

(80310)

<b>Medical Benefit</b>		<b>Effective Date:</b> 07/01/16	<b>Next Review Date:</b> 05/21
<b>Preauthorization</b>	Yes	<b>Review Dates:</b> 04/07, 05/08, 05/09, 05/10, 09/10, 09/11, 07/12, 05/13, 05/14, 05/15, 05/16, 05/17, 05/18, 05/19, 05/20	

**Preauthorization is required.**

*The following protocol contains medical necessity criteria that apply for this service. The criteria are also applicable to services provided in the local Medicare Advantage operating area for those members, unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.*

Populations	Interventions	Comparators	Outcomes
Individuals: • With cognitive deficits due to traumatic brain injury	Interventions of interest are: • Cognitive rehabilitation delivered by a qualified professional	Comparators of interest are: • Standard rehabilitation (e.g., physical therapy, occupational therapy) without specific focus on cognition • No rehabilitation	Relevant outcomes include: • Functional outcomes • Quality of life
Individuals: • With cognitive deficits due to dementia	Interventions of interest are: • Cognitive rehabilitation delivered by a qualified professional	Comparators of interest are: • Standard rehabilitation (e.g., physical therapy, occupational therapy) without specific focus on cognition • No rehabilitation	Relevant outcomes include: • Functional outcomes • Quality of life
Individuals: • With cognitive deficits due to stroke	Interventions of interest are: • Cognitive rehabilitation delivered by a qualified professional	Comparators of interest are: • Standard rehabilitation (e.g., physical therapy, occupational therapy) without specific focus on cognition • No rehabilitation	Relevant outcomes include: • Functional outcomes • Quality of life
Individuals: • With cognitive deficits due to multiple sclerosis	Interventions of interest are: • Cognitive rehabilitation delivered by a qualified professional	Comparators of interest are: • Standard rehabilitation (e.g., physical therapy, occupational therapy) without specific focus on cognition • No rehabilitation	Relevant outcomes include: • Functional outcomes • Quality of life
Individuals: • With cognitive deficits due to epilepsy, autism spectrum disorders, postencephalopathy, or cancer	Interventions of interest are: • Cognitive rehabilitation delivered by a qualified professional	Comparators of interest are: • Standard rehabilitation (e.g., physical therapy, occupational therapy) without specific focus on cognition • No rehabilitation	Relevant outcomes include: • Functional outcomes • Quality of life

**DESCRIPTION**

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 who receive cognitive rehabilitation delivered by a qualified professional, the evidence includes randomized controlled trials (RCTs), nonrandomized comparison studies, case series, and systematic reviews. Relevant outcomes are functional outcomes and quality of life. The cognitive rehabilitation trials have methodologic limitations and have reported mixed results, indicating there is no uniform or consistent evidence base supporting the efficacy of this technique. Systematic reviews have generally concluded that efficacy of cognitive rehabilitation is uncertain. The evidence is insufficient to determine the effects of the technology on health outcomes.

Clinical input obtained in 2010 provided the strongest support for the use of cognitive rehabilitation as part of the treatment of traumatic brain injuries. Cognitive rehabilitation may be considered medically necessary for traumatic brain injury based on this input.

For individuals who have cognitive deficits due to dementia who receive cognitive rehabilitation 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. Systematic reviews of RCTs have generally shown no benefit of cognitive rehabilitation or effects of clinical importance. One large RCT evaluating a goal-oriented cognitive rehabilitation program reported a significantly less functional decline in one of two functional scales and lower rates of institutionalization in the cognitive rehabilitation group compared with usual care at 24 months. These results need replication. The evidence is insufficient to determine the effect of the technology on health outcomes.

For individuals who have cognitive deficits due to stroke who receive cognitive rehabilitation 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 three separate domains of cognitive function have shown no benefit of cognitive rehabilitation or effects of clinical importance. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have cognitive deficits due to multiple sclerosis who receive cognitive rehabilitation 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 cognitive rehabilitation on cognitive outcomes. Although numerous RCTs have investigated cognitive rehabilitation for multiple sclerosis, high-quality trials are lacking. The ability to draw conclusions based on the overall body of evidence is limited by the heterogeneity of patient samples, interventions, and outcome measures. Further, 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 the effects of the technology on health outcomes.

