LOUISIANA BLUE

Cognitive Rehabilitation

Policy # 00578
Original Effective Date: 10/01/2021
Current Effective Date: 12/01/2025

Applies to all products administered or underwritten by Blue Cross and Blue Shield of Louisiana and its subsidiary, HMO Louisiana, Inc. (collectively referred to as the "Company"), unless otherwise provided in the applicable contract. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically.

When Services May Be Eligible for Coverage

Coverage for eligible medical treatments or procedures, drugs, devices or biological products may be provided only if:

- *Benefits are available in the member's contract/certificate, and*
- *Medical necessity criteria and guidelines are met.*

Based on review of available data, the Company may consider cognitive rehabilitation (as a distinct and definable component of the rehabilitation process) for individuals with cognitive impairment due to moderate to severe traumatic brain injury (TBI) or stroke (ischemic or hemorrhagic) to be **eligible for coverage.****

Patient Selection Criteria

Coverage eligibility for cognitive rehabilitation (CR) will be considered when all of the following criteria are met:

- CR is provided by a qualified licensed healthcare professional (e.g. neuropsychologist, psychiatrist, physician, psychologist, speech/ language therapist, physical or occupational therapist) within clinician-guided program; and
- CR is prescribed by the attending physician as part of the written care plan; and
- Individual has documented cognitive impairment with related functional deficit; and
- The individual has sufficient cognitive function to understand and willingly participate in the program and has adequate language expression and comprehension (i.e., is not in a vegetative or comatose state and does not have severe aphasia); and
- The individual is expected to make significant cognitive and functional improvements based on the preinjury function (goals and expected timeframes should be documented prior to the onset of treatment); and
- For continuation requests, documentation supports continued need for cognitive rehabilitation based on active participation and objective progress toward quantifiable short- and long-term goals.

When Services Are Considered Investigational

Coverage is not available for investigational medical treatments or procedures, drugs, devices or biological products.

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Based on review of available data, the Company considers cognitive rehabilitation (as a distinct and definable component of the rehabilitation process) for all other applications, including, but not limited to individuals with post-concussion syndrome (mild TBI), mild cognitive impairment, Alzheimer's disease and other dementias, multiple sclerosis, post-acute cognitive sequelae of SARS-CoV-2 infection, epilepsy, attention deficit disorder, postencephalitic or post encephalopathy, autism spectrum disorder, and cognitive deficits due to childhood cancers, adult brain tumors or non-central nervous system tumors, to be **investigational.***

The use of cognitive rehabilitation when patient selection criteria are not met is considered to be **investigational.***

Policy Guidelines

For services to be considered medically necessary, they must be provided by a qualified licensed professional and must be prescribed by the attending physician as part of the written care plan. Additionally, there must be a potential for improvement (based on preinjury function), and patients must be able to participate actively in the program. Active participation requires sufficient cognitive function to understand and participate in the program, as well as adequate language expression and comprehension (ie, participants should not have severe aphasia). Ongoing services are considered necessary only when there is demonstrated continued objective improvement in function.

2019 systematic review states that findings from several class III evidence studies suggest starting rehabilitation earlier postinjury is associated with greater improvements in mood, cognitive functioning, quality of life and better functional outcomes than treatment that begins late postinjury.

Guidelines for Cognitive Rehabilitation following TBI (2/2023) note that individuals with persistent cognitive deficits due to TBI should receive functionally oriented cognitive rehabilitation and reassessment of cognition should be undertaken on a regular basis using standardized and functional outcome measures to determine effectiveness of interventions.

Duration and intensity of cognitive rehabilitation therapy programs vary. One approach for comprehensive cognitive rehabilitation is a 16-week outpatient program comprising 5 hours of therapy daily for 4 days each week. In another approach, cognitive group treatment occurs for three 2-hour sessions weekly and three 1-hour individual sessions (total, 9 hours weekly). Cognitive rehabilitation programs for specific deficits (eg, memory training) are less intensive and generally have 1 or 2 sessions (30 or 60 minutes) in a week for 4 to 10 weeks.

Background/Overview

This review examines the evidence for cognitive rehabilitation (CR) delivered by qualified professionals within clinician-guided programs.

Short-term improvements in cognitive test performance measured post-intervention alone are insufficient to confirm the utility of CR for this review. Measurements of daily functioning and quality of life are the primary health outcomes of interest. Improvements should be demonstrable after longer-term follow-up post-intervention, preferably greater than 6 months.

CR is a structured set of therapeutic activities designed to retrain an individual's ability to think, use judgment, and make decisions. The focus is on improving deficits in memory, attention, perception, learning, planning, and judgment. The term CR is applied to various intervention strategies or techniques that attempt to help patients reduce, manage, or cope with cognitive deficits caused by brain injury. The desired outcomes are improved quality of life and function in home and community life. The term *rehabilitation* broadly encompasses reentry into familial, social, educational, and working environments, the reduction of dependence on assistive devices or services, and general enrichment of quality of life. Patients recuperating from traumatic brain injury have traditionally been treated with some combination of physical therapy, occupational therapy, and psychological services as indicated. CR is considered a separate service from other rehabilitative therapies, with its own specific procedures.

CR focuses on identifying and addressing individual needs and goals, which may require strategies for taking in new information or compensatory methods such as using memory aids. CR is a therapeutic approach that encompasses several key elements:

- It emphasizes functionality in daily activities.
- It focuses on specific activities selected by each participant as important, usually framed as personal goals they aspire to achieve.
- An individualized therapy plan is crafted, aimed at enhancing performance or managing these activities, based on an assessment of the participant’s current capabilities and intrinsic capacity, along with an evaluation of the demands of the chosen activities.
- Recognized rehabilitative strategies and methods are employed to help the participant compensate for, manage, or overcome functional limitations concerning the targeted activities.

CR is often categorized into six main domains: complex attention, executive function, learning and memory, language, perceptual-motor control, and social cognition. These areas are commonly evaluated and targeted in rehabilitation programs. The duration and intensity of these programs are customized based on an individual's assessment in these domains. This personalized approach helps create effective treatment plans that address specific cognitive impairments and prioritize functional outcomes.

Autism Spectrum Disorder

Autism Spectrum Disorder encompasses a broad range of conditions affecting social interaction, communication, and behavior. The term "spectrum" highlights the extensive variability of challenges among individuals. ASD includes numerous conditions that impact social interaction,

communication, and symptoms, necessitating diverse treatment approaches. These approaches may include behavioral and educational interventions, psychopharmacologic interventions, and complementary and alternative therapies.

Post-encephalitic experiences
Post-encephalitic experiences involve alterations in mental faculties to varying extents, potentially impeding everyday activities. The cognitive impairment patterns following encephalitis vary among individuals, depending on the affected brain systems and the nature of the encephalitis.

Traumatic Brain Injury
Traumatic brain injury (TBI) is a major cause of death. There were approximately 214,000 TBI-related hospitalizations in 2020 and over 69,000 TBI-related deaths in the United States in 2021. People age 75 years and older had the highest numbers and rates of TBI-related hospitalizations and deaths. There are three main types of TBI: mild TBI or concussion, moderate TBI, and severe TBI. TBIs can have a significant impact on both individuals and family members/caregivers, resulting in increased impairment in daily activities, depression, anxiety, social isolation, and decreased quality of life. Common symptoms after mild to moderate TBIs include headaches, changes in mood, and cognitive symptoms. Cognitive dysfunction appears to result in higher healthcare utilization, as individuals with cognitive impairment require three times as many hospitalizations as those without cognitive impairment.

Mild Cognitive Impairment or Alzheimer's Disease
Dementia is an acquired disorder marked by cognitive decline in one or more areas, such as memory, language, executive function, attention, perceptual-motor skills, and social cognition. The Diagnostic and Statistical Manual of Mental Disorders (5th edition, September 2024) defines major neurocognitive disorder as documenting substantial decline in memory and learning and at least one other cognitive domain (based on detailed history or serial neuropsychological testing), and steadily progressive, gradual decline in cognition, without extended plateaus. These deficits must be severe enough to impact daily function and independence.

