



CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all health benefit plans administered by CIGNA Companies including plans formerly administered by Great-West Healthcare, which is now a part of CIGNA.

Effective Date 7/15/2011
Next Review Date 7/15/2012
Coverage Policy Number 0258

Subject Neuropsychological Testing

Table of Contents

Coverage Policy	1
General Background	2
Coding/Billing Information	9
References	13
Policy History	16

Hyperlink to Related Coverage Policies

Attention-Deficit/Hyperactivity Disorder:
Assessment and Treatment

Autism Spectrum Disorder/Pervasive
Developmental Disorders: Assessment
and Treatment

Chronic Fatigue Syndrome: Diagnostic and
Treatment Services

Cognitive Rehabilitation

Lyme Disease Treatment

INSTRUCTIONS FOR USE

Coverage Policies are intended to provide guidance in interpreting certain **standard** CIGNA HealthCare benefit plans. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement (GSA), Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document **always supercedes** the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations. Proprietary information of CIGNA. Copyright ©2011 CIGNA

Coverage Policy

Please refer to the applicable benefit plan to determine terms and conditions of coverage. Coverage of neuropsychological testing is generally subject to the provisions of the applicable medical benefit. Services for or in connection with an injury or illness arising out of, or in the course of, any employment for wage or profit are specifically excluded under many benefit plans. Therefore, treatment for metal toxicity that occurs as a result of occupational exposure is generally not covered.

CIGNA covers neuropsychological testing as medically necessary when the information obtained will be used for clinical decision-making and there has been EITHER:

- a significant mental status change not due to a metabolic disorder that has not responded to treatment
- a significant behavioral change, significant memory loss or organic brain injury

and a reasonable suspicion of ANY of the following:

- brain tumor
- cerebral anoxic or hypoxic episode

- central nervous system (CNS) infection with presence of neurocognitive problems (e.g., herpes encephalitis, human immunodeficiency virus [HIV] infection, Lyme disease with CNS neurological involvement)
- dementia (e.g., Alzheimer's disease, vascular dementia, Lewy body dementia)
- demyelinating disease (e.g., multiple sclerosis)
- epilepsy and seizure disorders
- exposure to agents known to be associated with cerebral dysfunction (e.g., lead poisoning, intrathecal methotrexate, cranial irradiation)
- extrapyramidal disease (e.g., Parkinson's, Huntington's Disease)
- stroke or cerebral vascular injury (e.g., brain aneurysm, subdural hematoma)
- traumatic brain injury(including concussion with loss of consciousness)

CIGNA does not cover neuropsychological testing for chronic fatigue syndrome because it is considered experimental, investigational or unproven.

CIGNA does not cover neuropsychological testing for ANY of the following because such testing is considered educational in nature and not medically necessary. Services that are considered primarily educational or training in nature or related to improving academic or work performance are not covered under many benefit plans (this list may not be all- inclusive):

- attention-deficit/hyperactivity disorder (ADHD) and disruptive behavior disorders (e.g., oppositional defiant disorder, conduct disorder)
- autism spectrum disorder (ASD)/pervasive developmental disorder (PDD)
- baseline assessment in absence of signs or symptoms (e.g., athletes pre-injury)
- concussion with no loss of consciousness
- developmental disability, developmental delay
- learning disability
- mental retardation
- migraine
- mild cognitive impairment
- psychiatric conditions (e.g., psychotic disorders, anxiety disorders, substance abuse, personality disorders, mood disorders)
- Tourette's syndrome
- when performed for screening purposes
- when performed primarily for educational purposes
- when performed in association with vocational counseling or training

CIGNA does not cover computerized neuropsychological testing that does not require a professional to provide interpretation and preparation of a report because it is considered it is considered experimental, investigational or unproven.

CIGNA does not cover neuropsychological testing that is ordered strictly as a result of court-ordered services unless medical necessity criteria are otherwise met (see medical necessity criteria above).

General Background

Neuropsychological testing consists of the administration of a series of standardized assessments designed to objectively measure cognitive function. Neuropsychological testing is indicated when notable behavioral and/or cognitive changes have been associated with a history of moderate to severe head trauma or organic brain disease. This testing provides the basis for the conclusions regarding the neurocognitive effects of various medical disorders and aids in diagnosis. Making an assessment of preserved and compromised cognitive functions can also help to predict the effects of remediation. The testing results assist the clinician determine the scope and severity of cognitive impairments through a comparison of patient responses to established normative test values. The results of the testing will assist the clinician in developing a program or plan of care that is specific to the patient's needs, and determine appropriate adjustments to the patient's treatment.

Neuropsychological testing should be delayed until reversible medical or metabolic conditions that are adversely affecting the central nervous system (CNS) are corrected, when possible. Formal neuropsychological testing should also be delayed until any acute changes have stabilized following trauma, infections, or metabolic or vascular insults to the CNS.

The information obtained from neuropsychological testing may have a role in the clinical management of certain medical disorders including but not limited to:

- brain tumor, including benign and malignant
- cerebral anoxic or hypoxic episode
- central nervous system (CNS) infection with presence of neurocognitive problems (e.g., herpes encephalitis, human immunodeficiency virus [HIV] infection, Lyme disease with CNS neurological involvement)
- dementia (e.g., Alzheimer's disease, vascular dementia, Lewy body dementia)
- demyelinating disease (e.g., multiple sclerosis)
- epilepsy and seizure disorders
- exposure to agents known to be associated with cerebral dysfunction (e.g., lead poisoning, intrathecal methotrexate, cranial irradiation)
- extrapyramidal disease (e.g., Parkinson's, Huntington's Disease)
- stroke or cerebral vascular injury (e.g., brain aneurysm, subdural hematoma)
- traumatic brain injury (including concussion with loss of consciousness)

Neuropsychological testing should only be performed by practitioners who are appropriately trained in administering these tests.

