

MEDICAL POLICY

MEDICAL POLICY DETAILS	
Medical Policy Title	Neuropsychological Testing
Policy Number	2.01.50
Category	Contract Clarification
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Committee Approval Date	04/25/02, 03/27/03, 02/26/04, 04/28/05, 08/31/06, 06/28/07, 06/26/08, 10/28/09, 08/26/10, 08/25/11, 08/23/12, 08/22/13, 08/28/14, 12/10/15, 06/22/17, 12/13/18, 12/19/19, 12/10/20, 12/16/21, 01/19/23, 01/18/24
Current Effective Date	01/18/24
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Product Disclaimer	<ul style="list-style-type: none"> • Services are contract dependent; if a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply. • If a commercial product (including an Essential Plan or Child Health Plus product), medical policy criteria apply to the benefit. • If a Medicaid product covers a specific service, and there are no New York State Medicaid guidelines (eMedNY) criteria, medical policy criteria apply to the benefit. • If a Medicare product (including Medicare HMO-Dual Special Needs Program (DSNP) product) covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit. • If a Medicare HMO-Dual Special Needs Program (DSNP) product DOES NOT cover a specific service, please refer to the Medicaid Product coverage line.

POLICY STATEMENT

- I. Neuropsychological testing (NPT) is considered **medically appropriate** to establish or confirm the diagnosis of brain damage or brain disease, when there has been a *significant* mental status change, behavior change, memory loss or organic brain injury, within the preceding six months to one year, under any of the following conditions (*Please also see the Policy Guidelines section.*):
- moderate or severe head injury (e.g., an open or closed injury associated with more than a brief change in mental status or consciousness, or any head injury associated with an abnormality on cranial imaging), when there is evidence of cognitive change, to plan acute post injury rehabilitation;
 - cerebrovascular accident;
 - brain tumor;
 - cerebral anoxic or hypoxic episode;
 - Central nervous system (CNS) infection (e.g., herpes encephalitis, human immunodeficiency virus (HIV) infection);
 - HIV-associated neurocognitive disorder (HAND), including acquired immunodeficiency syndrome (AIDS) dementia complex (ADC);
 - demyelinating disease (e.g., multiple sclerosis);
 - extrapyramidal disease (e.g., Parkinson's or Huntington's disease);
 - metabolic encephalopathy (associated with hepatic or renal disease);
 - suspected/detected metabolic insult to brain;
 - exposure to agents known to be associated with cerebral dysfunction (e.g., lead poisoning, intrathecal methotrexate, cranial irradiation); **OR**
 - to provide diagnostic clarification such as:
 - to provide a differential diagnosis from a range of neurological and psychological disorders that present with similar constellations of symptoms (e.g., the differentiation between severe depression and dementia) when the diagnosis has been unable to be made by a complete psychiatric and/or psychological assessment and

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when carried out by a qualified mental health professional, including (but not limited to) the consulting neuropsychologist during an initial consultation. The medical record must indicate the presence or signs of the mental illness for which neuropsychological testing is being requested as an aid in the diagnosis and therapeutic planning; or

2. to make a diagnosis that cannot be made based on careful history, physical examination/laboratory testing/imaging, and collateral contacts, of a change in behavior or cognition, when it will clearly alter the treatment plan.
- II. NPT is considered **medically appropriate** when the significant mental status change, behavior change, memory loss or organic brain injury occurred more than one year prior to the request, **AND** there is no record of prior testing since onset on the change in mental status.
 - III. NPT is considered **medically appropriate** as part of a pre-operative evaluation prior to brain surgery (e.g., epilepsy surgery, tumor resection, deep brain stimulation) to establish a baseline. NPT is considered **medically appropriate** when performed post-operatively, to determine if it appears that cognitive dysfunction has occurred. There must be an appropriate interval (three to six months) to allow for healing and attenuation from the acute operative injury and after ruling out an acute delirium.
 - IV. NPT for the evaluation of mild traumatic brain injury, concussion, or post-concussive syndrome is considered **medically appropriate** in cases where the patient has had significant functional impairment that has not improved as expected after three to six months of standard care.
 - V. The use of NPT for the diagnosis of chronic traumatic encephalopathy (CTE) is considered **investigational**. CTE is a relatively recently recognized phenomenon occurring in some individuals after multiple concussions. At this time, understanding of CTE is evolving. It is not established that any specific neuropsychological testing can predict which individuals may develop CTE, nor is it clear how NPT will benefit or inform treatment in individuals' status post-concussion.
 - VI. Use of a computer-based neuropsychological assessment of a sports-related concussion (e.g., ImPACT, CogState Sport, HeadMinder), in order to determine whether an athlete is fit to return to play, is considered **not medically necessary**. (*Please also see the Policy Guidelines section.*)
 - VII. NPT is considered **not medically necessary** when used for baseline assessment of function in asymptomatic individuals at risk for sport-related concussions or brain injuries.
 - VIII. Use of NPT for the initial assessment of a suspected dementia or mild cognitive impairment (MCI) prior to a referral to, and assessment by, a specialist with experience in cognition (i.e., a neurologist or credentialed geriatrician) is considered **not medically necessary**.
 - IX. Use of NPT for suspected dementia is considered **medically appropriate** when a prior neurologic or psychiatric examination documents evidence of functional impairment in memory or other cognitive domain (e.g., executive function, language) by thorough history; collateral input from family, friends, and employers; and/or a low score on a cognitive screening test, such as the MOCA or Folstein Mini-Mental State Examination (MMSE). The standard of care in the community supports that, except in highly complex cases, eight hours of NPT is sufficient to make a diagnosis of MCI.
 - X. NPT is considered **medically appropriate** in order to assist in diagnosis of dementia *only* in cases for which a differential diagnosis remains highly uncertain despite assessment by a neurologist or credentialed geriatrician. The assumed benefit of this testing is in large part to provide information to family in order to assist in development of future plans for support. Dementias are known to be chronic and progressive illnesses. From a research standpoint, ongoing monitoring of the patient's cognitive status may be of value; however, from a clinical perspective, such ongoing monitoring is rarely medically necessary.
 - XI. Repeat NPT in less than two-year intervals are considered **not medically necessary** in most cases, unless the original diagnosis is brought into question.