Mild cognitive impairment (MCI) is a state between normal cognition and dementia, with cognitive impairments but no functional decline. MCI can lead to dementia or be reversible. With aging populations, dementia burden increases, requiring clinicians to test for cognitive impairment and manage early signs of Alzheimer's disease and other dementias.

Alzheimer's disease (AD) is the most common dementia in older adults. followed by mixed dementias, and vascular dementia alone. Other forms of dementia include the Parkinsonian dementias, dementia with Lewy bodies, and fronto-temporal dementia. An estimated 7 million Americans age 65 years and older are living with AD. That number is expected to double by 2060. AD is increasingly prevalent with advancing age.

CR aims to help patients in the early stages of dementia to maintain memory and higher cognitive function and to devise strategies to compensate for declining function.

Stroke
As of 2025, stroke continues to be one of leading causes of significant long-term disability in the United States. An estimated 9.4 million Americans ≥20 years of age self-report having had a stroke. Overall stroke prevalence was an estimated 3.3%. Prevalence of stroke in the United States increases with advancing age in both males and females. Each year, approximately 795 000 people experience a new or recurrent stroke. Approximately 610 000 of these are first clinical episodes and 185 000 are recurrent. Eighty-seven percent (87%) are ischemic, 10% are intracerebral hemorrhages (ICHs), and 3% are subarachnoid hemorrhages (SAHs). Cognitive deficits post-stroke limit participation in daily activities, impacting not just individuals but also their families, caregivers, and society. About 60% of stroke survivors experience cognitive impairments within the first year, with those suffering mild deficits showing the highest recovery rates.

Research to bolster the evidence base for CR continues due to the varied nature of post-stroke cognitive impairments.

Multiple Sclerosis
Multiple sclerosis (MS) is the most common progressive neurologic disease of young adults. MS varies per individual, with five clinical presentations: clinically isolated syndrome, relapsing-remitting MS, secondary-progressive MS, primary-progressive MS, and radiologically isolated syndrome. MS symptoms range from single attacks to progressive worsening, with some cases showing MRI abnormalities without symptoms. Treatments can reduce or prevent progression.

Approximately one million Americans are living with MS. The highest prevalence (50%) is observed in the 45–65 age group. Women have a higher prevalence rate (0.55%) compared to men (0.20%), comprising nearly three-quarters of the MS population. Cognitive impairment is a common and debilitating symptom in MS. There is limited evidence that disease-modifying therapies are effective in treating cognitive dysfunction. CR emerges as a promising approach to treat cognitive dysfunction in MS.

Post-Acute Cognitive Sequalae of SARS-CoV-2 Infection
Although Coronavirus disease 2019 (COVID-19) is primarily a respiratory infectious disease, it has also been associated with a wide range of other clinical manifestations. Post-recovery, many patients report enduring COVID-19-related symptoms, notably affecting cognitive functions such as executive function, memory, attention, and processing speed. These cognitive domains are predominantly linked to SARS-CoV-2 infection (PASC), also known as long-COVID syndrome.

The relevant population of interest is individuals with cognitive deficits due to PASC infection. The Centers for Disease Control and Prevention define the post-acute period as symptoms persisting at

four or more weeks following infection with SARS-CoV-2. The World Health Organization developed the following consensus case definition of 'post COVID-19 condition': individuals with "a history of probable or confirmed SARS CoV-2 infection, usually 3 months from the onset of COVID-19 with symptoms and that last for at least 2 months and cannot be explained by an alternative diagnosis. Common symptoms include fatigue, shortness of breath, cognitive dysfunction but also others and generally have an impact on everyday functioning. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time."

While subjective reports of cognitive impairment (ie, 'brain fog') have been reported by individuals not requiring hospitalization, current understanding of objective cognitive sequelae of COVID-19 is predominantly limited to individuals who required hospitalization. Ceban et al (2022) conducted a meta-analysis of 43 studies with 12 or more weeks follow-up that reported a 22% overall prevalence of cognitive impairment (95% CI, 17% to 28%; I^2=98%; N=13232). Subjectively ascertained cognitive impairment (eg, patient self-report) was reported in 18% of patients (95% CI, 12% to 24%; I^2=97.9%; 31 studies), which was significantly lower than in studies with objective ascertainment of cognitive status utilizing validated tools (36%; 95% CI, 27% to 46%; I^2=94.9%; 12 studies; p=.002). No significant difference in cognitive symptom prevalence was found in subgroup analyses of hospitalized versus non-hospitalized patients (30% versus 20%; p=.096) or patients with <6 months versus ≥6 months of follow-up (22% versus 21%; p=.794).

Objective cognitive deficits have been reported for verbal fluency, attention, working memory, processing speed, executive functioning, learning, and memory - with no clear pattern of cognitive impairment across studies. While cognitive impairment following intensive treatment of critical illness is not a new phenomenon, the disease course of cognitive impairment experienced by individuals with post-acute sequelae of SARS-CoV-2 infection is an ongoing research priority.

Epilepsy

Epilepsy is a neurologic condition causing seizures due to improper neuron signals. It is defined by the occurrence of two or more unprovoked seizures separated by more than 24 hours or by the occurrence of a single unprovoked seizure with risk factors indicating an equivalent probability of recurrence. Seizures are either focal, affecting part of one brain hemisphere, or generalized, affecting both hemispheres. Focal seizures can impair awareness and evolve into generalized seizures. Not all seizures are epilepsy-related. Conditions like febrile seizures, nonepileptic events, and eclampsia are examples of conditions involving seizures that may not be associated with epilepsy.

Epilepsy affects about 3 million adults in the U.S. and is a chronic, debilitating condition, with the vast majority of these cases originating in the temporal lobe. The management of patients with epilepsy is focused on three main goals: controlling seizures, avoiding treatment adverse effects, and maintaining or restoring quality of life.

Cancer

Childhood Cancers

In 2025, approximately 9,550 children in the U.S. will be diagnosed with cancer. Current survival rates show that 85% of these children will survive for five years or more, a significant improvement from the mid-1970s when it was only 58%. Childhood cancers (birth to age 14) and adolescent cancers (ages 15 to 19) differ from adult cancers, with common types including brain and spinal cord tumors, leukemia, lymphoma, neuroblastoma, and osteosarcoma. These require specialized diagnosis, treatment, and care approaches in pediatric oncology. Survivors often experience cognitive dysfunction, especially after treatments for brain tumors or leukemia, with risk factors including young age, cranial irradiation, and chemotherapy.

Adult Cancers

In 2025, it is predicated that there will be over 2 million new cancer cases and more than 618,000 cancer-related deaths in the United States. As the population ages, the overall incidence of cancer is expected to rise, with more than 18 million Americans currently living with a history of invasive cancer. Cognitive impairment is a common issue among cancer patients, including those in remission. Up to 30% of cancer patients show cognitive deficits before treatment begins, 75% may exhibit measurable cognitive impairment during treatment, and 35% of survivors will continue to face cognitive challenges months and years after treatment.

Studies have shown that up to 90% of brain tumor patients encounter difficulties with neurocognitive function during their disease journey. Cognitive changes related to cancer have also been observed in patients with non-central nervous system (non-CNS) cancers prior to initiation of treatment. Cancer therapies such as chemotherapy and radiation can lead to adverse cognitive effects, often referred to as "chemo brain". While some cognitive alterations are mild and transient, others may persist and significantly diminish quality of life. These cognitive deficits include impairments in various cognitive skills such as memory, attention, language, and executive functions.

Patients with brain tumors and those with non-CNS tumors can experience cognitive deficits following treatment.

FDA or Other Governmental Regulatory Approval

U.S. Food and Drug Administration (FDA)

Cognitive rehabilitation is not subject to regulation by the U.S. Food and Drug Administration.

Rationale/Source

This medical policy was developed through consideration of peer-reviewed medical literature generally recognized by the relevant medical community, U.S. Food and Drug Administration approval status, nationally accepted standards of medical practice and accepted standards of medical

practice in this community, technology evaluation centers, reference to regulations, other plan medical policies, and accredited national guidelines.