The components of neuropsychological assessment include all of the following:

- assessment of higher cortical functions, which includes thought process and organization, reasoning and judgment
- assessment of attention, language, memory and problem-solving
- obtaining a developmental history, the history of medical disease, trauma and psychiatric illness, and the history of the person's cognitive decline and/or premorbid level of function

Neuropsychological tests and measures used for clinical purposes must meet standards for psychometric adequacy. These standards include (American Academy of Clinical Neuropsychology [AACN], 2007):

- acceptable levels of reliability
- demonstrated validity in relation to other tests and/or to brain status, including evidence that the test or measure assesses the process, ability, or trait it purports to assess
- normative standards that allow the clinician to evaluate the patient's scores in relation to relevant patient characteristics, such as age, gender, and socio-demographic or cultural/linguistic background

Neuropsychological testing differs from psychological testing in that neuropsychological testing measures higher cerebral functioning, which focuses on cognitive skills and abilities (i.e., language, memory and problem-solving), whereas psychological testing is designed to provide information about a patient's personality and emotional functioning. Types of psychological testing include self-reported questionnaires, rating scales (e.g., the Hamilton Depression Rating Scale), projective techniques (e.g., the Rorschach or Thematic Apperception Test [TAT]), and screening tests of cognitive function.

Testing Methods

A wide variety of neuropsychological tests are available. These tests have been validated, are reliable and sensitive, and have been standardized to a normative sample. Normative data provides information about the expected test performance of individuals within a particular group, which is often stratified based on age or level of education (Duff, et al., 2008). The fundamental core neuropsychological assessment typically includes tests designed to measure attention, concentration, learning, memory, problem-solving, language function, and visual-spatial function.

The two basic approaches to testing include a fixed or a flexible battery. The fixed battery applies the same set of tests to all disorders requiring assessment. On the other hand, the flexible battery is more individualized to

the specific aspects of cognitive function that are in question. The decision as to what type of battery to apply is typically made by the neuropsychologist after a history and preliminary assessment. Fixed neuropsychological testing batteries provide a standardized and broad approach to the assessment of cognitive function. Consequently, a large amount of information is collected, but not all is pertinent, and the time required to apply the assessment is often excessive. The flexible battery on the other hand is able to be customized, requires less time, but is not as inclusive.

The most commonly used neuropsychological assessment battery is the Halstead-Reitan Battery. It includes six tests that measure multiple neurocognitive factors, such as abstract reasoning, memory and tactile/visual-spatial memory. The entire battery can take up to 12–15 hours to administer, without scoring and interpretation. Most qualified neuropsychologists, however, will apply the Halstead-Reitan in a flexible application, choosing specific tests based on the clinical questions to be addressed.

The average flexible neuropsychological testing battery requires approximately 5–10 hours to complete (including administration, scoring and interpretation). Other standardized fixed assessment batteries exist and are used as assessment tools in various circumstances. The following is a list of typical fixed batteries:

- Wechsler Adult Intelligence Scale-Revised (WAIS-R)
- Boston Diagnostic Aphasia Examination (BDAE)
- Rey Auditory Verbal Learning Test (RAVLT)
- Wisconsin Card Sorting Test (WCST)
- Rey Complex Figure Test

Computerized Neuropsychological Testing: Computerized neuropsychological testing is also referred to as automated or computer-based testing. This type of testing has been developed over the last 20 years (Schatz and Browndyke, 2002). There are features in computer-based testing that are absent in the traditional form of neuropsychological testing, including: timing of response latencies, automated analysis of response patterns, transfer of results to a database for further analysis or the ease with which normative data can be collected or compared to existing databases (Schatz and Browndyke, 2002). Limitations to computer-based testing include: unfamiliarity with the equipment by the patient and the potential for inaccurate timing procedures. Some of the tests are a translation of existing standardized tests into a computerized administration (e.g., Wisconsin Card Sorting Test™) while others are the development of new computer tests and batteries of tests (Wild, et al., 2008).

Many of the tests associated with computerized testing were developed to evaluate for mild cognitive impairment or for sports-related concussion. Some of the tests have been adapted for testing in the pediatric populations, in particular for cases of attention-deficit/hyperactivity disorder (ADHD) (Luciana, 2003). These tests are also used in the research setting.

Many of the computerized tests do not require a professional to interpret and complete a report. The computer program provides a report. The test may not involve a visit or evaluation of a neuropsychologist and may be administered by a non-skilled or unlicensed individual.

Examples of computerized testing include, but are not limited to:

- Mindstreams® Cognitive Health Assessment (NeuroTrax, Newark, NJ): This product is intended to provide an objective measurement of cognitive function parameters. An Assessment Report is available within seconds after testing, and contains a complete accounting of performance in the cognitive domains of memory, attention, executive function, visual spatial perception, verbal skills, motor planning, and information processing speed.
- Cambridge Neuropsychological Testing Automated Battery (CANTAB®) (Cambridge Cognition Ltd, Cambridge, UK): This test is a non-linguistic, and culturally blind and can be administered by a trained assistant. This test includes specialized batteries that deal with specific conditions including: CANTAB Alzheimer's, CANTAB ADHD, and CANTAB's Core Cognition battery.
- CNS Vital signs® (CNS Vital Signs LLC, Chapel Hill, NC): This test batteries for five domains: memory (verbal and visual recognition), psychomotor speed (i.e., finger tapping, symbol digit coding), reaction time, cognitive flexibility (shifting attention, Stroop paradigm), and complex attention. The program can be completed in 25-30 minutes, does not require an attendant to be present and the program will produce a report.

- Computer-Administered Neuropsychological Screen for Mild Cognitive Impairment (CANS-MCI[®]) (Screen, Inc. Seattle, WA): This test was developed as a screening instrument for detection of mild cognitive impairment. Tests include assessment of language, memory and executive function.

Computerized neuropsychological tests are used in management of concussions to facilitate decisions about safe return to play, work or school (ECRIa). These tests generally take about 15-20 minutes to complete.

