Cognitive Rehabilitation

Policy Number: CS020.M
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Instructions for Use

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Application

This Medical Policy does not apply to the states listed below; refer to the state-specific policy/guideline, if noted:

State	Policy/Guideline
Indiana	Cognitive Rehabilitation (for Indiana Only)
Kentucky	Cognitive Rehabilitation (for Kentucky Only)
Louisiana	Cognitive Rehabilitation (for Louisiana Only)
Mississippi	Cognitive Rehabilitation (for Mississippi Only)
Nebraska	Cognitive Rehabilitation (for Nebraska Only)
New Jersey	Cognitive Rehabilitation (for New Jersey Only)
North Carolina	Cognitive Rehabilitation (for North Carolina Only)
Pennsylvania	Cognitive Rehabilitation (for Pennsylvania Only)
Tennessee	Cognitive Rehabilitation (for Tennessee Only)

Coverage Rationale

Cognitive Rehabilitation (CR) is proven and medically necessary when treating individuals following a traumatic brain injury (TBI) or stroke. For medical necessity clinical coverage criteria, refer to the InterQual® 2021, Apr. 2021 Release, LOC: Outpatient Rehabilitation & Chiropractic:
- Cerebrovascular Accident (CVA): Rehabilitation (Adult)
- Traumatic Brain Injury (TBI): Rehabilitation (Adult)

Click here to view the InterQual® criteria.

The following are unproven and not medically necessary due to insufficient evidence of efficacy:
- Cognitive Rehabilitation for any other condition or diagnosis

- Coma Stimulation (also known as Coma arousal, Coma responsiveness, multisensory stimulation, and Coma care therapy/programs) for any indication, including individuals who are comatose, in a Vegetative or Minimally Conscious State

Definitions

Cognitive Rehabilitation (CR): A multidisciplinary treatment program designed to improve cognitive function and retrain an individual's ability to think, use judgment and make decisions. The focus of these therapeutic activities is to improve deficits in memory, attention, perception, visual processing, language, reasoning, learning, planning, judgment, and problem-solving. CR comprises tasks to reinforce or reestablish previously learned patterns of behavior or to establish new compensatory mechanisms for impaired neurologic systems. The goal of CR is to maximize functional independence with minimal interference from cognitive limitations. (Hayes, 2017; updated 2021).

Coma: A state of unconsciousness from which one cannot be aroused. Coma is the most severe of the alterations of consciousness. It differs from sleep in that Comatose patients will not awaken with stimulation. It differs from lethargy, drowsiness, or stupor (states in which patients are slow to respond) in that Comatose patients are completely unresponsive. Finally, it differs from delirium, confusion, or hallucinosis (states in which patients' sense of reality is distorted and expressions are bizarre) in that Comatose patients cannot express themselves at all (Taber's, 2014).

Coma Stimulation: This treatment may include a variety of stimulation techniques designed to awaken the Comatose individual. Techniques may include visual activities (i.e. presenting the Comatose individual with objects to look at), auditory (i.e. playing music or speaking), tactile (i.e. touching the individual), taste and smell (i.e. offering things for the individual to taste or smell) stimulation. Mobility stimulation may also be included in stable individuals. A stimulus is considered successful if the individual grimaces or moves. Therapists, nurses, physicians, or family members can perform these services in the hospital, the individual's home, or in a nursing home.

Minimally Conscious State: A severe alteration in consciousness that does not meet the diagnostic criteria for either Coma or a Persistent Vegetative State, in which patients respond to some sounds and unpleasant stimuli and have a sleep-wake cycle but do not attend to their environment consistently (Taber's, 2014).

Persistent Vegetative State: A continuing and unremitting clinical condition of complete unawareness of the environment accompanied by sleep-wake cycles with either complete or partial preservation of hypothalamic and brainstem autonomic functions. The diagnosis is established if the condition is present for 1 month after acute or nontraumatic brain injury or has lasted for 1 month in patients with degenerative or metabolic disorders or developmental malformations (Taber's, 2014).