Cognitive rehabilitation is a therapeutic approach designed to improve cognitive functioning after central nervous system insult. It includes an assembly of therapy methods that retrain or alleviate problems caused by deficits in attention, visual processing, language, memory, reasoning, problem-solving, and executive functions. Cognitive rehabilitation comprises tasks to reinforce or reestablish previously learned patterns of behavior or to establish new compensatory mechanisms for impaired neurologic systems. Cognitive rehabilitation may be performed by a physician, psychologist, or a physical, occupational, or speech therapist.

Summary of Evidence
For individuals who have cognitive deficits due to traumatic brain injury (TBI) who receive cognitive rehabilitation (CR) delivered by a qualified professional, the evidence includes RCTs, nonrandomized comparison studies, case series, and systematic reviews. Relevant outcomes are functional outcomes and quality of life. While some RCTs have indicated enhancements in certain outcomes with CR for individuals with moderate to severe TBI, systematic reviews have yielded mixed results. One systematic review analyzing 12 RCTs involving individuals with mild to moderate TBI demonstrated notable improvements in memory, processing speed, and cognitive behavior. Executive function, attention, and intelligence showed moderate effects, whereas visuospatial function and language significantly improved following multimodal cognitive training and sensory stimulation. Another systematic review of RCTs focusing on US Veterans with mild to moderate TBI, revealed that participants undergoing CR experienced substantial improvements, sustained for a minimum of three months, in overall neuropsychological functioning, memory, and executive function. These benefits did not extend to functional capacity or attention when compared to control groups. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cognitive deficits due to mild cognitive impairment or Alzheimer's disease who receive CR delivered by a qualified professional, the evidence includes RCTs, nonrandomized comparison studies, case series, and systematic reviews. Relevant outcomes are functional outcomes and quality of life. A 2025 meta-analysis reviewed 32 RCTs up to July 2024, including 2370 participants with mild cognitive impairment or dementia. It evaluated three dual-task combinations: dual cognitive, motor-cognitive, and dual motor tasks. Findings indicated dual cognitive task training enhanced global cognition, motor-cognitive dual task training significantly improved executive cognition, and dual motor task training was most effective for physical function. A 2023 Cochrane systematic review examined CR trials conducted between 2010 and 2022. Approximately 60% of participants had a diagnosis of AD. The review reported statistically significant improvements in participants' self-ratings of goal attainment related to everyday functioning both immediately following rehabilitation and at 3 to 12 months post-rehabilitation. There was less certainty regarding

the impact of CR on quality of life. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cognitive deficits due to stroke who receive CR delivered by a qualified professional, the evidence includes RCTs and systematic reviews. Relevant outcomes are functional outcomes and quality of life. Four systematic reviews evaluating 3 separate domains of cognitive function have shown no benefit of CR or effects of clinical importance. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cognitive deficits due to multiple sclerosis who receive CR delivered by a qualified professional, the evidence includes RCTs and systematic reviews. Relevant outcomes are functional outcomes and quality of life. Systematic reviews of RCTs have shown no significant effects of CR on cognitive outcomes. Numerous RCTs have investigated cognitive rehabilitation for multiple sclerosis. The ability to draw conclusions based on the overall body of evidence is limited by the heterogeneity of patient samples, interventions, and outcome measures. Results of the available RCTs have been mixed, with positive studies mostly reporting short-term benefits. Evidence for clinically significant, durable improvements in cognition is currently lacking. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cognitive deficits due to post-acute sequelae of SARS-CoV-2 (PASC) infection who receive CR delivered by a qualified professional, the evidence includes one systematic review and observational studies. Relevant outcomes are functional outcomes and quality of life. The systematic review and observational studies indicate that cognitive training is the most strongly supported intervention for CR in adults with PASC, while other CR interventions such as neurostimulation and multi-component programs have lower levels of evidence. Small-scale studies highlight persistent cognitive and neuropsychiatric symptoms post-infection, with improvements seen particularly in individuals who complete CR programs, engage in psychoeducation, or have higher education and lower depression scores. Controlled prospective studies in well-defined patient populations with sufficient follow-up duration are necessary to evaluate net health outcomes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cognitive deficits due to epilepsy, who receive CR delivered by a qualified professional, the evidence includes two systematic reviews and one RCT. Relevant outcomes are functional outcomes and quality of life. Both systematic reviews, published in the 2000s, have been constrained by the heterogeneity in study design, inconsistency in results, and the low to moderate quality of evidence. A single-blinded RCT evaluating the effectiveness of the CR program for episodic memory in temporal lobe epilepsy patients demonstrated that the CR group experienced memory gains up to 12 months post-baseline, with 56% achieving normalized verbal memory scores

compared to just 7% in the control group. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with cognitive deficits due to childhood cancers who are treated with CR delivered by a qualified professional, the evidence includes 1 RCT. Relevant outcomes are functional outcomes and quality of life. The single-center RCT indicated cognitive benefits, but lacked robust statistical analysis, control data, blinding, and long-term follow-up, limiting conclusions about health outcomes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with cognitive deficits due to adult brain tumors or non-CNS tumors who are treated with CR delivered by a qualified professional, the evidence includes systematic reviews and RCTs. A systematic review of 14 studies on CR in brain tumor survivors found that neuropsychologist-guided training improved cognition, while holistic mnemonic training and neurofeedback showed no effect. Methodological differences across studies prevented meta-analysis, limiting generalizability, with benefits noted especially for younger, educated individuals. Two systematic reviews examining CR in non-CNS cancers have yielded mixed outcomes. While many studies reported short-term gains in cognition, typically within six months, these improvements were not sustained in larger or longer-term trials. Neuropsychological interventions, including CR, most often studied in breast cancer survivors, demonstrated only minimal benefits. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cognitive deficits due to autism spectrum disorder or postencephalopathy who receive cognitive rehabilitation delivered by a qualified professional, the evidence includes systematic reviews, small nonrandomized studies, and case series. Relevant outcomes are functional outcomes and quality of life. The quantity of studies for these conditions is much less than that for the other cognitive rehabilitation indications. Systematic reviews generally have not supported consistent efficacy of cognitive rehabilitation for these conditions. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Additional Information
Clinical input obtained in 2010 provided the strongest support for the use of cognitive rehabilitation as part of the treatment of traumatic brain injuries. As part of clinical input obtained in 2015, the American Association of Physical Medicine & Rehabilitation reasserted its position of support. Cognitive rehabilitation may be considered medically necessary for traumatic brain injury based on this input.

Supplemental Information

Clinical Input From Physician Specialty Societies and Academic Medical Centers

While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.

2015 Input

In response to requests, input was received from 3 physician specialty societies and 5 academic medical centers while this policy was under review in 2015. Input was mixed on cognitive rehabilitation for patients with stroke, multiple sclerosis, brain tumors, or cognitive impairments after previous treatments for cancer. While input was not specifically requested for TBI, due to strong support provided in 2009 and no signals of any subsequent evidence or clinical practice changes, the American Association of Physical Medicine & Rehabilitation voluntarily and additionally reasserted its position of support for cognitive rehabilitation after TBI.

2009/2010 Input

In response to requests, input was received from 2 physician specialty societies and 5 academic medical centers while this policy was under review in 2010. The strongest support was for the use of cognitive rehabilitation as part of the treatment of those with TBI. The level of support varied for other diagnoses (eg, use in post-stroke patients).

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

American Academy of Physical Medicine and Rehabilitation

In 2021, the American Academy of Physical Medicine and Rehabilitation (AAPM&R) Multi-Disciplinary Post-Acute Sequelae of SARS-CoV-2 Infection (PASC) Collaborative issued a consensus guidance statement on the assessment and treatment of cognitive symptoms in patients with PASC. PASC cognitive symptom assessment and treatment recommendations are summarized in Table 1.