Examples of computerized testing used in evaluation of concussion include:

- ImPACT (Immediate Post-Concussion Assessment and Cognitive Testing) (ImPACT Applications, Inc, Pittsburgh, PA): According to the vendor website the test can be administered by an athletic trainer, school nurse, athletic director, team coach, team doctor, or anyone trained to administer baseline testing. It takes approximately 20 minutes and a clinical report is provided by the program.
- Concussion Resolution Index (CRI). Headminder, Inc., New York, NY). This test takes approximately 25 minutes to complete. According to the vendor's website, the athlete's provider is ultimately responsible for the administration and interpretation of the CRI. An athlete's provider is the person responsible for that athlete's care and who requested the athlete take the CRI—this may be the athlete's certified athletic trainer, physician, or other health or sports professional. Providers may administer the test personally or assign another person to supervise the test administration. The report is provided by the program.
- Axon Sports Computerized Cognitive Assessment Tool (CCAT) (Axon Sports, Ltd, Wausau, WI): This test takes approximately 15 minutes to complete. According to the vendor website, a clinic nurse or receptionist or computer lab supervisor can assist in the testing. A report is generated by the program. In the frequently asked question section of the vendor's website, it states that the Axon Sports test is not a neuropsychological test—neuropsychological tests can be given and interpreted only by appropriately trained and registered neuropsychologist. Neuropsychological assessments are generally very detailed and can require anywhere from 1–12 hours to complete. The Axon Sports CCAT measures the speed and accuracy of different aspects of thinking: processing speed, attention, learning and working memory. This information is not used to diagnose any disorder.

Wild et al. (2008) conducted a systematic review of the status of computerized cognitive testing, focusing on detection of cognitive decline in the aging population. Due to the heterogeneity across selected studies and test batteries, a meta-analysis was not possible. 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 all cases, published research was found that described psychometric properties of these tests. 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. It was noted that 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 are fully self-administered—the tests ranged widely in the amount of interaction required of an examiner. One of the potential advantages of computerized tests is the flexibility in terms of immediate adjustment of performance levels.

Neuropsychological Testing in the Educational Setting

Neuropsychological testing is also used in educational settings to provide information regarding educational planning and determine appropriate classroom placement (Stebbins, 2007). The testing may be used to identify specific learning disabilities and developmental disabilities. These tests may aid in the identification of children with severe intellectual deficits, such as mental retardation.

Tourette's syndrome (TS) is a chronic tic disorder, with the onset in childhood and characterized by motor and vocal tics. This disorder is frequently accompanied by other conditions; with the three most common being attention deficit/hyperactivity disorder (ADHD), learning disabilities, and obsessive-compulsive disorder (Bagheri, et al., 1999). Neuropsychological testing may be utilized to identify the patient's strengths and weaknesses and allow the patient to reach his or her maximum academic potential (Jankovic, 2007). Neuropsychological testing is considered primarily educational in nature and not medically necessary when performed for the assessment and management of Tourette's syndrome. Guidelines published by the European Society for the Study of Tourette's Syndrome noted that the clinical usefulness of formal neuropsychological testing in children with TS has not been clearly established to date, and more neuropsychometric tools are appropriate, at present, only in research settings." (Cath, et al., 2011)

Neuropsychological testing is generally performed primarily for educational reasons when done in association with the management of ADHD and disruptive behavior disorders (e.g., oppositional defiant disorder, conduct disorder). Educational testing is usually provided by school systems under applicable state and federal rules. Neuropsychological testing may be useful in patients in whom diagnosis is difficult, or when cognitive impairment secondary to another disorder is suspected (e.g., those with previous head injury, alcohol-related cognitive deficits, early dementias or seizures). There is insufficient evidence to recommend neuropsychological evaluation for ADHD to be performed on a routine basis in the management of ADHD.

The autism spectrum disorders (ASD) are a range of complex behavioral disorders that are also referred to as pervasive developmental disorders (PDD). There is no specific test that can confirm a diagnosis of ASD. The evaluation must include clinical history which incorporates parental report, family history, pregnancy, neonatal and developmental history of the child and a clinical examination (Volkmar, et al., 1999; Tuchman, 2003; Filipek, et al., 2000 [reaffirmed 2010]). It has been proposed that neuropsychological testing be used in the assessment of ASD and to assist with the educational planning process. The medical necessity for the standard use of neuropsychological testing in the assessment and/or management of ASD is not supported in the medical literature.

The use of neuropsychological testing in these settings is primarily used for educational purposes and is not medically necessary for the treatment of the conditions.

Neuropsychological Testing for Other Conditions

Neuropsychological testing is of limited value in any of the following conditions:

- When the patient has a substance abuse background and either of the following conditions apply:
 - The patient continues to use to an extent that would render test results inaccurate.
 - The patient is not yet 10 or more days post-detoxification.
- When the patient is on certain daily medications (e.g., mood-altering substances or beta-blockers) that may confound interpretation of results, and the drug effects have not been ruled out

There are situations when routine screening of individuals is performed, such as for the purpose of early detection of changes in cognition. The use of neuropsychological testing for screening purposes, in the absence of signs and symptoms, would be considered not medically necessary.

While neuropsychological testing is not indicated for psychiatric conditions, the testing may be used to evaluate the presence of cognitive impairments in patients with co-morbid disorders when the psychiatric conditions have been effectively treated.

Migraine headaches: The literature regarding the clinical utility of neuropsychological testing for patients with migraine headaches is not conclusive. It has been suggested that there may be cognitive impairment with migraines, but studies have not been conclusive (O'Bryant, et al., 2006; Baars, et al., 2010). There is insufficient clinical evidence that demonstrates that neuropsychological testing is useful in clinical decision making or will improve management of this condition.

Mild Cognitive Impairment (MCI): MCI is a condition associated with impairments in understanding and memory not severe enough to be diagnosed as dementia, but more pronounced than those associated with normal aging (National Institute of Neurological Disorders and Stroke [NINDS], 2011). MCI is a classification of persons with memory impairment who are not demented (normal general cognitive function; intact activities of daily living). Patients with MCI should be identified and monitored for cognitive and functional decline due to their increased risk for subsequent dementia (Petersen, et al., 2001). Neuropsychological testing for this condition does not impact clinical decision making.