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
97129	Therapeutic interventions that focus on cognitive function (e.g., attention, memory, reasoning, executive function, problem solving, and/or pragmatic functioning) and compensatory strategies to manage the performance of an activity (e.g., managing time or schedules, initiating, organizing, and sequencing tasks), direct (one-on-one) patient contact; initial 15 minutes
97130	Therapeutic interventions that focus on cognitive function (e.g., attention, memory, reasoning, executive function, problem solving, and/or pragmatic functioning) and compensatory strategies to manage the performance of an activity (e.g., managing time or schedules, initiating, organizing, and sequencing tasks), direct (one-on-one) patient contact; each additional 15 minutes (List separately in addition to code for primary procedure)

HCPCS Code	Description
S9056	Coma stimulation per diem

Description of Services

According to the Centers for Disease Control and Prevention (CDC), "a TBI is caused by a bump, blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain" (CDC, 2020).

Brain injury is defined as damage to the brain caused by externally inflicted trauma or damage due to stroke, aneurysm, anoxia, encephalitis, brain tumors, brain surgery and brain toxins. Either type of injury may result in significant physical, cognitive, and psychosocial impairment in functioning and consciousness.

CR targets such functions as attention, memory and learning, affect and expression, problem solving, and executive functions. Two basic approaches to CR are used: (1) restorative (remedial) CR, where intellectual deficits are bolstered by various repetitive exercises; and (2) compensatory (adaptive) CR, where adaptive devices and strategies and modification of the environment are used to restore functioning despite ongoing deficits. These 2 techniques can be used in combination and can also be components of a comprehensive rehabilitation program that involves other forms of remediation and psychosocial therapy. (Hayes, 2017; updated 2021).

Coma (or sensory) stimulation is proposed to promote awakening of brain-injured patients from a Coma or Vegetative State. This may involve stimulation of any or all the senses with various stimuli for each sense. There is not an established protocol for completing this type of stimulation or definitive patient selection criteria.

Clinical Evidence

Other Disorders

CR has also been investigated for disorders such as cerebral palsy, Down syndrome, Alzheimer's Disease (AD), schizophrenia, attention deficit hyperactivity disorder (ADHD), multiple sclerosis, developmental disorders such as autism, and Parkinson's disease. Based on the peer reviewed literature there is insufficient evidence to support the use of CR in all other conditions except for TBI and stroke as indicated above, medical literature is limited and available studies include small study samples, and lack of comparison groups, and long term follow up.

In 3 separate RCTs, analyses by Hanssen et al. (2016), Campbell et al. (2016), and Rilo et al. (2018) concluded that individuals with multiple sclerosis receiving multicomponent or computerized CR during research periods that ranged from 12 weeks to 7 months demonstrated improvements in several cognitive domains for 120, 38, and 42 participants, respectively. Additional research is needed to further explore the benefits of CR in this patient population.

Iwata et al. (2017) conducted a multicenter RCT examining whether cognitive remediation is effective in improving both cognitive and social functions in schizophrenia in outpatient settings that provide learning-based psychiatric rehabilitation. Participants were randomly assigned either a cognitive remediation program (n=29) or treatment as usual (n=31). The cognitive remediation intervention included cognitive training using computer software (CogPack) administered twice a week, while the control group met weekly over 12 weeks and was based on the Thinking Skills for Work program. Most participants were attending day treatment services where social skills training, psychoeducation for knowledge about schizophrenia, group activities and other psychosocial treatment were offered Cognitive and social functioning were assessed using the Brief Assessment of Cognition in Schizophrenia (BACS) and Life Assessment Scale for Mentally Ill (LASMI) at pre- and postintervention. Processing speed, executive function, and the composite score of the BACS, as well as significant improvement in interpersonal relationships and work skills on the LASMI, showed greater improvement for the cognitive remediation group than the control group. The researchers concluded that cognitive remediation in addition to psychiatric rehabilitation contributed to greater improvement in both cognitive and social functioning than psychiatric rehabilitation alone. Cognitive remediation may enhance the efficacy of psychiatric rehabilitation improving social functioning. Limitations to this study include but were not limited to small study size and absence of long term follow up.