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XII. The routine use of NPT is considered **not medically necessary** for the diagnosis or re-evaluation/follow-up for the following conditions, as more suitable approaches such as clinical exam with collateral input and/or developmental testing are available:

- A. autism spectrum disorder;
- B. attention deficit hyperactivity disorder (ADHD); **OR**
- C. Tourette's syndrome.

XIII. NPT is considered **medically appropriate** when a child presents with significant failure to progress cognitively and behaviorally at a normal neurodevelopmental pace (e.g., due to suspected intellectual, developmental or learning disability), AND other tests and diagnostic techniques (e.g., a careful history, parent/child interview, behavioral observation, school-based testing, developmental testing):

- A. have not been sufficient to provide/inform a diagnosis; **OR**
- B. necessitate the collection of more detailed information about specific cognitive abilities (e.g. memory, executive function) necessary to guide treatment planning or patient management; **OR**
- C. identify either documented prenatal alcohol exposure or suspected prenatal alcohol exposure with a positive dysmorphology facial evaluation.

It is important to note that school psychologists use standardized tests of cognitive and emotional function to determine levels of academic performance and support educational services, including (but not limited to) the Individualized Educational Program (IEP) and early interventions. In many cases, results of school-based testing may be sufficient to inform diagnoses by a clinician of intellectual disability, autism spectrum disorder, developmental disability, and/or learning disability. Therefore, the routine use of NPT is considered **not medically necessary** when school-based testing is sufficient to allow a clinician (e.g., pediatrician, other specialist, or clinical psychologist) to make these diagnoses.

XIV. NPT is considered **not medically necessary** under the following circumstances:

- A. when the patient has a substance abuse history, and **EITHER** of the following apply:
 - 1. The patient continues to use such that test results would be inaccurate, **OR**
 - 2. The patient is not yet 14 or (optimally) more days post-detoxification; **OR**
- B. when the patient is on certain daily medications that have a sufficiently intoxicating effect (e.g., high-dose benzodiazepines, opiates) to confound interpretation of results, and the drug effects have not been ruled out.

XV. NPT is usually considered **not medically necessary** when similar testing has been performed within the last 12 months. However, more frequent testing may be considered medically appropriate when it is being utilized to assess therapeutic interventions, intercurrent injuries or unexpected changes in mental status that require objective confirmation to guide treatment and management (e.g., acute, unexpected cognitive decline in a patient with multiple sclerosis, signaling the need for more aggressive therapy).

XVI. Use of a computer-based neurological test as the sole method performed for a neuropsychological assessment still requires administration, interpretation, and preparation of a report by an NPT-trained individual. Computerized NPT (e.g., CognICA) for any indication that does not require a physician, psychologist, or licensed mental health professional to provide interpretation and preparation of a report is considered **investigational**.

Refer to Corporate Medical Policy #2.02.16 Genetic Testing for Familial Alzheimer's Disease

Refer to Corporate Medical Policy #3.01.02 Psychological Testing

Refer to Corporate Medical Policy #6.01.07 Positron Emission Tomography (PET) Non-Oncologic Conditions

Refer to Corporate Medical Policy #11.01.03 Experimental and Investigational Services