Chronic Fatigue Syndrome: Chronic fatigue syndrome (CFS) can be a disabling illness characterized by persistent fatigue and associated myalgias, tender lymph nodes, arthralgias, chills, feverish feelings and postexertional malaise. Diagnosis of this syndrome is by exclusion with no definitive laboratory test or physical findings. Evaluation for this condition should include a detailed medical history, complete physical examination, including a mental status examination and a standard series of urine and blood laboratory tests to identify other possible causes of illness. The evidence-based, peer-reviewed medical literature does not support the use of neuropsychological testing in the assessment and/or management of this condition.

Baseline Assessment: A recent area of development for neuropsychological testing, in particular computerized testing, is baseline assessment, which is when the testing is performed in the absence of signs and/or symptoms for purposes of a later comparison. A use for baseline testing that is becoming prevalent is in the assessment and management of sports-related concussion (Schatz and Browndyke, 2002). In some contact sports, an athletic program may perform a baseline assessment of an individual's cognitive performance at the beginning of the season for purposes of later comparison in the event of an injury. When these tests are performed prior to injury, or in the absence of signs and/or symptoms, this use would not be considered medically necessary.

Repeat Testing

Repeat testing may be medically indicated when there is a significant change in behavior or medical condition and will affect treatment planning. Repeat testing for monitoring of a condition is not considered medically necessary unless it will impact clinical decision-making or level of care planning.

Professional Societies/Organizations

American Academy of Child and Adolescent Psychiatry (AACAP): The AACAP published practice parameters for the assessment and treatment of children and adolescents with ADHD (Pliszka, et al., 2007). Regarding neuropsychological testing the parameters note that this testing is not required as part of a routine assessment for ADHD, but may be indicated by the findings of the standard psychological assessment.

American Academy of Neurology (AAN): The Quality Standards Subcommittee of the AAN published an evidence-based review: Practice parameter: early detection of dementia: mild cognitive impairment. The recommendations include (Petersen, et al., 2001):

- Neuropsychologic batteries are useful instruments in identifying patients with dementia, particularly when administered to an increased-risk (by virtue of memory impairment) population. Those neuropsychologic instruments that emphasize memory function are most useful.
- Interview-based techniques may be considered in identifying patients with dementia, particularly when administered to a population at increased risk of cognitive impairment.

American Academy of Pediatrics (AAP): The AAP published a clinical report regarding sport-related concussion in children and adolescents (Halstead, et al., 2010). Among the conclusions and guidance the report notes:

- Neuropsychological testing can be helpful to provide objective data to athletes and their families after a concussion.
- Neuropsychological testing is one tool in the complete management of a sport-related concussion and alone does not make a diagnosis or determine when return to play is appropriate.
- Concussion has many signs and symptoms, some of which overlap, with other medical conditions. Loss of consciousness is uncommon and if it lasts longer than 30 seconds, it may indicate more significant intracranial injury.

American Psychiatric Association: The American Psychiatric Association published practice guidelines for the psychiatric evaluation of adults. The following notations were made in the guidelines regarding neuropsychological testing (American Psychiatric Association, 2006):

- The testing has a broad range of application, but the decision to order neuropsychological testing for an individual patient remains a matter of clinical judgment.
- The testing may be requested when cognitive deficits are suspected or there is a need to grade for severity or progression of deficits over time.
- The testing can be helpful in distinguishing between cognitive disorders and malingering or factitious disorders. When patients present later in life with the new onset of psychosis or mood disorder accompanied by cognitive deficits, neuropsychological testing may also be helpful in distinguishing dementia from other psychiatric syndromes.

The American Psychiatric Association published practice guidelines for treatment of patients with Alzheimer's Disease and other dementias (American Psychiatric Association, 2007). The guidelines note that:

- Neuropsychological testing may help in deciding whether a patient with subtle or atypical symptoms actually has dementia as well as in more thoroughly characterizing an unusual symptom picture.

- Testing may help to characterize the extent of cognitive impairment, to distinguish among the types of dementias, and to establish baseline cognitive function.
- Testing may also help identify strengths and weaknesses that could guide expectations for the patient, direct interventions to improve overall function, assist with communication, and inform capacity determinations.

The guidelines notes that mild cognitive impairment is a term used to represent a variety of mild cognitive syndromes manifested by a modest but detectable decline in cognitive function in the setting of largely intact functional status (American Psychiatric Association, 2007). There are a variety of research definitions for mild cognitive impairment, but there is no consensus on the optimal definition. The most widely accepted definition requires the following:

- subjective cognitive complaints
- evidence of objective deficits in cognitive function based on age- and education-adjusted norms on standardized neuropsychological tests
- intact daily functioning,
- evidence of cognitive decline from a prior level
- evidence of not meeting the criteria for dementia

The American Psychiatric Association's position statement on HIV-related neuropsychiatric findings and associated impairments (American Psychiatric Association, 2003), notes that, "Psychiatrists should be aware of the neuropsychological manifestations of HIV and the importance of providing patients with or referring patients for further assessment and treatment when patients show signs of clinically significant neuropsychological impairment."