Table 1. Post-Acute Sequelae of SARS-CoV-2 Infection Cognitive Symptom Assessment and Treatment Recommendations[a]

Assessment Recommendations	
Recommendation #	**Statement**
1	"Patients should be screened for signs of cognitive symptoms using validated tools and instruments."
2	"Patients should be evaluated for conditions that may exacerbate cognitive symptoms and warrant further testing and potential subspecialty referral. [...] Particular areas include: • Sleep impairment • Mood, including anxiety, depression, and posttraumatic stress disorder • Fatigue • Endocrine abnormalities • Autoimmune disorders Note: Patients often report dissatisfaction with their care because of their persistent symptoms being attributed to psychological factors. It is important to note that mood disorders may be secondary to persistent medical conditions or one of many factors leading to cognitive symptoms."
3	"Patients should have a thorough neurological examination to identify focal neurological deficits."
3a	"For those patients identified with new or worsening focal neurological deficits (including new or worsening cognitive symptoms) an emergent evaluation is warranted; neuroimaging should be considered."
4	"The following basic lab workup should be considered to screen for reversible factors contributing to cognitive symptoms. The initial lab workup in new patients or those without lab workup in the 3 months prior to visit including complete blood count, vitamin B12, thiamine, folate, homocysteine, 1,25-dihydroxy vitamin D, magnesium, liver function tests, comprehensive metabolic panel thyroid function tests (thyroid stimulating hormone, free T3, free T4). In high-risk patients, one may consider syphilis rapid plasma regain and human immunodeficiency virus testing [...]"
5	"Clinicians should conduct a full patient history with review of preexisting conditions and comprehensive medication and supplement review for those

	that may contribute to cognitive symptoms. Of note, patients with PASC often present on antihistamine, anticholinergic, and antidepressant/anxiolytic medications that can contribute to cognitive symptoms."
5a	"Clinicians should validate patient history through the collection of collateral history, including preexisting function and conditions, from care team/primary care, patient family or care partner, or close contact as available."
6	"Clinicians should assess impact of cognitive symptoms using standardized patient-reported assessments, to include activities of daily living, instrumental activities of daily living, school, work and avocational (ie, hobbies), and quality of life."
Treatment Recommendations	
Recommendation #	**Statement**
1	"For patients who screen positive for cognitive symptoms, refer to a specialist (ie, speech-language pathologist, occupational therapist, neuropsychologist) with expertise in formal cognitive assessment and remediation."
2	"Treat, in collaboration with appropriate specialists, underlying medical conditions, such as pain, insomnia/sleep disorders (including poor sleep hygiene), and mood disorders that may be contributing to cognitive symptoms."
3	"Complete, in collaboration with patient primary care provider, medication polypharmacy reduction, weaning or deprescribing medications if medically feasible with emphasis on medications that may impact cognition."
4	"Reinforce sleep hygiene techniques including nonpharmacologic approaches as first line of sleep remediation."
5	"Similar to patients experiencing “physical” fatigue, patients should be advised to begin an individualized and structured, titrated return to activity program."

5a	"For patients who achieve a return to their normal, daily activities, regular exercise (at least 2–3 times/week of aerobic exercise) may be effective in improving cognition and also contribute to improved sleep patterns."
5b	"Frequent assessment of the impact of return to normal, daily activities (including school, work, driving, operating heavy machinery, etc.) is recommended to ensure that symptoms do not flare and exercise is tolerated."

[a] Adapted from Fine et al (2021).

In 2023, the American Academy of Physical Medicine and Rehabilitation (AAPM&R) Multi-Disciplinary Post-Acute Sequelae of SARS-CoV-2 Infection (PASC) Collaborative issued a consensus guidance statement on the assessment and treatment of neurologic symptoms in patients with PASC. PASC neurologic symptom assessment and treatment recommendations are summarized in Table 2.

Table 2. Post-Acute Sequelae of SARS-CoV-2 Infection Neurologic Symptom Assessment and Treatment Recommendations[a]

Assessment Recommendations	
Recommendation #	**Statement**
1	"Clinicians should conduct a full patient history including a review of predisposing comorbidities, prior neurologic symptoms or disorders, relevant hospitalizations, time course and severity of COVID-19 infection(s), COVID-19 treatments, vaccines/boosters, pertinent family history, and social history."
2	"Clinicians should perform a thorough neurological examination to identify focal neurological deficits."
3	"Evaluate for medication and supplement use that may impact signs, symptoms, or assessment parameters"
4	"The following basic lab workup should be considered in new patients or for those without a lab workup in the 3 months prior to the visit: complete blood count with differential; chemistries including renal and hepatic function tests, thyroid stimulating hormone, c-reactive protein, erythrocyte sedimentation rate, vitamins B1, B6, B12, and D, magnesium, and hemoglobin A1c (HbA1c)."

5	"Assess for history of previous and/or current alcohol and substance use, current diet and exercise habits, physical and cognitive activity levels, and social determinants of health (eg, housing, employment, family, insurance, access to community resources, social stressors, etc.)"
6	"Assess for changes in basic and instrumental activities of daily living, including participation at work, school, community avocational (ie, hobbies) activities."
7	"On initial evaluation, obtain standardized measures of activity performance to compare to normal control values and to guide the initial activity prescription. Repeat the standardized measures of activity performance at follow-up visits to quantify functional changes and guide progression of the activity prescription."
Treatment Recommendations	
Recommendation #	**Statement**
1	"In collaboration with primary care or appropriate specialist treat underlying medical conditions, such as pain, psychiatric, renal/endocrine, cardiovascular, neurological, respiratory, etc., which may be contributing to neurologic symptoms."
2	"In collaboration with primary care or appropriate specialist, consider polypharmacy reduction, weaning or deprescribing medications and supplements where medically feasible."
3	"For patients who achieve a return to their daily activities, consider recommending regular physical activity as tolerated, which may be effective in improving many neurologic symptoms and also contribute to improved sleep patterns."
4	"For patients with neurologic sequelae affecting gait, mobility, cognitive status or activities of daily living, consider referral to physical medicine and rehabilitation physician and/or allied health professionals (eg, physical therapy, occupational therapy, speech language pathology and social work) for patient-specific recommendations to increase function and independence. To optimize functional outcomes, allied health professionals should preferably be familiar with treating sensorimotor deficits, autonomic dysfunction, and post-exertional fatigue."
5	"Provide counseling, referrals to community resources, and education for risk factor modification in the areas of: alcohol and substance use; healthy

	dietary pattern and hydration; return to activity, as tolerated; medications and supplements; sleep hygiene; social determinants of health."

[a] Adapted from Melamed et al (2023).

American Congress of Rehabilitation Medicine
In 2013, based on a systematic review, the American Congress of Rehabilitation Medicine recommended process-based cognitive rehabilitation strategies (eg, attention process training, strategy acquisition and internalization, self-monitoring, corrective feedback) to treat attention and memory deficits in children and adolescents with brain cancers who undergo surgical resection and/or radiotherapy. The strength of evidence for recommendations were determined according to American Academy of Neurology study classification, and no financial conflicts of interest were declared by the authors.

National Institute for Health and Care Excellence
In 2013 (updated in 2023), NICE guidance on stroke rehabilitation recommended cognitive rehabilitation for visual neglect and memory and attention deficits that impact function. Interventions should focus on relevant functional tasks (eg, "errorless learning") and "elaborative techniques" (eg, "mnemonics," "encoding" strategies) for memory impairments. The guidance states that providers should 'Make special arrangements for people after stroke who have communication or cognitive needs (for example, by holding joint speech and language therapy and physiotherapy sessions for those with communication difficulties).'

In 2018, NICE guidance on dementia management suggested: "Consider cognitive rehabilitation or occupational therapy to support functional ability in people living with mild to moderate dementia."

In 2021 (updated in 2024), NICE issued a rapid guideline on managing the long-term effects of COVID-19. The guideline recommends using a "multidisciplinary approach to guide rehabilitation, including physical, psychological and psychiatric aspects of management." Cognitive rehabilitation was not specifically addressed. Assessing the clinical effectiveness of "different service models of multimodality/multidisciplinary post-COVID-19 syndrome rehabilitation in improving patient-reported outcomes (such as quality of life)" was listed as a key recommendation for research.

The NICE guidance development is a transparent process that provides detailed information on the strength of recommendations and information on potential conflicts of interest for guideline committee members.