POLICY GUIDELINES

I. There is an expectation that the results of NPT will have an impact on treatment or modify patient management.

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- II. A psychiatric/mental health assessment is required prior to advancing to NPT, if there are co-occurring symptoms or diagnoses (e.g., anxiety disorder, mood disorder, depressive symptoms), along with a significant cognitive impairment.
- III. It is important to note that school districts have a significant number of resources to test school-age children, including (but not limited to) the Individualized Educational Program (IEP) and early intervention. Most school districts in NYS have the ability to look at cognitive and emotional function through school psychologists and through the use of such standardized testing as the WESCHLER (WIAT2), Woodcock Johnson (WJ3), Connors or Vanderbilt self-reports/questionnaire, WWPPSI, BASCII, Stanford-Binet, and FBA (functional behavioral analysis). Such tests are within the ability of and regularly performed by school psychologists.
- IV. NPT requires significant time, skill set and resources. It is one tool in a treatment plan, and typically not the initial evaluation. Self-referral is not appropriate, and referrals should include a careful neurological and mental status exam, history, and input from collaterals and school district, with a focused request that testing should help delineate.
- V. NPT evaluation services may be performed only by practitioners who are appropriately credentialed to perform this testing.
- VI. The “gold standard” for the diagnosis of developmental disorders and autism spectrum disorders is the Autism Diagnosis Observation Scale (ADOS) and evaluation by developmental pediatricians or psychologists. While some providers consider that this testing falls under the category of NPT, CPT coding and descriptions do not support this. The appropriate codes for the ADOS and similar developmental evaluations should be used.
- VII. Mobile apps, (e.g., Lumosity, OptiMind), and tests administered by other than a neuropsychologist, neurologist or psychiatrist are **ineligible for coverage**.
- VIII. NPT, including computer-based testing, when performed for any of the following reasons, is usually contractually excluded and **ineligible for coverage**:
 - A. vocational purposes that are primarily related to employment;
 - B. educational purposes in the case of educational assessment and planning;
 - C. As part of a school sports program;
 - D. court-ordered services, unless these services would otherwise be covered under the individual’s contract in the absence of the court order, and a Health Plan medical director determines, in advance, that the services are medically necessary.
- IX. NPT performed as stand-alone, self-administrated and/or self-scored inventories, or screening tests such as the AIMS, MMSE, MOCA, Mini-Cog, etc., is considered inclusive of an Evaluation and Management service and is not separately payable as neuropsychological testing, unless these tests are performed as part of a comprehensive neuropsychological evaluation. In addition, brief emotional/behavioral assessments are not covered as NPT.
- X. The number of hours requested for NPT includes the total time necessary to complete face-to-face administration of two or more tests, scoring, interpretation, clinical decision making, treatment planning and report, and interactive feedback to the patient, family member(s) or caregiver(s). The proposed time for test administration and scoring of the selected tests may not exceed the administration time established by the test’s publishers, plus appropriate time to score. A request for additional test administration time may be considered medically necessary when supported by extenuating circumstances with evidence submitted by the provider. Examples of extenuating circumstances include the following:
 - A. The patient has significant functional impairment. Examples include, but are not limited to:
 1. sensory deficits and/or physical disabilities that necessitate modification in standard administration procedures;
 2. severe oppositional behavior; and/or
 3. attention deficits or developmental disabilities that require the examiner to provide frequent redirection and/or breaks for the patient during testing.

Note: Testing should not be conducted if extenuating circumstances such as these are so severe that they could reasonably pose a threat to the reliability or validity of test results.

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- B. The patient has an intellectual disability.
 - C. The patient requires an interpreter, as English is not the patient's primary language.
- XI. A complete neuropsychological evaluation with test batteries including, administration, scoring and interpretation, generally takes between two and eight hours to complete. This is based on numerous sources. Occasionally, it is necessary to complete the evaluation over two or more sessions. Requests for more than eight hours of testing will require a detailed list of the testing battery and rationale for the extended time. The medical record must include supporting documentation to justify more than eight hours per patient per evaluation. If the testing is done over several days, the testing time should be combined and reported all on the last date of service. If the testing time exceeds eight hours, medical necessity for extended time should be documented. Medical records may be requested.

DESCRIPTION

NPT uses standard techniques to objectively test behavioral and cognitive abilities comparing the patient's results to established normal results. NPT is indicated when there have been notable behavioral and/or cognitive changes associated with severe head trauma or brain disease or associated with uncertain cause. Whereas neuro-imaging procedures, such as CT scans, PET scans, and MRIs, report on the structural and physiological scope of brain injury, NPT data provide information on cognitive and intellectual functioning. Cognitive deficits can also have non-organic, transient roots, and may be associated with depressive conditions, anxiety disorders, and severe psychological trauma.

Components of NPT include:

- I. obtaining information on a patient's cognitive status by providing a clinical assessment of the patient's thinking, reasoning, and judgment (neurobehavioral status exam); and/or
- II. having the patient undergo a specific battery of tests that assess attention, language, memory and executive function.

The neurobehavioral status examination is a clinical assessment of cognitive functions and behavior. It may include an interview with the patient and family members, as well as integration of prior history and other sources of clinical data with clinical decision-making, treatment planning and report. Some briefer behavioral measures to determine the individual's mental status may be included in this examination. Evaluation domains may include language, memory, acquired knowledge, attention, planning and problem-solving, and visual-spatial abilities. When it precedes a neuropsychological evaluation, the clinical assessment would determine the type of tests and how those tests should be administered.

There are many NPT batteries. Combinations of evaluation instruments are often utilized to devise a "battery." NPT does not rely on self-report questionnaires or rating scales such as the Hamilton Depression Rating Scale, or projective techniques such as the Rorschach or Thematic Apperception Test (TAT).

Computerized NPT is also referred to as automated or computer-based testing. Computer-based testing can entail either the adoption/translation of conventional paper and pencil neuropsychological tests such as the Wisconsin Card Sorting Test or newly developed computer-based testing to measure unique cognitive functions. There are features in computer-based testing that are absent in the traditional form of NPT, including: timing of response latencies, automated analysis of response patterns, transfer of results to a database for further analysis and the ease with which normative data can be collected or compared to existing databases.