For individuals who have cognitive deficits due to epilepsy, autism spectrum disorder, post-encephalopathy, or cancer who receive cognitive rehabilitation delivered by a qualified professional, the evidence includes RCTs, nonrandomized comparison 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 indi-

cations. Systematic reviews generally have not supported the efficacy of cognitive rehabilitation for these conditions. Relevant RCTs have had methodologic limitations, most often very short lengths of follow-up, which do not permit strong conclusions about efficacy. The evidence is insufficient to determine the effects of the technology on health outcomes.

## POLICY

Cognitive rehabilitation (as a distinct and definable component of the rehabilitation process) may be considered **medically necessary** in the rehabilitation of patients with cognitive impairment due to traumatic brain injury.

Cognitive rehabilitation (as a distinct and definable component of the rehabilitation process) is considered **investigational** for all other applications, including but not limited to, stroke, post-encephalitic or post-encephalopathy patients, autism spectrum disorder, seizure disorder, multiple sclerosis, the aging population, including patients with Alzheimer disease and patients with cognitive deficits due to brain tumor or previous treatment for cancer.

## 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 pre-injury function) and patients must be able to actively participate in the program. (Active participation requires sufficient cognitive function to understand and participate in the program as well as adequate language expression and comprehension, i.e., participants should not have severe aphasia.) Ongoing services are considered necessary only when there is demonstrated continued objective improvement in function.

Duration and intensity of cognitive rehabilitation therapy programs vary. One approach for comprehensive cognitive rehabilitation is a 16-week outpatient program consisting of five hours of therapy daily for four days each week. In another approach cognitive group treatment occurs for three two-hour sessions weekly and three one-hour individual sessions (total, nine hours per week). Cognitive rehabilitation programs for specific defects (e.g., memory training) are less intensive and generally have one or two sessions (30 or 60 minutes) a week for four to 10 weeks.

## MEDICARE ADVANTAGE

Cognitive Rehabilitation may be **medically necessary** for persons with acquired cognitive defects resulting from head trauma, or acute neurologic events including cerebrovascular accidents.

Cognitive Rehabilitation is **not medically necessary** for patients with chronic progressive brain conditions with no potential for restoration.

## BACKGROUND

Cognitive rehabilitation 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 cognitive rehabilitation 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. Cognitive rehabilitation is considered a separate service from other rehabilitative therapies, with its own specific procedures.

### REGULATORY STATUS

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

### RELATED PROTOCOL

Sensory Integration Therapy and Auditory Integration Therapy

---

Services that are the subject of a clinical trial do not meet our Technology Assessment and Medically Necessary Services Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment and Medically Necessary Services Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

### REFERENCES

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

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):1856-1865. 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):453-461. PMID 25398725.
5. Gich J, Freixanet J, Garcia 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):1332-1343. PMID 25716880.
6. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). Cognitive rehabilitation. *TEC Assessments*. 1997;Volume 12:Tab 6.
7. 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):271-286. PMID 23022261.

8. 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; 4(4):CD008391. PMID 23633354.
9. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). Cognitive rehabilitation for traumatic brain injury in adults. *TEC Assessments*. 2008;Volume 23:Tab 3.
10. Cicerone KD, Mott T, Azulay J, et al. A randomized controlled trial of holistic neuropsychologic rehabilitation after traumatic brain injury. *Arch Phys Med Rehabil*. Dec 2008;89(12):2239-2249. PMID 19061735.
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):539-550. PMID 26359341.
12. 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 2 2015;5(4):e005247. PMID 25838501.
13. 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 5 2013;6(6):CD003260. PMID 23740535.
14. 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):928-939. PMID 20808145.
15. 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.
16. 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):707-717. PMID 26572551.
17. 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.
18. 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*. Oct 14 2014:1-31. PMID 25312605.
19. Kurz A, Thone-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*. Jul-Sep 2012;26(3):246-253. PMID 21986341.
20. 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):1149-1163. PMID 15603468.
21. 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;183:248-254. PMID 12948999.
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):1188-1199. PMID 23871120.
23. Bowen A, Hazelton C, Pollock A, et al. Cognitive rehabilitation for spatial neglect following stroke. *Cochrane Database Syst Rev*. Jul 1 2013;7(7):CD003586. PMID 23813503.
24. Loetscher T, Lincoln NB. Cognitive rehabilitation for attention deficits following stroke. *Cochrane Database Syst Rev*. May 31 2013;5(5):CD002842. PMID 23728639.
25. Nair RD, Lincoln NB. Cognitive rehabilitation for memory deficits following stroke. *Cochrane Database Syst Rev*. Jul 18 2007(3):CD002293. PMID 17636703.
26. das Nair R, Cogger H, Worthington E, et al. Cognitive rehabilitation for memory deficits after stroke. *Cochrane Database Syst Rev*. Sep 01 2016;9:CD002293. PMID 27581994.