Institute of Medicine
In 2011, the Institute of Medicine published a report on cognitive rehabilitation for traumatic brain injury that included a comprehensive review of the literature and recommendations. The report concluded that "current evidence provides limited support for the efficacy of CRT [cognitive

rehabilitation therapy] interventions. The evidence varies in both the quality and volume of studies and therefore is not yet sufficient to develop definitive guidelines for health professionals on how to apply CRT in practice." The report recommended that standardization of clinical variables, intervention components, and outcome measures was necessary to improve the evidence base for this treatment. The Institute of Medicine also recommended future studies with larger sample sizes and more comprehensive sets of clinical variables and outcome measures.

Veterans Administration
In 2009, the Veterans Administration/Department of Veterans Affairs published guidelines on the treatment of concussion and mild traumatic brain injury, which were updated in 2016 and most recently in 2021. These guidelines addressed cognitive rehabilitation in the setting of persistent symptoms. The 2021 guidelines stated:

- "We suggest that patients with symptoms attributed to mild traumatic brain injury [mTBI] who present with memory, attention, or executive function problems despite appropriate management of other contributing factors (e.g., sleep, pain, behavioral health, headache, disequilibrium) should be referred for a short trial of clinician-directed cognitive rehabilitation services." [Strength of recommendation: "weak for."]
- "We suggest against the use of self-administered computer training programs for the cognitive rehabilitation of patients with symptoms attributed to mTBI." [Strength of recommendation: "weak against."]

A 2019 Veterans Administration/Department of Defense practice guideline on the management of stroke rehabilitation found "insufficient evidence to recommend for or against the use of any specific cognitive rehabilitation methodology or pharmacotherapy to improve cognitive outcomes" and noted "there has been very little advancement in the evidence regarding the use of specific cognitive rehabilitation strategies or techniques to improve clinical outcomes following stroke."

U.S. Preventive Services Task Force Recommendations
Not applicable.

Medicare National Coverage
There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

Ongoing and Unpublished Clinical Trials
Some currently unpublished trials that might influence this review are listed in Table 3.

Table 3. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date

Ongoing			
NCT01138020	Cognitive Rehabilitation of Blast-induced Traumatic Brain Injury (CRbTBI)	77	Oct 2026
NCT03900806	Internet-based WOrk-related Cognitive Rehabilitation for Cancer Survivors: a Randomized Controlled Trial (i-WORC)	261	Aug 2023
NCT04615390	Recovery Profiles in Patients With COVID-19 Outcomes Undergoing Rehabilitation	200	Nov 2023
NCT03168360	Effect of Intensive Cognitive Rehabilitation in Subacute Stroke Patient	150	Dec 2023
NCT04632719	MentalPlus®‡ for Assessment and Rehabilitation of Cognitive Functions After Remission of Symptoms of COVID-19 (MP-COVID)	200	Dec 2023
NCT05172206	Symptom-based Rehabilitation Compared to Usual Care in Post-COVID - a Randomized Controlled Trial (RELOAD)	132	Dec 2023
NCT05731570	Cognitive Impairment in Long Covid: PhEnotyping and RehabilitatiOn (CICERO)	120	Feb 2024
NCT03225482	Cognitive Rehabilitation for Older Veterans With Mild Cognitive Impairment	216	Mar 2024
NCT04229056	Computer-Assisted Self-Training to Improve Executive Function Versus Unspecific Training in Patients After Stroke, Cardiac Arrest or in Parkinson's Disease: A Randomized Controlled Trial (COMPEX)	700	Dec 2024
NCT05676047	Symptom-Targeted Rehabilitation for Cognitive Complaints in Long COVID (STAR-C3)	100	Dec 2024
NCT03948490	Rehabilitation and Longitudinal Follow-up of Cognition in Adult Lower Grade Gliomas	180	Mar 2025
NCT06021470	The StrokeCog Study: a Randomised Pilot Study of a Novel Cognitive Rehabilitation Intervention in Stroke	64	Oct 2025

NCT05954741	Comparing the Effectiveness of Multidimensional Rehabilitation Programs for Cognitive Impairment in Comorbid Outpatients: a Randomized Controlled Trial	75	Jan 2026
NCT05934786	Rehabilitation of Cognition and Psychosocial Well-being - A Better Life With Epilepsy	70	Dec 2028
NCT05494424	Cognitive Rehabilitation in Post-COVID-19 Condition: A Study Protocol for a Randomized Controlled Trial	240	Jan 2029
Unpublished			
NCT03237676	The Effect of Cognitive Rehabilitation Therapy in Improving Cognitive Function of Attention Following Mild Traumatic Brain Injury	90	Dec 2019
NCT04852718	Evaluate a Rehabilitation Program for the Sequelae of COVID 19 Infection: Description of a Clinical Practice	120	Apr 2021
NCT03679468	Improving Cognition in People With Progressive Multiple Sclerosis: A Multi-Arm, Randomized, Blinded, Sham-Controlled Trial of Cognitive Rehabilitation and Aerobic Exercise.	309	Feb 2023

NCT: national clinical trial.

References

1. Hardy KK, Willard VW, Allen TM, et al. Working memory training in survivors of pediatric cancer: a randomized pilot study. Psychooncology. Aug 2013; 22(8): 1856-65. PMID 23203754
2. Kesler S, Hadi Hosseini SM, Heckler C, et al. Cognitive training for improving executive function in chemotherapy-treated breast cancer survivors. Clin Breast Cancer. Aug 2013; 13(4): 299-306. PMID 23647804
3. Bonavita S, Sacco R, Della Corte M, et al. Computer-aided cognitive rehabilitation improves cognitive performances and induces brain functional connectivity changes in relapsing remitting multiple sclerosis patients: an exploratory study. J Neurol. Jan 2015; 262(1): 91-100. PMID 25308631
4. De Giglio L, De Luca F, Prosperini L, et al. A low-cost cognitive rehabilitation with a commercial video game improves sustained attention and executive functions in multiple sclerosis: a pilot study. Neurorehabil Neural Repair. Jun 2015; 29(5): 453-61. PMID 25398725

5. Gich J, Freixanet J, García R, et al. A randomized, controlled, single-blind, 6-month pilot study to evaluate the efficacy of MS-Line!: a cognitive rehabilitation programme for patients with multiple sclerosis. Mult Scler. Sep 2015; 21(10): 1332-43. PMID 25716880
6. Park M, Ha Y. Effects of Virtual Reality-Based Cognitive Rehabilitation in Stroke Patients: A Randomized Controlled Trial. Healthcare (Basel). Oct 29 2023; 11(21). PMID 37957991
7. Feinstein A. The CogEx trial - Cognitive rehabilitation and aerobic exercise for cognitive impairment in people with progressive multiple sclerosis: A randomised, blinded, sham-controlled trial. Mult Scler. Nov 2023; 29(13): 1523-1525. PMID 37916484
8. Teasdale G, Maas A, Lecky F, et al. The Glasgow Coma Scale at 40 years: standing the test of time. Lancet Neurol. Aug 2014; 13(8): 844-54. PMID 25030516
9. Austin TA, Hodges CB, Thomas ML, et al. Meta-analysis of Cognitive Rehabilitation Interventions in Veterans and Service Members With Traumatic Brain Injuries. J Head Trauma Rehabil. Jan 25 2024. PMID 38270528
10. Chung CS, Pollock A, Campbell T, et al. Cognitive rehabilitation for executive dysfunction in adults with stroke or other adult non-progressive acquired brain damage. Cochrane Database Syst Rev. Apr 30 2013; 2013(4): CD008391. PMID 23633354
11. Chiaravalloti ND, Sandry J, Moore NB, et al. An RCT to Treat Learning Impairment in Traumatic Brain Injury: The TBI-MEM Trial. Neurorehabil Neural Repair. Jul 2016; 30(6): 539-50. PMID 26359341
12. das Nair R, Bradshaw LE, Carpenter H, et al. A group memory rehabilitation programme for people with traumatic brain injuries: the ReMemBrIn RCT. Health Technol Assess. Apr 2019; 23(16): 1-194. PMID 31032782
13. Kudlicka A, Martyr A, Bahar-Fuchs A, et al. Cognitive rehabilitation for people with mild to moderate dementia. Cochrane Database Syst Rev. Jun 29 2023; 6(6): CD013388. PMID 37389428
14. Bahar-Fuchs A, Martyr A, Goh AM, et al. Cognitive training for people with mild to moderate dementia. Cochrane Database Syst Rev. Mar 25 2019; 3(3): CD013069. PMID 30909318
15. Huntley JD, Gould RL, Liu K, et al. Do cognitive interventions improve general cognition in dementia? A meta-analysis and meta-regression. BMJ Open. Apr 02 2015; 5(4): e005247. PMID 25838501
16. Bahar-Fuchs A, Clare L, Woods B. Cognitive training and cognitive rehabilitation for mild to moderate Alzheimer's disease and vascular dementia. Cochrane Database Syst Rev. Jun 05 2013; 2013(6): CD003260. PMID 23740535
17. Clare L, Linden DE, Woods RT, et al. Goal-oriented cognitive rehabilitation for people with early-stage Alzheimer disease: a single-blind randomized controlled trial of clinical efficacy. Am J Geriatr Psychiatry. Oct 2010; 18(10): 928-39. PMID 20808145
18. Martin M, Clare L, Altgassen AM, et al. Cognition-based interventions for healthy older people and people with mild cognitive impairment. Cochrane Database Syst Rev. Jan 19 2011; (1): CD006220. PMID 21249675
19. Clare L, Kudlicka A, Oyebode JR, et al. Individual goal-oriented cognitive rehabilitation to improve everyday functioning for people with early-stage dementia: A multicentre randomised