Computer-based neuropsychological screening tests utilizing artificial intelligence (AI) have been proposed to be digital markers of cognitive impairment. The Integrated Cognitive Assessment (CognICA) from Cognitivity Ltd, is a five-minute rapid visual categorization test that reports to measure cognitive dysfunction utilizing human's strong reaction to animal stimuli. The test presents 100 natural images of animals with various levels of difficulty at 100ms followed by 20ms of inter-stimulus interval, followed by a dynamic noisy mask (for 250ms), followed then by the participant's categorization of animal vs. non-animal. The test focuses on speed and accuracy of processing visual information, targeting cognitive domains that are affected in the initial stages of cognitive disorders such as dementia and multiple sclerosis. The test is designed to be self-administered, language independent with no learning effects, and does not require cumbersome equipment. The vendor offers a similar visual categorization test via mobile app, called OptiMind.

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Computer-based neuropsychological assessment of a sports-related concussion involves an abbreviated test battery, lasting approximately 20-30 minutes. These types of tests are given prior to commencement of a sports season to obtain a baseline and then are repeated as needed after a concussion, to guide medical decisions about a player's return to active participation in the particular sport. They usually provide a measurement of attention, processing speed, and reaction time, and can be administered by a team coach, athletic trainer or physician with minimal training. Several computer-based tests are available for cognitive assessment. These include but are not limited to: ImPACT (Immediate Post Concussion Assessment and Cognitive Testing), CogState, MicroCog, Automated Neuropsychological Assessment metrics (ANAM), CNS Vital Signs, CANTAB, Mindstreams, Cognivue, and HeadMinder.

Chronic traumatic encephalopathy (CTE) is a progressive degenerative disease found in people who have had a severe blow or repeated blows to the head. The disease was previously called dementia pugilistica (DP), or "punch-drunk," as it was initially found in those with a history of boxing. This trauma triggers progressive degeneration of the brain tissue, including the build-up of an abnormal protein called tau. These changes in the brain can begin months, years, or even decades after the last brain trauma or end of active athletic involvement. The brain degeneration is associated with memory loss, confusion, impaired judgment, impulse control problems, aggression, depression, and, eventually, progressive dementia. Currently, CTE can only be definitively diagnosed by direct tissue examination, including full autopsies and immunohistochemical brain analyses.

Pursuant to New York State law, effective November 1, 2012, every contract providing physician services, or providing medical, major medical, or similar comprehensive-type coverage must provide coverage for the screening, diagnosis, and treatment of autism spectrum disorders (ASDs) when prescribed or ordered by a licensed physician or a licensed psychologist for medically necessary services. Treatment includes services provided by a licensed or certified speech therapist, occupational therapist, physical therapist, and social worker when the policy generally provides such coverage. Therapeutic treatment must include care that is deemed habilitative or non-restorative. The law prohibits the imposition of limitations that are solely applied to the treatment of ASD. However, as long as the visit limit is not imposed solely on services required to treat an ASD, a visit limit continues to be permissible, as long as such visit limit also passes the testing requirements under the Mental Health Parity Addiction and Equity Act of 2008.

RATIONALE

NPT, when used to assess brain dysfunction and cognitive deficits, has proven to be highly accurate with predictive accuracy in the 80%-95% range. NPT provides quantifiable results that indicate the amount of deviation from baseline norms. Through a comparison of patient responses to established norms, the clinician can determine the scope and severity of cognitive impairments, thereby assisting in development of a program/plan of care best suited to the patient's needs.

Studies demonstrate that NPT used as part of a pre-operative evaluation provides important information on the risks for post-operative neuropsychological deficits and also provides confirmatory evidence of seizure onset laterality in patients whose seizures originate in the temporal lobes.

There is no specific diagnostic test for ADHD, but rather its diagnosis is based upon clinical assessment with the parent/child interview being the cornerstone in the assessment of ADHD. Similarly, there are no specific diagnostic tests for autism or Tourette's syndrome; rather, the diagnosis is usually made based upon the clinical assessment and interview process. The American Academy of Pediatrics clinical practice guidelines and the practice parameter from the American Academy of Child and Adolescent Psychiatry related to the diagnosis and evaluation of ADHD state that neuropsychological and psychological test batteries are not routinely indicated to make a diagnosis, unless there are co-existing conditions that may complicate a routine assessment. Uncomplicated cases of ADHD are best diagnosed through a careful history, parent and teacher reports, and the use of structured clinical interviews.

NPT, beyond a standard parent interview and direct structured behavioral observation, is rarely needed for diagnosing autism (Practice Parameter for Screening and Diagnosis of Autism from the American Academy of Neurology and the Child Neurology Society).