American Psychological Association: the American Psychological Association published updated guidelines for the evaluation of dementia and age-related cognitive change (American Psychological Association, 2011). The guidelines include the following regarding neuropsychological testing for this condition:

- Neuropsychological evaluation and cognitive testing remain among the most effective differential diagnostic methods in discriminating pathophysiological dementia from age-related cognitive decline, cognitive difficulties that are depression-related, and other related disorders
- Comprehensive neuropsychological evaluations for dementia and cognitive change include tests of multiple cognitive domains, typically including memory, attention, perceptual and motor skills, language, visuospatial abilities, reasoning, and executive functions. Measures of mood and personality may be relevant in many cases. Psychologists are encouraged to refer to current compendia resources and the clinical research literature in selecting assessment instruments.
- Technology assisted assessments (e.g., computer administered cognitive batteries, tele-health visits) are rapidly advancing but appropriate psychometric properties and normative data are nascent. These technologies may have significant advantages for older persons with limited mobility or health-care access, but may also disadvantage older persons with limited experience and expertise interacting with technology.
- Psychologists are encouraged to use standardized, reliable, and valid tests. Whether traditional or technology-assisted, appropriate tests have normative data for the age range of the person being assessed and are suitable for the individual's ethnicity, race, and educational background. In particular, the positive and negative predictive values of the instruments are considered when selecting tests for dementia, cognitive impairment, and age-related cognitive change. Furthermore, testing instruments should be sensitive to subtle changes in cognitive function over time.

U.S. Preventive Services Task Force (USPSTF): The USPSTF published a statement regarding screening for dementia. The statement concluded that the evidence is insufficient to recommend for or against routine screening for dementia in older adults (USPSTF, 2003).

Summary

Neuropsychological testing is used to assess cognitive function and to quantify the neurocognitive effects of various medical disorders and/or head trauma-related conditions. Neuropsychological testing is a tool to assist in the diagnosis of certain conditions, such as dementia, but is not a diagnostic tool in itself. Although testing may help to predict the level of potential remediation, it has not been determined to be beneficial in either guiding treatment or monitoring treatment progress.

Coding/Billing Information

Note: This list of codes may not be all-inclusive.

Covered when medically necessary:

CPT®* Codes	Description
96116	Neurobehavioral status exam (clinical assessment of thinking, reasoning and judgment, eg, acquired knowledge, attention, language, memory, planning and problem solving, and visual spatial abilities), per hour of the psychologist's or physician's time, both the face-to-face time with the patient and time interpreting test results and preparing the report
96118	Neuropsychological testing (eg, Halstead-Reitan Neuropsychological Battery, Wechsler Memory Scales and Wisconsin Card Sorting Test), per hour of the psychologist's or physician's time, both face-to-face time administering tests to the patient and time interpreting these test results and preparing the report
96119	Neuropsychological testing (eg, Halstead-Reitan Neuropsychological Battery, Wechsler Memory Scales and Wisconsin Card Sorting Test), with qualified health care professional interpretation and report, administered by technician, per hour of technician time, face-to-face
96120	Neuropsychological testing (eg, Wisconsin Card Sorting Test), administered by a computer, with qualified health care professional interpretation and report

ICD-9-CM Diagnosis Codes	Description
013.60-013.66	Tuberculous encephalitis or myelitis
036.1	Meningococcal encephalitis
042	Human immunodeficiency virus [HIV] disease
046.0-046.9	Slow virus infections and prion diseases of central nervous system
049.8	Other enterovirus diseases of central nervous system
049.8	Other specified non-arthropod-borne viral diseases of central nervous system
049.9	Unspecified non-arthropod-borne viral diseases of central nervous system
054.3	Herpetic meningoencephalitis
056.01	Encephalomyelitis due to rubella
062.0-062.9	Mosquito-borne viral encephalitis
063.0-063.9	Tick-borne viral encephalitis
064	Viral encephalitis transmitted by other and unspecified arthropods
066.41	West-nile virus with encephalitis
072.2	Mumps encephalitis
080-088.9	Rickettsioses and other arthropod-borne diseases
090.41	Congenital syphilitic encephalitis
094.81	Syphilitic encephalitis
130.0	Meningoencephalitis due to toxoplasmosis
137.1	Late effects of central nervous system tuberculosis
138	Late effects of acute poliomyelitis
139.0	Late effects of viral encephalitis
191.0 – 191.9	Malignant neoplasm of brain
192.0 – 192.9	Malignant neoplasm of other and unspecified parts of nervous system
198.3	Secondary malignant neoplasm of other specified sites, brain and spinal cord
225.0	Benign neoplasm of brain and other parts of nervous system, brain
237.5	Neoplasm of uncertain behavior of endocrine gland and nervous system, brain

	and spinal cord
239.6	Neoplasm of unspecified nature, brain
290.0	Senile dementia, uncomplicated
290.10- 290.13	Presenile dementia
290.20- 290.21	Senile dementia with delusional or depressive features
290.3	Senile dementia with delirium
290.4	Vascular dementia
294.0	Amnesic disorder in conditions classified elsewhere
294.10	Dementia in conditions classified elsewhere without behavioral disturbance
294.11	Dementia in conditions classified elsewhere with behavioral disturbance
310.2	Postconcussion syndrome
310.8	Other specified nonpsychotic mental disorders following organic brain damage (Mild memory disturbance)
323.01	Encephalitis and encephalomyelitis in viral diseases classified elsewhere
323.1	Encephalitis, myelitis, and encephalomyelitis in rickettsial diseases classified elsewhere
323.2	Encephalitis, myelitis and encephalomyelitis in protozoal diseases classified elsewhere
323.41	Other encephalitis and encephalomyelitis due to infection classified elsewhere
323.51	Encephalitis and encephalomyelitis following immunization procedures
323.62	Other postinfectious encephalitis and encephalomyelitis
323.71	Toxic encephalitis and encephalomyelitis
323.81	Other causes of encephalitis and encephalomyelitis
323.9	Unspecified cause of encephalitis, myelitis, and encephalomyelitis
331.0	Alzheimer's disease
331.11	Pick's disease
331.19	Other frontotemporal dementia
331.2	Senile degeneration of the brain
331.3	Communicating hydrocephalus
331.4	Obstructive hydrocephalus
331.7	Cerebral degeneration in diseases classified elsewhere
331.81	Reye's syndrome
331.82	Dementia with Lewy bodies
331.89	Other cerebral degeneration
331.9	Cerebral degeneration, unspecified
320.0 – 320.9	Bacterial meningitis
332.0 – 332.1	Parkinson's disease
333.0	Other degenerative diseases of the basal ganglia
333.4	Huntington's chorea
333.5	Other choreas
340	Multiple sclerosis
341.8	Other demyelinating diseases of central nervous system
341.9	Unspecified demyelinating disease of central nervous system
345.00- 345.91	Epilepsy and recurrent seizures
348.1	Anoxic brain damage
348.30	Encephalopathy, unspecified
348.39	Other encephalopathy
349.9	Unspecified disorders of nervous system
430	Subarachnoid hemorrhage
431	Intracerebral hemorrhage
432	Other and unspecified intracranial hemorrhage
434.01	Occlusion of cerebral arteries, cerebral thrombosis with cerebral infarction
434.11	Occlusion of cerebral arteries, cerebral embolism with cerebral infarction