controlled trial (the GREAT trial). Int J Geriatr Psychiatry. May 2019; 34(5): 709-721. PMID 30724405
20. Amieva H, Robert PH, Grandoulier AS, et al. Group and individual cognitive therapies in Alzheimer's disease: the ETNA3 randomized trial. Int Psychogeriatr. May 2016; 28(5): 707-17. PMID 26572551
21. Regan B, Wells Y, Farrow M, et al. MAXCOG-Maximizing Cognition: A Randomized Controlled Trial of the Efficacy of Goal-Oriented Cognitive Rehabilitation for People with Mild Cognitive Impairment and Early Alzheimer Disease. Am J Geriatr Psychiatry. Mar 2017; 25(3): 258-269. PMID 28034509
22. Thivierge S, Jean L, Simard M. A randomized cross-over controlled study on cognitive rehabilitation of instrumental activities of daily living in Alzheimer disease. Am J Geriatr Psychiatry. Nov 2014; 22(11): 1188-99. PMID 23871120
23. Brunelle-Hamann L, Thivierge S, Simard M. Impact of a cognitive rehabilitation intervention on neuropsychiatric symptoms in mild to moderate Alzheimer's disease. Neuropsychol Rehabil. 2015; 25(5): 677-707. PMID 25312605
24. Kurz A, Thöne-Otto A, Cramer B, et al. CORDIAL: cognitive rehabilitation and cognitive-behavioral treatment for early dementia in Alzheimer disease: a multicenter, randomized, controlled trial. Alzheimer Dis Assoc Disord. 2012; 26(3): 246-53. PMID 21986341
25. Chapman SB, Weiner MF, Rackley A, et al. Effects of cognitive-communication stimulation for Alzheimer's disease patients treated with donepezil. J Speech Lang Hear Res. Oct 2004; 47(5): 1149-63. PMID 15603468
26. Spector A, Thorgrimsen L, Woods B, et al. Efficacy of an evidence-based cognitive stimulation therapy programme for people with dementia: randomised controlled trial. Br J Psychiatry. Sep 2003; 183: 248-54. PMID 12948999
27. Bowen A, Hazelton C, Pollock A, et al. Cognitive rehabilitation for spatial neglect following stroke. Cochrane Database Syst Rev. Jul 01 2013; 2013(7): CD003586. PMID 23813503
28. Loetscher T, Lincoln NB. Cognitive rehabilitation for attention deficits following stroke. Cochrane Database Syst Rev. May 31 2013; 2013(5): CD002842. PMID 23728639
29. Nair RD, Lincoln NB. Cognitive rehabilitation for memory deficits following stroke. Cochrane Database Syst Rev. Jul 18 2007; (3): CD002293. PMID 17636703
30. das Nair R, Cogger H, Worthington E, et al. Cognitive rehabilitation for memory deficits after stroke. Cochrane Database Syst Rev. Sep 01 2016; 9(9): CD002293. PMID 27581994
31. Loetscher T, Potter KJ, Wong D, et al. Cognitive rehabilitation for attention deficits following stroke. Cochrane Database Syst Rev. Nov 10 2019; 2019(11). PMID 31706263
32. Gillespie DC, Bowen A, Chung CS, et al. Rehabilitation for post-stroke cognitive impairment: an overview of recommendations arising from systematic reviews of current evidence. Clin Rehabil. Feb 2015; 29(2): 120-8. PMID 24942480
33. Diamond PT. Rehabilitative management of post-stroke visuospatial inattention. Disabil Rehabil. Jul 10 2001; 23(10): 407-12. PMID 11400902
34. Zucchella C, Capone A, Codella V, et al. Assessing and restoring cognitive functions early after stroke. Funct Neurol. 2014; 29(4): 255-62. PMID 25764255

35. das Nair R, Ferguson H, Stark DL, et al. Memory Rehabilitation for people with multiple sclerosis. Cochrane Database Syst Rev. Mar 14 2012; (3): CD008754. PMID 22419337
36. Rosti-Otajärvi EM, Hämäläinen PI. Neuropsychological rehabilitation for multiple sclerosis. Cochrane Database Syst Rev. Feb 11 2014; (2): CD009131. PMID 24515630
37. das Nair R, Martin KJ, Lincoln NB. Memory rehabilitation for people with multiple sclerosis. Cochrane Database Syst Rev. Mar 23 2016; 3: CD008754. PMID 27004596
38. Redero D, Lázaro E, Vázquez N, et al. Neuropsychological rehabilitation in patients with relapsing-remitting multiple sclerosis: a systematic review. Appl Neuropsychol Adult. Aug 28 2023: 1-9. PMID 37641201
39. Lincoln NB, Bradshaw LE, Constantinescu CS, et al. Cognitive rehabilitation for attention and memory in people with multiple sclerosis: a randomized controlled trial (CRAMMS). Clin Rehabil. Feb 2020; 34(2): 229-241. PMID 31769299
40. Lincoln NB, Bradshaw LE, Constantinescu CS, et al. Group cognitive rehabilitation to reduce the psychological impact of multiple sclerosis on quality of life: the CRAMMS RCT. Health Technol Assess. Jan 2020; 24(4): 1-182. PMID 31934845
41. Nauta IM, Bertens D, Fasotti L, et al. Cognitive rehabilitation and mindfulness reduce cognitive complaints in multiple sclerosis (REMIND-MS): A randomized controlled trial. Mult Scler Relat Disord. Mar 2023; 71: 104529. PMID 36736039
42. Brissart H, Omorou AY, Forthoffer N, et al. Memory improvement in multiple sclerosis after an extensive cognitive rehabilitation program in groups with a multicenter double-blind randomized trial. Clin Rehabil. Jun 2020; 34(6): 754-763. PMID 32475261
43. Chiaravalloti ND, DeLuca J, Moore NB, et al. Treating learning impairments improves memory performance in multiple sclerosis: a randomized clinical trial. Mult Scler. Feb 2005; 11(1): 58-68. PMID 15732268
44. Chiaravalloti ND, Moore NB, Nikelshpur OM, et al. An RCT to treat learning impairment in multiple sclerosis: The MEMREHAB trial. Neurology. Dec 10 2013; 81(24): 2066-72. PMID 24212393
45. Rosti-Otajärvi E, Mäntynen A, Koivisto K, et al. Neuropsychological rehabilitation has beneficial effects on perceived cognitive deficits in multiple sclerosis during nine-month follow-up. J Neurol Sci. Nov 15 2013; 334(1-2): 154-60. PMID 24011606
46. Mäntynen A, Rosti-Otajärvi E, Koivisto K, et al. Neuropsychological rehabilitation does not improve cognitive performance but reduces perceived cognitive deficits in patients with multiple sclerosis: a randomised, controlled, multi-centre trial. Mult Scler. Jan 2014; 20(1): 99-107. PMID 23804555
47. Hanssen KT, Beiske AG, Landrø NI, et al. Cognitive rehabilitation in multiple sclerosis: a randomized controlled trial. Acta Neurol Scand. Jan 2016; 133(1): 30-40. PMID 25952561
48. Shahpouri MM, Barekatain M, Tavakoli M, et al. Evaluation of cognitive rehabilitation on the cognitive performance in multiple sclerosis: A randomized controlled trial. J Res Med Sci. 2019; 24: 110. PMID 31949461