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K. Wild and colleagues (2008) conducted a systematic review of computerized cognitive testing, focusing on its ability to detect cognitive decline in the aging population. The heterogeneity across selected studies and test batteries made a meta-analysis impossible. The study included review of 11 test batteries that were either developed to screen for cognitive decline in the elderly or have been applied to that function. In slightly more than half the tests, normative data for elderly subjects were rated as less than adequate as a result of either small sample size or lack of data specific to older adults in a larger sample. Reliability data was typically presented in some form, although only three test batteries met the highest rating achieved by describing more than one type of reliability. Few of the batteries were fully self-administered; the tests ranged widely in the amount of interaction required of an examiner. One of the persistent issues was the general lack of adequately established psychometric standards. Other concerns include failure to demonstrate equivalence between the examinee's experience of computer use versus traditional test administration, which is of particular importance in the elderly population.

Prior to the advent of highly active antiretroviral therapy (HAART), dementia was a common source of morbidity and mortality in HIV infected patients. With HAART, a less severe dysfunction, mild cognitive motor disorder, has become more common than ADC. Early signs and symptoms are subtle and may be overlooked. Cognitive screening tests should be part of the routine care of HIV-infected patients. Changes in the management of the patient, based on the cognitive findings, center around use of different antiretroviral therapy, including HAART. Cognitive screening tools have been developed (e.g., MoCA, HDS, IHDS) that can assist in identifying those patients who are at higher risk; however, based on their sensitivity and specificity, traditional NPT still appears to be the gold standard and is required to provide a definitive diagnosis.

The routine use of NPT to differentiate Alzheimer's disease from other neurocognitive disorders is usually not necessary, as more suitable approaches are available. However, NPT may be considered necessary for complicated cases when the usual diagnostic techniques are not adequate to provide a diagnosis and the diagnosis will alter the course of treatment. There are cases of neurocognitive decline for which etiology may be unclear. At the current time there is no simple, reliable, accurate test to make the diagnosis of Alzheimer's disease or many other neurocognitive disorders. Diagnosis of these conditions should be based on several pieces of information, including basic laboratory testing, history-taking (including mental health and substance use issues), with input from collaborating others; neurologic and mental status examination; and imaging. Many practitioners utilize a brief screening tool like MMSE, MOCA, Mini-Cog, or CamCog to make an estimate of deficits. Some diagnoses are then confirmed by brain biopsy (e.g., CNS vasculitis). Conclusive diagnosis of Alzheimer's disease still is based on brain tissue, and NPT may not have the specificity needed to change patient management or improve health outcomes. Many diagnoses of Alzheimer's disease are made without NPT; however, if a provider has a highly unusual case (e.g., cognitive decline under age 55 years) and can document a rationale for how the testing will alter the treatment plan, this can be presented for review.

The use of stand-alone cognitive assessments for generalized screening, including those utilizing AI such as CognICA, do not require a physician, psychologist, or licensed mental health professional to provide interpretation and preparation of a report. There is a lack of evidence that screening for cognitive impairment or early diagnosis of cognitive impairment improves patient or clinical decision making. Furthermore, there is little evidence for any interventions that preserve or improve the functioning of patients with MCI and there are no identified studies directly addressing the adverse psychological effects of this screening or adverse effects from false-positive or false-negative testing.

The American Academy of Neurology (AAN) published a practice guideline update for mild cognitive impairment (MCI) in 2018, reaffirmed in 2021. The guideline stated:

“When screening or assessing for MCI, validated assessment tools should be used. Various instruments have acceptable diagnostic accuracy for detecting MCI, with no instrument being superior to another. Because brief cognitive assessment instruments are usually calibrated to maximize sensitivity rather than specificity, patients who test positive for MCI should then have further assessment (e.g., more in depth cognitive testing, such as NPT with interpretation based on appropriate normative data) to formally assess

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for this diagnosis. Diagnosis of MCI is based ultimately on a clinical evaluation determining cognitive function and functional status and not solely on a specific test score.”

The Centers for Disease Control and Prevention (CDC) published guidelines in 2018 for the diagnosis and management of mild traumatic brain injury among children. Recommendation 5B states; “Health care professional may use validated, age-appropriate computerized cognitive testing in the acute period of injury as a component of the diagnosis of mTBI (moderate; level C).” Recommendation 19C states; “Health professionals may refer children with persisting problems related to cognitive function for a formal neuropsychological evaluation to assist in determining the etiology and recommending targeted treatment (high; level C).”

Chronic traumatic encephalopathy (CTE) is a relatively recently recognized phenomenon occurring in some individuals after multiple concussions. At this time, understanding of CTE is evolving. It is not established that any specific NPT can predict which individuals may develop CTE, nor is it clear how NPT will benefit or inform treatment in individuals’ status post-concussion. Given that, in individuals with a recent or remote history of otherwise uncomplicated concussion, and for whom there has not been a recent, rapid, and significant mental status change, NPT for diagnostic assessment of CTE is considered investigational.