434.91	Occlusion of cerebral arteries, cerebral artery occlusion, unspecified with cerebral infarction
438.0	Late effects of cerebrovascular disease; cognitive deficits
438.89	Other late effects of cerebrovascular disease
742.9	Unspecified anomaly of brain, spinal cord, and nervous system
747.81	Congenital anomalies of cerebrovascular system
780.33	Post traumatic seizures
780.39	Other convulsions
780.93	Other general symptoms, memory loss
799.01	Other ill-defined and unknown causes of morbidity and mortality; asphyxia
799.02	Other ill-defined and unknown causes of morbidity and mortality; hypoxemia
800.10-800.49	Fracture of vault of skull, closed
800.60-800.99	Fracture of vault of skull, open
801.10-801.49	Fracture of base of skull, closed
801.60-801.99	Fracture of base of skull, open
803.00-803.49	Other and unqualified skull fracture, closed
803.60-803.99	Other and unqualified skull fracture, open
804.00-804.49	Multiple fractures involving skull or face with other bones, closed
804.60-804.99	Multiple fractures involving skull or face with other bones, open
850.11-850.5	Concussion with loss of consciousness
851.00-851.99	Cerebral laceration and contusion
852.00-852.59	Subarachnoid, subdural, and extradural hemorrhage, following injury
853.00-853.19	Other and unspecified intracranial hemorrhage following injury
854.00 – 854.19	Intracranial injury of other and unspecified nature
909.2	Late effects of radiation
907.0	Late effect of intracranial injury without mention of skull fracture
961.3	Poisoning by quinoline and hydroxyquinoline derivatives
982.1	Toxic effect of carbontetrachloride
984.0 – 984.9	Toxic effect of lead and its compounds (including fumes)
985.0	Toxic effect of mercury and its compounds
985.9	Toxic effect of unspecified metal
990	Effects of radiation, unspecified
997.01	Central nervous system complication
997.02	Iatrogenic cerebrovascular infarction or hemorrhage

Experimental/Investigational/Unproven/Not Covered:

ICD-9-CM Diagnosis Codes	Description
780.71	Chronic fatigue syndrome

Educational in Nature/Not Medically Necessary/Not Covered:

ICD-9-CM Diagnosis Codes	Description
291.0-291.9	Alcohol-induced mental disorders
292.0-292.9	Drug induced mental disorders
294.8	Other persistent mental disorders due to conditions classified elsewhere
294.9	Unspecified persistent mental disorders due to conditions classified elsewhere
295.00-295.9	Schizophrenic disorders
296.00-296.9	Episodic mood disorders
297.0-297.9	Delusional disorders
298.0-298.9	Other nonorganic psychoses
299.00 – 299.91	Pervasive development disorders
300.00- 300.19	Anxiety states
300.10- 300.19	Dissociative, conversion and factitious disorders
300.20- 300.29	Phobic disorders
300.3	Obsessive-compulsive disorders
300.4	Dysthymic disorder
300.5	Neurasthenia
300.6	Depersonalization disorder
300.7	Hypochondriasis
300.81- 300.89	Somatoform disorders
300.9	Unspecified nonpsychotic mental disorder
301.0-301.9	Personality disorders
302.0-302.9	Sexual and gender identity disorders
303.00- 303.93	Alcohol dependence syndrome
304.00- 304.93	Drug dependence
305.00- 305.93	Nondependent abuse of drugs
307.23	Tourette's disorder
308.0-308.9	Acute reaction to stress
309.0-309.9	Adjustment reaction
311	Depressive disorder, not elsewhere classified
312.00-312.9	Disturbances of conduct, not elsewhere classified
313.0-313.9	Disturbance of emotions specific to childhood and adolescence
314.00 – 314.9	Hyperkinetic syndrome of childhood
315.00 – 315.9	Specific delays in development
317	Mild mental retardation
318.0 – 318.2	Other specified mental retardation
319	Unspecified mental retardation
331.83	Mild cognitive impairment, so stated
346.00- 346.93	Migraine
348.9	Unspecified condition of brain
729.1	Fibromyalgia
780.71	Chronic fatigue syndrome
780.79	Other malaise and fatigue

781.3	Lack of coordination
781.99	Other symptoms involving nervous and musculoskeletal systems
783.40	Lack of normal physiological development, unspecified
783.42	Delayed milestones
781.99	Other symptoms involving nervous and musculoskeletal system
783.40	Lack of normal physiological development, unspecified
783.42	Delayed milestones
784.0	Headache
794.9	Other nonspecific abnormal results of function studies
850.0	Concussion with no loss of consciousness
850.9	Concussion, unspecified
959.01	Head injury, unspecified
V20.2	Routine infant or child health check
V57.22	Encounter for vocational therapy
V71.09	Observation and evaluation for other suspected mental condition
V71.9	Observation and evaluation for other unspecified suspected condition
V79.0-V79.9	Special screening for mental disorders and developmental handicaps
V80.0	Special screening for neurological conditions
V80.9	Special screening for other neurological conditions
	All other codes