49. Chiaravalloti ND, Moore NB, Weber E, et al. The application of Strategy-based Training to Enhance Memory (STEM) in multiple sclerosis: A pilot RCT. Neuropsychol Rehabil. Mar 2021; 31(2): 231-254. PMID 31752604
50. Centers for Disease Control and Prevention (CDC). Post-COVID Conditions: Information for Healthcare Providers. December 16, 2022; https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-conditions.html.
51. Soriano JB, Murthy S, Marshall JC, et al. A clinical case definition of post-COVID-19 condition by a Delphi consensus. Lancet Infect Dis. Apr 2022; 22(4): e102-e107. PMID 34951953
52. Bell ML, Catalfamo CJ, Farland LV, et al. Post-acute sequelae of COVID-19 in a non-hospitalized cohort: Results from the Arizona CoVHORT. PLoS One. 2021; 16(8): e0254347. PMID 34347785
53. Fine JS, Ambrose AF, Didehbani N, et al. Multi-disciplinary collaborative consensus guidance statement on the assessment and treatment of cognitive symptoms in patients with post-acute sequelae of SARS-CoV-2 infection (PASC). PM R. Jan 2022; 14(1): 96-111. PMID 34902226
54. Graham EL, Clark JR, Orban ZS, et al. Persistent neurologic symptoms and cognitive dysfunction in non-hospitalized Covid-19 "long haulers". Ann Clin Transl Neurol. May 2021; 8(5): 1073-1085. PMID 33755344
55. Ceban F, Ling S, Lui LMW, et al. Fatigue and cognitive impairment in Post-COVID-19 Syndrome: A systematic review and meta-analysis. Brain Behav Immun. Mar 2022; 101: 93-135. PMID 34973396
56. Vrettou CS, Mantziou V, Vassiliou AG, et al. Post-Intensive Care Syndrome in Survivors from Critical Illness including COVID-19 Patients: A Narrative Review. Life (Basel). Jan 12 2022; 12(1). PMID 35054500
57. Oh ES, Vannorsdall TD, Parker AM. Post-acute Sequelae of SARS-CoV-2 Infection and Subjective Memory Problems. JAMA Netw Open. Jul 01 2021; 4(7): e2119335. PMID 34323990
58. De Luca R, Bonanno M, Calabrò RS. Psychological and Cognitive Effects of Long COVID: A Narrative Review Focusing on the Assessment and Rehabilitative Approach. J Clin Med. Nov 04 2022; 11(21). PMID 36362782
59. Del Brutto OH, Rumbea DA, Recalde BY, et al. Cognitive sequelae of long COVID may not be permanent: A prospective study. Eur J Neurol. Apr 2022; 29(4): 1218-1221. PMID 34918425
60. Heesakkers H, van der Hoeven JG, Corsten S, et al. Clinical Outcomes Among Patients With 1-Year Survival Following Intensive Care Unit Treatment for COVID-19. JAMA. Feb 08 2022; 327(6): 559-565. PMID 35072716
61. Imamura M, Mirisola AR, Ribeiro FQ, et al. Rehabilitation of patients after COVID-19 recovery: An experience at the Physical and Rehabilitation Medicine Institute and Lucy Montoro Rehabilitation Institute. Clinics (Sao Paulo). 2021; 76: e2804. PMID 34133481
62. Albu S, Rivas Zozaya N, Murillo N, et al. Multidisciplinary outpatient rehabilitation of physical and neurological sequelae and persistent symptoms of covid-19: a prospective, observational cohort study. Disabil Rehabil. Nov 2022; 44(22): 6833-6840. PMID 34559592

63. Liu K, Zhang W, Yang Y, et al. Respiratory rehabilitation in elderly patients with COVID-19: A randomized controlled study. Complement Ther Clin Pract. May 2020; 39: 101166. PMID 32379637
64. Barbara C, Clavario P, De Marzo V, et al. Effects of exercise rehabilitation in patients with long coronavirus disease 2019. Eur J Prev Cardiol. May 25 2022; 29(7): e258-e260. PMID 35078233
65. Farina E, Raglio A, Giovagnoli AR. Cognitive rehabilitation in epilepsy: An evidence-based review. Epilepsy Res. Jan 2015; 109: 210-8. PMID 25524861
66. Langenbahn DM, Ashman T, Cantor J, et al. An evidence-based review of cognitive rehabilitation in medical conditions affecting cognitive function. Arch Phys Med Rehabil. Feb 2013; 94(2): 271-86. PMID 23022261
67. Engelberts NH, Klein M, Adèr HJ, et al. The effectiveness of cognitive rehabilitation for attention deficits in focal seizures: a randomized controlled study. Epilepsia. Jun 2002; 43(6): 587-95. PMID 12060017
68. Helmstaedter C, Loer B, Wohlfahrt R, et al. The effects of cognitive rehabilitation on memory outcome after temporal lobe epilepsy surgery. Epilepsy Behav. Apr 2008; 12(3): 402-9. PMID 18155965
69. Reichow B, Servili C, Yasamy MT, et al. Non-specialist psychosocial interventions for children and adolescents with intellectual disability or lower-functioning autism spectrum disorders: a systematic review. PLoS Med. Dec 2013; 10(12): e1001572; discussion e1001572. PMID 24358029
70. Wang M, Reid D. Using the virtual reality-cognitive rehabilitation approach to improve contextual processing in children with autism. ScientificWorldJournal. 2013; 2013: 716890. PMID 24324379
71. Eack SM, Greenwald DP, Hogarty SS, et al. Cognitive enhancement therapy for adults with autism spectrum disorder: results of an 18-month feasibility study. J Autism Dev Disord. Dec 2013; 43(12): 2866-77. PMID 23619953
72. Akel BS, Şahin S, Huri M, et al. Cognitive rehabilitation is advantageous in terms of fatigue and independence in pediatric cancer treatment: a randomized-controlled study. Int J Rehabil Res. Jun 2019; 42(2): 145-151. PMID 30741725
73. Zucchella C, Capone A, Codella V, et al. Cognitive rehabilitation for early post-surgery inpatients affected by primary brain tumor: a randomized, controlled trial. J Neurooncol. Aug 2013; 114(1): 93-100. PMID 23677749
74. Fernandes HA, Richard NM, Edelstein K. Cognitive rehabilitation for cancer-related cognitive dysfunction: a systematic review. Support Care Cancer. Sep 2019; 27(9): 3253-3279. PMID 31147780
75. Zeng Y, Cheng AS, Chan CC. Meta-Analysis of the Effects of Neuropsychological Interventions on Cognitive Function in Non-Central Nervous System Cancer Survivors. Integr Cancer Ther. Dec 2016; 15(4): 424-434. PMID 27151596
76. Poppelreuter M, Weis J, Mumm A, et al. Rehabilitation of therapy-related cognitive deficits in patients after hematopoietic stem cell transplantation. Bone Marrow Transplant. Jan 2008; 41(1): 79-90. PMID 17934527

