reflecting, summarizing (motivational interviewing techniques)

OT: occupational therapy/therapist

R2D: Rehabilitation and Reintegration Division, U.S. Army Office of the Surgeon General

PTSD: post-traumatic stress disorder

SCORE: Study of Cognitive Rehabilitation Effectiveness

SLP: speech-language pathology/pathologist

SM: service members (serving in all branches of the military: Army, Air Force, Coast Guard, Marine Corps, Navy)

SMART: specific, measureable, attainable, realistic, timed (goal)

TBI: traumatic brain injury

V: veteran

VA: Veterans Administration