***Current Procedural Terminology (CPT®) ©2010 American Medical Association: Chicago, IL.**

References

1. American Academy of Clinical Neuropsychology. American Academy of Clinical Neuropsychology (AACN) practice guidelines for neuropsychological assessment and consultation. Clin Neuropsychol. 2007 Mar;21(2):209-31.
2. American Psychiatric Association. Practice guideline for the Psychiatric Evaluation of Adults. Second Edition. June 2006. Accessed June 3, 2011. Available at URL address: http://www.psychiatryonline.com/pracGuide/pracGuideTopic_1.aspx
3. American Psychiatric Association. Position statement: Recognition and Management of HIV-Related Neuropsychiatric Findings and Associated Impairments. October 2003. Accessed May 26, 2010. Available at URL address: <http://www.psych.org/Departments/EDU/Library/APAOfficialDocumentsandRelated/PositionStatements/200305.aspx>
4. American Psychiatric Association. Practice guideline. Treatment of Patients With Alzheimer's Disease and Other Dementias, Second Edition. Oct 2007. Accessed June 13, 2011. Available at URL address: http://www.psychiatryonline.com/pracGuide/pracGuideChapToc_3.aspx
5. American Psychological Association Task Force to Update the Guidelines for the Evaluation of Dementia and Age-Related Cognitive Decline. Adopted by the APA Council of Representatives on February 18, 2011. Guidelines for the Evaluation of Dementia and Age-Related Cognitive Change. Accessed June 3, 2011. Available at URL address: <http://www.apa.org/pi/aging/resources/dementia-guidelines.pdf>
6. Assessment: neuropsychological testing of adults. Considerations for neurologists. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology. 1996 Aug;47(2):592-9.
7. Axon Sports Computerized Cognitive Assessment Tool (CCAT). Axon Sports, Ltd. Accessed June 12, 2011. Available at URL address: <http://www.axonsports.com/index.cfm>

8. Baars MA, van Boxtel MP, Jolles J. Migraine does not affect cognitive decline: results from the Maastricht aging study. *Headache*. 2010 Feb;50(2):176-84.
9. Bagheri MM, Kerbeshian J, Burd L. Recognition and management of Tourette's syndrome and tic disorders. *Am Fam Physician*. 1999 Apr 15;59(8):2263-72, 2274.
10. Banks ME. The role of neuropsychological testing and evaluation: when to refer. *Adolesc Med*. 2002 Oct;13(3):643-62.
11. Butcher JN, Perry JN, Atlis MM. Validity and utility of computer-based test interpretation. *Psychol Assess*. 2000 Mar;12(1):6-18.
12. Canadian Stroke Network/Heart and Stroke Foundation of Canada. Lindsay P, Bayley M, Hellings C, Hill M, Woodbury E, Phillips S. Selected topics in stroke management. Vascular cognitive impairment and dementia. In: Canadian best practice recommendations for stroke care. *CMAJ* 2008 Dec 2;179(12 Suppl):E67-70.
13. Cath DC, Hedderly T, Ludolph AG, Stern JS, Murphy T, Hartmann A, et al.; ESSTS Guidelines Group. European clinical guidelines for Tourette syndrome and other tic disorders. Part I: assessment. *Eur Child Adolesc Psychiatry*. 2011 Apr;20(4):155-71.
14. Concussion Resolution Index (CRI). Headminder, Inc. Accessed June 12, 2011. Available at URL address: <http://www.headminder.com/site/cri/home.html>
15. Costa DI, Azambuja LS, Portuguese MW, Costa JC. Neuropsychological assessment in children. *J Pediatr*. 2004;80(2 suppl):S111-S116.
16. Department of Veterans 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 Apr. Accessed June 3, 2011. Available at URL address: http://www.healthquality.va.gov/management_of_concussion_mtbi.asp
17. Duff K, Paulsen JS. Neuropsychology. In: *Neurology in Clinical Practice*, 5th ed. Philadelphia: Butterworth-Heinemann, an Imprint of Elsevier, 2008.
18. EAST Practice Management Guidelines Work Group. Practice management guidelines for the management of mild traumatic brain injury. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2000. Accessed June 3, 2011. Available at URL address: <http://www.east.org/tpg/tbi.pdf>
19. ECRI Institute (a). Hotline Response [database online]. Plymouth Meeting (PA): ECRI Institute; 2010 Dec 29. Computerized Testing for Neuropsychological Evaluation of Concussion. 2010 Dec 29. Available at URL address: <http://www.ecri.org>.
20. ECRI Institute (b). Hotline Response [database online]. Plymouth Meeting (PA): ECRI Institute; 2010 May 6. Nonpsychiatric Uses of Neuropsychologic Testing in Adults. 2010 May 6. Available at URL address: <http://www.ecri.org>.
21. Filipek PA, Accardo PJ, Ashwal S, Baranek GT, Cook EH Jr, Dawson G, et al. Practice parameter: screening and diagnosis of autism: report of the Quality Standards Subcommittee of the American Academy of Neurology and the Child Neurology Society. *Neurology*. 2000 Aug 22;55(4):468-79. (guideline reaffirmed by the developer October 18, 2003, July 28, 2006, July 10, 2010)
22. Halstead ME, Walter KD; Council on Sports Medicine and Fitness. American Academy of Pediatrics. Clinical report--sport-related concussion in children and adolescents. *Pediatrics*. 2010 Sep;126(3):597-615.