77. Butler RW, Copeland DR, Fairclough DL, et al. A multicenter, randomized clinical trial of a cognitive remediation program for childhood survivors of a pediatric malignancy. J Consult Clin Psychol. Jun 2008; 76(3): 367-78. PMID 18540731
78. Richard NM, Bernstein LJ, Mason WP, et al. Cognitive rehabilitation for executive dysfunction in brain tumor patients: a pilot randomized controlled trial. J Neurooncol. May 2019; 142(3): 565-575. PMID 30847839
79. Melamed E, Rydberg L, Ambrose AF, et al. Multidisciplinary collaborative consensus guidance statement on the assessment and treatment of neurologic sequelae in patients with post-acute sequelae of SARS-CoV-2 infection (PASC). PM R. May 2023; 15(5): 640-662. PMID 36989078
80. National Institute for Health and Care Excellence (NICE). Stroke rehabilitation in adults [NG236]. 2023; https://www.nice.org.uk/guidance/CG162.
81. National Institute for Health and Care Excellence (NICE). Dementia: assessment, management and support for people living with dementia and their carers [NG97]. 2018; https://www.nice.org.uk/guidance/ng97.
82. National Institute for Health and Care Excellence (NICE). COVID-19 rapid guideline: managing the long-term effects of COVID-19 [NG188]. 2024; https://www.nice.org.uk/guidance/ng188.
83. Institute of Medicine. Cognitive rehabilitation therapy for traumatic brain injury: evaluating the evidence. Washington, DC: National Academies Press; 2011.
84. Department of Veteran Affairs Department of Defense. VA/DoD clinical practice guideline for management of concussion/mild traumatic brain injury. Washington (DC): Department of Veteran Affairs, Department of Defense; 2009.
85. Management of Concussion-mild Traumatic Brain Injury Working Group. VA/DoD clinical practice guideline for the management of concussion-mild traumatic brain injury, Version 2.0. Washington, DC: Department of Veterans Affairs, Department of Defense; 2016.
86. Department of Veterans Affairs/Department of Defense Management and Rehabilitation of Post-Acute Mild Traumatic Brain Injury Work Group. VA/DoD Clinical Practice Guideline for the Management and Rehabilitation of Post-Acute Mild Traumatic Brain Injury. Version 3.0, 2021. https://www.healthquality.va.gov/guidelines/Rehab/mtbi/VADoDmTBICPGFinal508.pdf.
87. Department of Veterans Affairs/Department of Defense Management of Stroke Rehabilitation Work Group. VA/DoD Clinical Practice Guideline for the Management of Stroke Rehabilitation. Version 4.0, 2019. https://www.healthquality.va.gov/guidelines/Rehab/stroke/VADoDStrokeRehabCPGFinal8292019.pdf.
88. Cicerone, K. D., Goldin, Y., Ganci, K., Rosenbaum, A., Wethe, J. V., Langenbahn, D. M., Malec, J. F., Bergquist, T. F., Kingsley, K., Nagele, D., Trexler, L., Fraas, M., Bogdanova, Y., & Harley, J. P. (2019). Evidence-based cognitive rehabilitation: Systematic review of the literature from 2009 through 2014. Archives of Physical Medicine and Rehabilitation, 100(8), 1515–1533.
89. Bayley MT, Janzen S, Harnett A, Teasell R, Patsakos E, Marshall S, Bragge P, Velikonja D, Kua A, Douglas J, Togher L, Ponsford J, McIntyre A. INCOG 2.0 guidelines for cognitive rehabilitation following traumatic brain injury: Methods, overview, and principles. J Head Trauma Rehabil. 2023;38(1):7-23.

Cognitive Rehabilitation

Policy # 00578
Original Effective Date: 10/01/2025
Current Effective Date: 12/01/2025

Policy History

Original Effective Date: 10/01/2021
Current Effective Date: 12/01/2025

07/01/2021	Medical Policy Committee review
07/14/2021	Medical Policy Implementation Committee approval. New policy.
07/07/2022	Medical Policy Committee review
07/13/2022	Medical Policy Implementation Committee approval. Investigational policy statement for post-acute cognitive sequelae of SARS-CoV-2 infection was added.
07/06/2023	Medical Policy Committee review
07/12/2023	Medical Policy Implementation Committee approval. No change to coverage.
07/02/2024	Medical Policy Committee review
07/10/2024	Medical Policy Implementation Committee approval. No change to coverage.
07/03/2025	Medical Policy Committee review
07/09/2025	Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
11/06/2025	Medical Policy Committee review
11/12/2025	Medical Policy Implementation Committee approval. Coverage statement for traumatic brain injury added "moderate to severe" in the statement. Patient selection criteria extensively revised. Investigational statement changed to " Based on review of available data, the Company considers cognitive rehabilitation (as a distinct and definable component of the rehabilitation process) for all other applications, including, but not limited to individuals with post-concussion syndrome (mild TBI), mild cognitive impairment, Alzheimer's disease and other dementias, multiple sclerosis, post-acute cognitive sequelae of SARS-CoV-2 infection, epilepsy, attention deficit disorder, postencephalitic or post encephalopathy, autism spectrum disorder, and cognitive deficits due to childhood cancers, adult brain tumors or non-central nervous system tumors, to be investigational."

Next Scheduled Review Date: 11/2026

Coding

The five character codes included in the Louisiana Blue Medical Policy Coverage Guidelines are obtained from Current Procedural Terminology (CPT®)‡, copyright 2024 by the American Medical Association (AMA). CPT is developed by the AMA as a listing of descriptive terms and five character identifying codes and modifiers for reporting medical services and procedures performed by physician.

The responsibility for the content of Louisiana Blue Medical Policy Coverage Guidelines is with Louisiana Blue and no endorsement by the AMA is intended or should be implied. The AMA disclaims responsibility for any consequences or liability attributable or related to any use, nonuse

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Codes used to identify services associated with this policy may include (but may not be limited to) the following:

Code Type	Code
CPT	97129, 97130
HCPCS	No codes
ICD-10 Diagnosis	F01.50-F01.C4, F02.80-F02.C4, F03.90-F03.C4, F07.81, F44.5, F84.0-F84.9, F90.0-F90.9, G30.0-G30.9, G31.0-G31.9, G31.84, G35.A-G35.D, G40.0-G40.919,G45.0-G45.9, G46.0-G46.8, G93.40-G93.49, R56.1, S06.300A-S06.300D, S06.0-S06.9X9S, S06.A0XA-S06.A1XS

*Investigational – A medical treatment, procedure, drug, device, or biological product is Investigational if the effectiveness has not been clearly tested and it has not been incorporated into standard medical practice. Any determination we make that a medical treatment, procedure, drug, device, or biological product is Investigational will be based on a consideration of the following:

A. Whether the medical treatment, procedure, drug, device, or biological product can be lawfully marketed without approval of the U.S. Food and Drug Administration (FDA) and whether such approval has been granted at the time the medical treatment, procedure, drug, device, or biological product is sought to be furnished; or
B. Whether the medical treatment, procedure, drug, device, or biological product requires further studies or clinical trials to determine its maximum tolerated dose, toxicity, safety, effectiveness, or effectiveness as compared with the standard means of treatment or diagnosis, must improve health outcomes, according to the consensus of opinion among experts as shown by reliable evidence, including:
    1. Consultation with technology evaluation center(s);
    2. Credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community; or
    3. Reference to federal regulations.

**Medically Necessary (or "Medical Necessity") - Health care services, treatment, procedures, equipment, drugs, devices, items or supplies that a Provider, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing or treating an illness, injury, disease or its symptoms, and that are:

A. In accordance with nationally accepted standards of medical practice;
B. Clinically appropriate, in terms of type, frequency, extent, level of care, site and duration, and considered effective for the patient's illness, injury or disease; and
C. Not primarily for the personal comfort or convenience of the patient, physician or other health care provider, and not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient's illness, injury or disease.

For these purposes, "nationally accepted standards of medical practice" means standards that are based on credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community, Physician Specialty Society recommendations and the views of Physicians practicing in relevant clinical areas and any other relevant factors.

NOTICE: If the Patient's health insurance contract contains language that differs from the BCBSLA Medical Policy definition noted above, the definition in the health insurance contract will be relied upon for specific coverage determinations.

NOTICE: Medical Policies are scientific based opinions, provided solely for coverage and informational purposes. Medical Policies should not be construed to suggest that the Company recommends, advocates, requires, encourages, or discourages any particular treatment, procedure, or service, or any particular course of treatment, procedure, or service.

NOTICE: Federal and State law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over Medical Policy and must be considered first in determining eligibility for coverage.