In a prospective study by Nelson, L.D., et al. (2017), the reliability and validity of three computerized neurocognitive tests were compared in the ability to assess mild traumatic brain injury (mTBI) in patients presenting to the emergency department of a level 1 trauma center. In the target group, 94 participants were identified as meeting inclusion criteria such as exposure to a common cause of mTBI. The controls group consisted of 80 participants who self-reported injuries to a variety of body areas but did not meet criteria for TBI. Participants were examined within 72 hours of injury and at 15- and 45-days post-injury. The examination consisted of an interview and neuropsychological assessment battery. Subjects took two out of three computerized neuropsychological tests (CNTs): Automatic Neuropsychological Assessment Metrics (ANAM v. 4.3; Vista Life Sciences), Defense Automated Neurobehavioral Assessment [DANA; U.S. Navy Bureau of Medicine and Surgery (BUMED)], and Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT, online version; ImPACT Applications Inc.), as well as a variety of other tests including the Sport Concussion Assessment Tool (SCAT3) symptom checklist. The study results showed that none of the three CNTs yielded significant differences between the mTBI group versus the controls group of other injuries at any of the assessment time points. SCAT3 symptom severity differentiated better between groups which supports measuring mTBI symptoms during clinical assessment of mTBI patients. The authors suggested that clinicians continue to apply standard clinical criteria to assess patients for mTBI.

CODES

- *Eligibility for reimbursement is based upon the benefits set forth in the member’s subscriber contract.*
- ***CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.***
- *Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.*
- *Code Key: Experimental/Investigational = (E/I), Not medically necessary/ appropriate = (NMN).*

CPT Codes

Code	Description
90791	Psychiatric diagnostic evaluation
90792	Psychiatric diagnostic evaluation with medical services
96116	Neurobehavioral status exam (clinical assessment of thinking, reasoning and judgment, [e.g., acquired knowledge, attention, language, memory, planning and problem solving, and visual spatial abilities]), by physician or other qualified health care professional, both face-to-face time with the patient and time interpreting test results and preparing the report; first hour

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Code	Description
96121	each additional hour (List separately in addition to code for primary procedure)
96132	Neuropsychological testing evaluation services by physician or other qualified health care professional, including integration of patient data, interpretation of standardized test results and clinical data, clinical decision making, treatment planning and report, and interactive feedback to the patient, family member(s) or caregiver(s), when performed; first hour
96133	each additional hour (List separately in addition to code for primary procedure)
96136	Psychological or neuropsychological test administration and scoring by physician or other qualified health professional, two or more tests, any method; first 30 minutes
96137	each additional 30 minutes (List separately in addition to code for primary procedure)
96138	Psychological or neuropsychological test administration and scoring by technician, two or more tests, any method; first 30 minutes
96139	each additional 30 minutes (List separately in addition to code for primary procedure)
96146	Psychological or neuropsychological test administration, with single automated, standardized instrument via electronic platform, with automated result only

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Code	Description
No specific code	

ICD10 Codes

Code	Description
Numerous diagnosis codes	

REFERENCES

*Agronin, M. Assessing and working with patients with cognitive impairment and dementia. The Carlot Report 2015 Mar;13(3).

American Academy of Clinical Neuropsychology. American Academy of Clinical Neuropsychology (AACN) practice guidelines for neuropsychological assessment and consultation. 2007 Mar 28 [<https://theaacn.org/position-papers-and-policies/>] accessed 12/19/23.

*Adelman AM, et al. Initial evaluation of the patient with suspected dementia. Am Fam Physician 2005 May 1;71(9):1745-50.

*Amato MA, et al. Cognitive dysfunction in early-onset multiple sclerosis. A reappraisal after 10 Years. Arch Neurol 2001 Oct; 58:1602-6.

American Academy of Clinical Neuropsychology. Official position of the American academy of clinical neuropsychology on test security. 2021 Dec 20. [<https://theaacn.org/official-position-papers-and-statements/>] accessed 12/22/23.

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American Academy of Neurology (AAN). Position statement on sports concussion. Mar 2013; updated Apr 29, 2020. [[Sports Concussion: AAN Position Statement on Policies | AAN](#)] accessed 12/22/23.

American Academy of Neurology. Practice parameter: screening and diagnosis of autism: Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Child Neurology Society. Reaffirmed 2014 Aug 9. [<https://www.aan.com/Guidelines/home/GuidelineDetail/33>] accessed 12/19/23.

American Academy of Neurology. Practice guideline update summary: mild cognitive impairment: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. 2018 Jan, reaffirmed 2021 Jan 31. [<https://www.aan.com/Guidelines/home/GuidelineDetail/881>] accessed 12/19/23.

American Academy of Neurology. Practice parameter: Diagnosis of dementia (an evidenced-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. Reaffirmed 2004 Feb 14. [<https://www.aan.com/Guidelines/home/GuidelineDetail/42>] accessed 12/19/23.

American Psychological Association. Guidelines for the evaluation of dementia and age-related cognitive decline. APA Presidential Task Force on the assessment of age-consistent memory decline and dementia. 2011 Aug 15. [<http://www.apa.org/practice/guidelines/dementia.aspx>] accessed 12/19/23.

Arevalo-Rodriguez I, et al. Mini-mental state examination (MMSE) for the early detection of dementia in people with mild cognitive impairment (MCI). *Cochrane Database Syst Rev* 2021 Jul 27;7:CD010783.

*Baschnagel A, et al. Neuropsychological testing and biomarkers in the management of brain metastases. *Radiat Oncol* 2008 Sep 17; 3:26.

*Battaglia D, et al. Cognitive assessment in epilepsy surgery of children. *Childs Nerv Syst* 2006 Aug;22(8):744-59.