27. 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):120-128. PMID 24942480.
28. Diamond PT. Rehabilitative management of post-stroke visuospatial inattention. *Disabil Rehabil.* Jul 10 2001;23(10):407-412. PMID 11400902.
29. Zucchella C, Capone A, Codella V, et al. Assessing and restoring cognitive functions early after stroke. *Funct Neurol.* Oct-Dec 2014;29(4):255-262. PMID 25764255.
30. das Nair R, Ferguson H, Stark DL, et al. Memory Rehabilitation for people with multiple sclerosis. *Cochrane Database Syst Rev.* Mar 14 2012;3(3):CD008754. PMID 22419337.
31. Rosti-Otajarvi EM, Hamalainen PI. Neuropsychological rehabilitation for multiple sclerosis. *Cochrane Database Syst Rev.* Feb 11 2014;2(2):CD009131. PMID 24515630.
32. 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.
33. 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.
34. Chiaravalloti ND, Moore NB, Nickelshpur OM, et al. An RCT to treat learning impairment in multiple sclerosis: The MEMREHAB trial. *Neurology.* Dec 10 2013;81(24):2066-2072. PMID 24212393.
35. Rosti-Otajarvi E, Mantynen 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):154-160. PMID 24011606.
36. Mantynen A, Rosti-Otajarvi 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.
37. Hanssen KT, Beiske AG, Landro NI, et al. Cognitive rehabilitation in multiple sclerosis: a randomized controlled trial. *Acta Neurol Scand.* Jan 2016;133(1):30-40. PMID 25952561.
38. Farina E, Raglio A, Giovagnoli AR. Cognitive rehabilitation in epilepsy: An evidence-based review. *Epilepsy Res.* Jan 2015;109C:210-218. PMID 25524861.
39. Engelberts NH, Klein M, Ader HJ, et al. The effectiveness of cognitive rehabilitation for attention deficits in focal seizures: a randomized controlled study. *Epilepsia.* Jun 2002;43(6):587-595. PMID 12060017.
40. 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):402-409. PMID 18155965.
41. 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.
42. Wang M, Reid D. Using the virtual reality-cognitive rehabilitation approach to improve contextual processing in children with autism. *ScientificWorldJournal.* Dec 2013;2013:716890. PMID 24324379.
43. 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.
44. 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.
45. 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.
46. 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):367-378. PMID 18540731.
47. Cherrier MM, Anderson K, David D, et al. A randomized trial of cognitive rehabilitation in cancer survivors. *Life Sci.* Oct 17 2013;93(17):617-622. PMID 24012579.

48. Ercoli LM, Petersen L, Hunter AM, et al. Cognitive rehabilitation group intervention for breast cancer survivors: results of a randomized clinical trial. *Psychooncology*. Nov 2015;24(11):1360-1367. PMID 25759235.
49. National Institute for Health and Care Excellence (NICE). Stroke rehabilitation in adults [CG162]. 2013; <https://www.nice.org.uk/guidance/CG162>. Accessed February 16, 2018.
50. Institute of Medicine. Cognitive rehabilitation therapy for traumatic brain injury: evaluating the evidence. Washington, DC: National Academies Press; 2011.
51. 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.
52. 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.
53. National Government Services, Inc. (Primary Geographic Jurisdiction 06 & K - Illinois, Minnesota, Wisconsin, Connecticut, New York - Entire State, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont) Local Coverage Determination (LCD): Outpatient Physical and Occupational Therapy Services (L33631), Revision Effective Date for services performed on or after 01/01/2020.