Díez-Cirarda and colleagues assessed structural and functional cerebral changes in 44 PD patients, after attending a three-month integrative CR program (REHACOP) as part of a RCT. Participants were randomly divided into REHACOP group (CR) and a control group (occupational therapy). T1-weighted, diffusion weighted and functional magnetic resonance images (fMRI) during resting-state and during a memory paradigm were obtained both pre- and post-treatment. Cerebral changes were assessed with repeated measures ANOVA 2 × 2 for group x time interaction. Results demonstrated that the REHACOP group showed significantly increased brain connectivity and activation in both the resting state and recognition fMRIs compared to the control group. The study group showed increased brain activation in the learning fMRI when comparing the post- to the pre-treatment, as well as showing significant and positive correlations between the brain connectivity and activation and the cognitive performance at post-treatment. Researchers concluded that an integrative CR program can produce significant functional cerebral changes in PD patients. Acknowledging the small sample size, future studies with larger samples are needed to replicate these findings (2017).

A systematic review by Isaac and Januel assessed the effect of cognitive remediation programs on neural processes. 15 reports included 19 randomized controlled studies on 455 adult patients suffering from a schizophrenia spectrum disorder. Overall, the reviewers concluded that studies provided interesting conclusions on a possible neuroplastic effect of cognitive remediation in schizophrenia through functional reorganization of neural networks, superior to other interventions or usual care. Specifically, cognitive remediation can improve various cortical and subcortical activations, including frontal activation associated with high-level cognitive and social-cognitive functions. Further randomized controlled studies are needed to confirm or clarify existing results, in order to provide stronger evidence for a neurobiological effect of cognitive remediation programs in schizophrenia spectrum disorders (2016).

In 2013, Reichow et al. reported a systematic review of psychosocial interventions administered by nonspecialists for children and adolescents with intellectual disability or lower-functioning autism-spectrum disorders. Five comparative trials in patients with autism-spectrum disorders (total N=255) who received CR, training, and support were included. Improvements in school performance and developmental outcomes were inconsistent across trials.

A Cochrane review evaluated the efficacy of cognitive training and CR for mild to moderate AD and vascular dementia. The evidence reviewed included 11 trials of cognitive training and a single trial of CR. The authors found no evidence for the efficacy of cognitive training to improve cognitive functioning, mood or activities of daily living (ADL) in individuals with mild to moderate AD or vascular dementia. The single trial of CR provided preliminary indications of the potential benefits of individual CR to improve ADL in individuals with mild AD. The authors recommend that more high-quality trials of both cognitive training and CR are needed in order to establish the efficacy of cognitive training and CR for individuals with early-stage dementia (Bahar-Fuchs, 2013).

Sonuga-Barke et al. (2013) conducted a meta-analysis on the efficacy of ADHD treatments that included cognitive training. The authors concluded that better evidence for efficacy from blinded assessments is required for behavioral interventions and cognitive training before they can be supported as treatments for core ADHD symptoms.

Kurz, et al. (2011) conducted a multicenter RCT on 201 patients with mild dementia in AD. The intervention comprised 12 individual weekly sessions of CR, and combined 4 established strategies adopted from neurorehabilitation and psychotherapy. ADL were chosen as the primary outcome. The results showed no effect of the intervention on everyday functioning. There were improvements favoring the intervention on QOL and treatment satisfaction and a significant antidepressant effect in female participants. The findings of this study may be helpful for designing further studies that are needed to determine the potential of CR in older adults with dementia.

Riccio and French (2004) evaluated available empirical support regarding the efficacy of treatments for treatment of attention deficits across disorders and age levels. The search of the major databases yielded 83 studies that included treatment of attentional deficits. A review of the studies indicated that, regardless of the treatment program or population, the existing research does not provide sufficient evidence to reach any conclusions about the efficacy of programs designed to address attention deficits. Before any conclusions can be drawn, there is a need for more rigorous study of available treatment programs across age levels and disorders, with sufficient baseline and outcome data as well as control or alternative treatment conditions.