*Boake C, et al. Using early neuropsychologic testing to predict long-term productivity outcome from traumatic brain injury. *Arch Phys Med Rehabil* 2001 Jun;82(6):761-8.

*Books DA. Use of computer-based testing of youth hockey players with concussions. *Neuro Rehabil* 2007;22(3):169-79.

*Brown J, et al. Self-administered cognitive screening test (TYM) for detection of Alzheimer's disease: cross sectional study. *BMJ* 2009 Jun 9;338:b2030.

*Camp SJ, et al. A longitudinal study of cognition in primary progressive multiple sclerosis. *Brain* 2005 Dec;128(Pt 12):2891-8.

*Cohen-Gadol AA, et al. Long-term outcome of epilepsy surgery among 399 patients with nonlesional seizure foci including mesial temporal lobe sclerosis. *J Neurosurg* 2006 Apr;104(4):513-24.

*Covassin T, et al. Concussion history and postconcussion neurocognitive performance and symptoms in collegiate athletes. *J Athl Train* 2008 Apr-Jun;43(2):119-24.

*Duara R, et al. Frontotemporal dementia and Alzheimer's disease: differential diagnosis. *Dement Geriatr Cogn Disord* 1999;10 Suppl 1:37-42.

*Dubois B, et al. Research criteria for the diagnosis of Alzheimer's disease: revising the NINCDS-ADRDA criteria. *Lancet Neurol* 2007 Aug;6(8):734-46.

*Feldman HH, et al. Diagnosis and treatment of dementia: 2. Diagnosis. *CMAJ* 2008 Mar 25;178(7):825-36.

French J, et al. Influence of test environment, age, sex, and sport on baseline computerized neurocognitive test performance. *Am J Sports Med* 2019 Nov;47(13):3263-3269.

*Geroldi C, et al. The added value of neuropsychologic tests and structural imaging for the etiologic diagnosis of dementia in Italian expert centers. *Alzheimer Dis Assoc Disord* 2008 Oct-Dec;22(4):309-20.

*Grindel SH. The use, abuse and future of neuropsychological testing in mild traumatic brain injury. *Curr Sports Med Rep* 2006;5(1):9-14.

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- *Halstead ME, et al. American Academy of pediatrics. Clinical report--sport-related concussion in children and adolescents. Pediatrics 2010 Sep;126(3):597-615.
- *Halstead ME, et al. Sport-related concussion in children and adolescents. Pediatrics 2018 Dec;142(6). pii: e20183074.
- Harmon KG et al. American Medical Society for Sports Medicine position statement on concussion in sport. Br J Sports Med 2019 Feb;53(4):213-225.
- *Harrison J, et al. A neuropsychological test battery for use in Alzheimer disease clinical trials. Arch Neurol 2007 Sep;64(9):1323-9.
- *Hoops S, et al. Validity of MoCA and MMSE in the detection of MCI and dementia in Parkinson disease. Neurol 2009 Nov 24;73(21):1738-45.
- *Hori T, et al. Selective subtemporal amygdalohippocampectomy for refractory temporal lobe epilepsy: operative and neuropsychological outcomes. J Neurosurg 2007 Jan;106(1):134-41.
- *Hoyme HE, et al. Updated clinical guidelines for diagnosing fetal alcohol spectrum disorders. Pediatrics 2016 Aug; 138(2): e20154256.
- *Hutchinson AD and Mathias JL. Neuropsychological deficits in frontotemporal dementia and Alzheimer's disease: a meta-analytic review. J Neurol Neurosurg Psychiatry 2007; 78:917-28.
- *Iverson GL, et al. relation between subjective foginess and neuropsychological testing following concussion. J Int Neuropsychol Soc 2004 Oct;10(6):904-6.
- Ivins BJ., et al. Using rates of low scores to assess agreement between brief computerized neuropsychological assessment batteries: a clinically based approach for psychometric comparisons. Arch Clin Neuropsychol 2019;34(8):1392-1408.
- *Jacova C, et al. Neurological testing and assessment for dementia. Alzheimer's Dementia 2007 Oct;3(4):299-317.
- *Jansen CE, et al. A meta-analysis of the sensitivity of various neuropsychological tests used to detect chemotherapy-induced cognitive impairment in patients with breast cancer. Oncol Nurs Forum 2007 Sep;34(5):997-1005.
- *Jokinen H, et al. Cognitive profile of subcortical ischaemic vascular disease. J Neurol Neurosurg Psych 2006 Jan;77(1):28-33.
- *Joo EY, et al. Resection extent versus postoperative outcomes of seizure and memory in mesial temporal lobe epilepsy. Seizure 2005 Dec;14(8):541-51.
- Kalafatis C, et al. Validity and cultural generalizability of a 5-minute AI based, computerized cognitive assessment in mild cognitive impairment and Alzheimer's dementia. Frontiers in Psychiatry 2021 Jul 22;12(706695).
- *Lineweaver TT, et al. Evaluating the contributions of state-of-the-art assessment techniques to predicting memory outcome after unilateral anterior temporal lobectomy. Epilepsia 2006 Nov;47(11):1895-903.
- *Lumba-Brown A, et al. Centers for disease control and prevention guideline on the diagnosis and management of mild traumatic brain injury among children. JAMA Pediatr 2018 Nov 01;172(11): e182853.
- *Lovell M. The management of sports-related concussion: current status and future trends. Clin Sports Med 2009 Jan;28(1):95-111.
- *McClincy MP, et al. Recovery from sports concussion in high school and collegiate athletes. Brain Inj 2006 Jan;20(1):33-9.
- *Meehan WP 3rd, et al. Sports- related concussion. Pediatrics 2009 Jan;123(1):114-23.
- *Mitchell AJ. A meta-analysis of the accuracy of the mini-mental state examination in the detection of mild cognitive impairment. J Psychiatr Res 2009 Jan;43(4):411-31.