23. Heilbronner RL, Sweet JJ, Attix DK, Krull KR, Henry GK, Hart RP. Official position of the American Academy of Clinical Neuropsychology on serial neuropsychological assessments: the utility and challenges of repeat test administrations in clinical and forensic contexts. *Clin Neuropsychol*. 2010 Nov;24(8):1267-78.
24. ImPACT (Immediate Post-Concussion Assessment and Cognitive Testing) ImPACT Applications, Inc. Accessed June 12, 2011. Available at URL address: <http://impacttest.com/about/background>
25. Jankovic J. Movement disorders. In: Goetz CG. *Textbook of Clinical Neurology*, 3rd ed. Philadelphia: Saunders, an Imprint of Elsevier; 2007. ch 34.
26. Luciana M. Practitioner review: computerized assessment of neuropsychological function in children: clinical and research applications of the Cambridge Neuropsychological Testing Automated Battery (CANTAB). *J Child Psychol Psychiatry*. 2003 Jul;44(5):649-63.
27. Miller RG, Jackson CE, Kasarskis EJ, England JD, Forshew D, Johnston W, et al; Quality Standards Subcommittee of the American Academy of Neurology. Practice parameter update: The care of the patient with amyotrophic lateral sclerosis: multidisciplinary care, symptom management, and cognitive/behavioral impairment (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2009 Oct 13;73(15):1227-33.
28. Miyasaki JM, Shannon K, Voon V, Ravina B, Kleiner-Fisman G, Anderson K, et al.; Quality Standards Subcommittee of the American Academy of Neurology. Practice Parameter: evaluation and treatment of depression, psychosis, and dementia in Parkinson disease (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2006 Apr 11;66(7):996-1002.
29. National Institute of Neurological Disorders and Stroke (NINDS). Last updated March 23, 2011. Dementia: Hope Through Research. Accessed June 10, 2011. Available at URL address: http://www.ninds.nih.gov/disorders/dementias/detail_dementia.htm
30. National Multiple Sclerosis Society, National Clinical Advisory Board. Assessment and management of cognitive impairment in multiple sclerosis. Expert Opinion Paper. 2008. Accessed June 12, 2011. Available at URL address: <http://www.nationalmssociety.org/for-professionals/healthcare-professionals/publications/expert-opinion-papers/index.aspx>
31. No authors listed. Assessment: neuropsychological testing of adults. Considerations for neurologists. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology*. 1996 Aug;47(2):592-9.
32. O'Bryant SE, Marcus DA, Rains JC, Penzien DB. Neuropsychology of migraine: present status and future directions. *Expert Rev Neurother*. 2005 May;5(3):363-70.
33. O'Bryant SE, Marcus DA, Rains JC, Penzien DB. The neuropsychology of recurrent headache. *Headache*. 2006 Oct;46(9):1364-76.
34. Patel DR, Shivdasani V, Baker RJ. Management of sport-related concussion in young athletes. *Sports Med*. 2005;35(8):671-84.
35. Petersen RC, Stevens JC, Ganguli M, Tangalos EG, Cummings JL, DeKosky ST. Practice parameter: early detection of dementia: mild cognitive impairment (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2001 May 8;56(9):1133-42.
36. Pliszka S; AACAP Work Group on Quality Issues. 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.

37. Podell K, Gifford K, Bougakov D, Goldberg E. Neuropsychological assessment in traumatic brain injury. *Psychiatr Clin North Am.* 2010 Dec;33(4):855-76.
38. Rowland LP, Pedley TA. *Merritt's Neurology*, 12th ed. Philadelphia: Lippincott Williams & Wilkins; 2010.
39. Sadock BJ, Sadock VA, Ruiz P. Kaplan & Sadock's comprehensive textbook of psychiatry 9th ed. Philadelphia: Lippincott Williams; 2009.
40. Schlegel RE, Gilliland K. Development and quality assurance of computer-based assessment batteries. *Arch Clin Neuropsychol.* 2007 Feb;22 Suppl 1:S49-61. Epub 2006 Nov 7.
41. Scottish Intercollegiate Guidelines Network (SIGN). Management of patients with dementia. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2006 Feb.
42. Schatz P, Browndyke J. Applications of computer-based neuropsychological assessment. *J Head Trauma Rehabil.* 2002 Oct;17(5):395-410.
43. Stebbins GT. Neuropsychological testing. In: Goetz C. *Textbook of clinical neurology*. 3rd ed. Chicago, IL: W.B. Saunders Company; 2007. ch 27.
44. Tuchman R. Autism. *Neurol Clin.* 2003 Nov;21(4):915-32.
45. U.S. Preventive Services Task Force. Screening for Dementia, Topic Page. June 2003. Accessed June 6, 2011. Available at URL address: <http://www.uspreventiveservicestaskforce.org/uspstf/uspstdeme.htm>
46. Volkmar F, Cook EH Jr, Pomeroy J, Realmuto G, Tanguay P. Practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. American Academy of Child and Adolescent Psychiatry Working Group on Quality Issues. *J Am Acad Child Adolesc Psychiatry.* 1999 Dec;38(12 Suppl):32S-54S.
47. Wild K, Howieson D, Webbe F, Seelye A, Kaye J. Status of computerized cognitive testing in aging: a systematic review. *Alzheimers Dement.* 2008 Nov;4(6):428-37.

Policy History

<u>Pre-Merger Organizations</u>	<u>Last Review Date</u>	<u>Policy Number</u>	<u>Title</u>
CIGNA HealthCare	7/15/2008	0258	Neuropsychological Testing

"CIGNA", "CIGNA HealthCare" and the "Tree of Life" logo are registered service marks of CIGNA Intellectual Property, Inc., licensed for use by CIGNA Corporation and its operating subsidiaries. All products and services are provided by such operating subsidiaries and not by CIGNA Corporation. Such operating subsidiaries include Connecticut General Life Insurance Company, CIGNA Health and Life Insurance Company, CIGNA Behavioral Health, Inc., CIGNA Health Management, Inc., and HMO or service company subsidiaries of CIGNA Health Corporation and CIGNA Dental Health, Inc. In Arizona, HMO plans are offered by CIGNA HealthCare of Arizona, Inc. In California, HMO plans are offered by CIGNA HealthCare of California, Inc. In Connecticut, HMO plans are offered by CIGNA HealthCare of Connecticut, Inc. In North Carolina, HMO plans are offered by CIGNA HealthCare of North Carolina, Inc. In Virginia, HMO plans are offered by CIGNA HealthCare Mid-Atlantic, Inc. All other medical plans in these states are insured or administered by Connecticut General Life Insurance Company or CIGNA Health and Life Insurance Company.