Wade et al. (2003) evaluated whether a program of multidisciplinary rehabilitation and group support achieves sustained benefit for people with Parkinson's disease. The study was a crossover RCT comparing 144 patients and caregivers who had received

rehabilitation four months before assessment with those who had not. Analysis comparing patients, before and six months after treatment showed worsening in disability, QOL, and caregiver strain. The investigators concluded that patients with Parkinson's disease decline significantly over 6 months, but a short spell of multidisciplinary rehabilitation may improve mobility.

Coma Stimulation

Controlled trials comparing care with and without coma stimulation programs are limited in current literature that effectively demonstrates a consistent, reproducible and positive impact on health outcomes.

In a systematic literature review, Li et al. (2020) focused on sensory stimulation to improve coma arousal in comatose patients following a TBI. In total, 10 studies were eligible for the analysis. The review included post TBI patients with severe disorders of consciousness who received sensory stimulation with specific intervention protocols, assessment tools, and behavioral/neural responses assessed by standard scales and instruments. Limitations included heterogeneity of outcome evaluation measures, varying interventions, short intervention period, absence of long-term follow-up and small sample size. The authors concluded the sensory stimulation program improved coma arousal and is likely to aid recovery. Overall, sensory stimulation with structured, meaningful, multimodal, familiar and emotional stimuli is recommended. However, the authors noted that additional high-quality clinical trials with larger sample sizes are needed to establish standard sensory stimulation protocols to improve outcomes after TBI.

In 2016, Padilla and colleagues conducted a systematic review to assess the effectiveness of sensory stimulation to improve arousal and alertness of people in a coma or persistent vegetative state following a traumatic brain injury. A total of 9 studies published from 2008 through 2013 were included for analysis. The authors concluded that there is strong evidence for the effectiveness of multimodal sensory stimulation in improving the clinical outcomes after a traumatic brain injury-induced coma or persistent vegetative state. In addition, “Moderate evidence was also provided for auditory stimulation, limited evidence was provided for complex stimuli, and insufficient evidence was provided for median nerve stimulation.” This systematic review grouped widely heterogeneous studies in terms of design, outcomes and populations. Furthermore, the clinical significance of the studies chosen for inclusion is not clear. Given the lack of rigorous, clinically meaningful studies for inclusion and the qualitative methodological approach that was used in analysis, more research is needed to confirm the conclusions the authors have made from this review. (Megha 2013, which was previously cited in this policy, was included in this systematic review).

U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

CR is not subject to U.S. Food and Drug Administration (FDA) regulation.

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Policy History/Revision Information

Date	Summary of Changes

08/01/2021	**Application**
	• Added language to indicate this policy does not apply to the states of Mississippi and Pennsylvania; refer to the state-specific policy version
	Coverage Rationale
	• Revised language pertaining to medical necessity clinical coverage criteria:
	  ○ Added reference to the InterQual® 2021, Apr. 2021 Release, LOC: Outpatient Rehabilitation & Chiropractic:
	  ▪ Cerebrovascular Accident (CVA): Rehabilitation (Adult)
	  ▪ Traumatic Brain Injury (TBI): Rehabilitation (Adult)
	  ○ Removed reference to the InterQual® Client Defined 2021, LOC: Outpatient Rehabilitation & Chiropractic:
	  ▪ Cerebrovascular Accident (CVA): Rehabilitation (Adult) (Custom) - UHG
	  ▪ Traumatic Brain Injury (TBI): Rehabilitation (Adult) (Custom) - UHG
	Supporting Information
	• Updated *Clinical Evidence* and *References* sections to reflect the most current information
	• Archived previous policy version CS020.L

Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state or

contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state or contractual requirements for benefit plan coverage govern. Before using this policy, check the federal, state or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

UnitedHealthcare may also use tools developed by third parties, such as the InterQual® criteria, to assist us in administering health benefits. The UnitedHealthcare Medical Policies are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.