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- *Moser RS, et al. Neuropsychological evaluation in the diagnosis and management of sports- related concussion. Arch Clin Neuropsychol 2007 Nov;22(8):909-16.
- *Nelson, LD, et al. Prospective, head-to-head study of three computerized neurocognitive assessment tools part 2: utility for assessment of mild traumatic brain injury in emergency department patients. J Int Neuropsychol Soc 2017 Apr;23(4):293-303.
- New York Education Law § 4410 (4)(a) [<http://public.leginfo.state.ny.us/lawssrch.cgi?NVLWO:>] accessed 12/19/23.
- *Pelham WE, et al. Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. J Clin Child Adolesc Psychol 2005;34(3):449-76.
- *Pliszka S, et al. Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. J Am Acad Child Adolesc Psychiatry 2007 Jul;46(7):894-921.
- Poletti, S, et al. Long-term consequences of COVID-19 on cognitive functioning up to 6 months after discharge: role of depression and impact on quality of life. Eur Arch Psychiatry Clin Neurosci 2022 Aug;272(5):773-782.
- *Ozonoff S, et al. Evidenced-based assessment of autism spectrum disorders in children and adolescents. J Clin Child Adolesc Psychol 2005 Sep;34(3):523-40.
- *Pineda DA, et al. The role of neuropsychologic tests in the diagnosis of attention deficit hyperactivity disorder. Pediatr Neurol 2007 Jun;36(6):373-81.
- *Rothlind JC, et al. Neuropsychological performance following staged bilateral pallidal or subthalamic nucleus deep brain stimulation for Parkinson's disease. J Int Neuropsychol Soc 2007 Jan;13(1):68-79.
- *Salmon DP, et al. Cognitive screening and neuropsychological assessment in early Alzheimer's disease. Clin Geriatr Med 2001 May;17(2):229-54.
- *Sano M. Neurological testing in the diagnosis of dementia. J Geriatric Psychiatry Neurol 2006 Sep;19(3):155-9.
- *Sanyal SK, et al. Memory and intelligence outcome following surgery for intractable temporal lobe epilepsy: relationship to seizure outcome and evaluation using a customized neuropsychological battery. Epilepsy Behav 2005 Mar;6(2):147-55.
- *Saxton J, et al. Computer assessment of mild cognitive impairment. Postgrad Med 2009 Mar;121(2):177-85.
- *Schatz P, et al. Computer-based assessment of sports-related concussion. Appl Neuropsychol 2003;10(1):42-7.
- *Schatz P, et al. Sensitivity and specificity of the ImPACT Test Battery for concussion in athletes. Arch Clin Neuropsychol 2006 Jan;21(1):91-9.
- *Seidman LJ. Neurological functioning in people with ADHD across the lifespan. Clin Psychol Rev 2006 Aug;26(4):466-85.
- *Van Kampen DA, et al. The 'value added' of neurocognitive testing after sports-related concussion. Am J Sports Med 2006;34(10):1630-5.
- *Wild K, et al. Status of computerized cognitive testing in aging: a systematic review. Alzheimers Dement 2008 Nov;4(6):428-37.
- *Wright SL, et al. Distinguishing between depression and dementia in older persons: neuropsychological and neuropathological correlates. J Geriatr Psychiatry Neurol 2007 Dec;20(4):189-98.
- *Zehnder AE, et al. Lack of practice effects on neuropsychological tests as early cognitive markers of Alzheimer disease? Am J Alzheimer's Dis Other Dement 2007;22(5):416-26.

*Key Article

KEY WORDS

Cognivue, CogState, HeadMinder, ImPACT, Mindstreams, Neurobehavioral testing, Neuropsychological testing.

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CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

Based upon review, neuropsychological testing is not addressed in a National Medicare coverage determination or policy. However, neuropsychological testing is addressed in the chapter 15, section 80.2 in the Medicare Benefit Policy Manual. Please refer to the following website for Medicare Members:

<https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/bp102c15.pdf> accessed 12/19/23.

There is currently a Local Coverage Determination (LCD) for psychiatry and psychological services that addresses neuropsychological testing (L33632). Please refer to the following LCD website for Medicare Members:

<https://www.cms.gov/medicare-coverage-database/details/lcd-details.aspx?LCDId=33632&ver=76&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCA%7cCAL%7cNCD%7cMEDCAC%7cTA%7cMCD&ArticleType=SAD&PolicyType=Both&s=41&Keyword=psychiatry&KeywordLookUp=Title&KeywordSearchType=Exact&kq=true&bc=IAAAACAAIAAA&> accessed 12/19/23.