Corporate Medical Policy
Neuropsychological Testing (NPT)

Description of Procedure or Service

Neuropsychological testing (NPT) is used to determine the brain's capacity with respect to short and long term memory, abstract reasoning, attention concentration, executive function, motor skills and other cognitive and psychological factors. These tests often take 2-5 hours to complete including administration, scoring and interpretation. It is generally not necessary to repeat neuropsychological testing at intervals less than 3 months after completion of testing (UNC Department of Neurology, 2020).

Psychological tests assess a range of mental abilities and attributes, including achievement, ability, personality and neurological functioning. Psychological testing, including neuropsychological assessment, utilizes a set of standardized tests, whose validity and reliability have been established empirically. They allow for an assessment of a patient's cognitive and behavioral functioning and an analysis of changes related to mental or physical disease, injury, or abnormal development of the brain. Research has shown that the scores from these tests are reproducible and can be compared to those of normal persons of similar age, sex and demographic background to yield valid conclusions.

Benefit Application

Psychological and neuropsychological testing is necessary to determine the appropriate psychiatric treatment.

Neuropsychological testing for employment, disability qualification or legal/court-related purposes is not a covered benefit as it is not considered treatment of disease.

Services provided by school systems are not reimbursable by the health plan.

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits.

Policy Statement

GEHA allows 6 hours per calendar year of neuropsychological (NPT) or psychological (PT) testing. Psychological testing that exceeds 6 hours per calendar year requires precertification or preauthorization. Covered services are based on our review for medical necessity.

When Neuropsychological Testing is covered

GEHA considers neuropsychological testing (NPT) medically necessary when provided to aid in the assessment of cognitive impairment due to medical or psychiatric conditions, and to enhance psychiatric or psychotherapeutic treatment outcomes after a detailed diagnostic when all of the following criteria are met:
A. The number of hours requested for testing does not exceed the reasonable time necessary to address the clinical questions with the identified measures; and
B. The testing techniques are validated for the proposed diagnostic question or treatment plan; and
C. The testing techniques do not represent redundant measurements of the same cognitive, behavioral or emotional domain; and
D. The testing techniques submitted are both validated for the age and population of the member; and they are the most updated version of the instrument.

Treatment:

A. Testing is needed to aid in the differential diagnosis of behavioral or psychiatric conditions when the member’s history and symptomatology are not readily attributable to a particular psychiatric diagnosis and the questions to be answered by testing could not be resolved by a psychiatric/diagnostic interview, observation in therapy, or an assessment for level of care at a mental health or substance abuse facility; or
B. Testing is needed to develop treatment recommendations after the member has been tried on various medications and/or psychotherapy, has not progressed in treatment, and continues to be symptomatic

Repeat testing:

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

Conditions considered appropriate for Neuropsychological Testing/Psychological Testing services include but are not limited to:

A. Differentiating organic deficits from psychological deficits (structural CNS issues versus schizophrenia)
B. Serial assessments for progressive brain injury disorders (TBI, stroke, differentiation of brain damage from a depressive disorder) and progressive neurological disorders (Parkinson’s disease, Alzheimer’s disease, epilepsy, hydrocephalus, multiple sclerosis)
C. Determination of cognitive deficits in seizure disorders
D. Evaluation of intellectual deficits in individuals with Acquired Immuno-Deficiency Syndrome (AIDS)
E. Differentiating epileptic versus non-epileptic seizures
F. Assessment of autoimmune diseases including fibromyalgia

When Neuropsychological Testing is not covered

A. Pre-surgical clearance (e.g. bariatric surgery). An evaluation by a psychologist or psychiatrist may be required
B. Psychological and neuropsychological testing of children for the purpose of diagnosing attention deficit/hyperactivity disorder (ADHD)
C. For the diagnosis of pervasive developmental disorders (Autism Spectrum Disorders)
D. Services provided by school systems to children with Autism Spectrum Disorder (ASD) are not reimbursable
E. For neurotoxic effects of alcohol and/or drug abuse or dependence in a patient during the detoxification period or within the early period of abstinence from the offending drug because the results are unreliable
F. In the evaluation of Chronic Fatigue Syndrome
G. Employment, disability qualification or legal/court-related purposes
H. In the evaluation, of:
   1. Persian Gulf War unexplained illnesses,
   2. Toxic mold and sick building syndrome
   3. Silicone breast implant disease

Policy Guidelines

Psychological and neuropsychological tests provide a standardized means of sampling behavior, an objective method for evaluating responses, and a tool for comparing the functioning of an individual with peers. Standardized tests are administered under uniform conditions, scored objectively and designed to measure relative performance. Test results usually are interpreted with reference to a comparable group of people, the standardization, or normative sample.

Psychological testing requires a clinically-trained examiner. All psychological tests should be administered, scored, and interpreted by a qualified professional, as governed by licensure and scope of practice, with expertise in the appropriate area.

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, and 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.

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.

**Physician documentation**

Please complete the form for psychological and/or neuropsychological testing authorization only if more than 6 hours of testing will be done. (If the testing, including time for interpretation and report, will take 6 hours or less, it does not need to be authorized.)

Information requirements for greater than 6 hours of testing include (but may not be limited to):

- Patient demographics
- Person/Agency requesting testing
- Purpose of testing
- Number of hours and anticipated dates of testing requested
- Medical/psychological evaluations and treatments
  - Prior diagnosing or treatment
  - Substance abuse within the last 30 days

Additional supporting documentation may be requested to determine medical necessity.

**Background**

Psychological tests are only one element of a psychological assessment. They should never be used as the sole basis for a diagnosis. A detailed clinical interview, including a complete history of the test subject and a review of psychological, medical, educational, and other relevant records is required to lay the groundwork for interpreting the results of any psychological measurement.

Neuropsychological testing is a sub classification of psychological testing and a well-established method for evaluating patients who demonstrate cognitive or behavioral abnormalities. Neuropsychological testing is used when a differentiation between organic versus functional disorders is needed to direct proper therapy (e.g., occupational, physical, or speech and language therapy), predict neuropsychological recovery, or monitor progress (Kulas & Naugle, 2003). Neuropsychological tests includes examples, such as: Halsted-Reitan neuropsychological battery or its components; Luria-Nebraska; Wechsler Adult Intelligence Scale (WAIS); Wechsler Intelligence Scales for Children - Revised (WISC-R); Wechsler Memory Scale; and the Reitan Indiana neuropsychological test.

**Brain Injury**
Neuropsychological testing may be necessary for persons with documented neurologic disease or injury (e.g., traumatic brain injury, stroke) when there is uncertainty about the degree of impairment, or when an organic deficit is present but information on anatomic location and extent of dysfunction is required. An organic deficit is defined as a symptomatic manifestation of structural cerebral or systemic medical pathology, as opposed to being considered psychological or emotional in nature (functional). Such testing can also be used to systematically track progress in rehabilitation after brain injury or other neurological disease. Serial assessment in nonprogressive conditions, such as head injury, documents the patient’s rate of recovery and potential for returning to work.

In 2001, Millis et. al. conducted research to describe neuropsychological outcome 5 years after injury in persons with traumatic brain injury (TBI) who received inpatient medical rehabilitation. To determine the magnitude and pattern neuropsychological recovery from 1 year to 5 years after injury. There were 182 participants with complicated mild to severe traumatic brain injury surveyed. Significant variability in outcome was found 5 years after TBI, ranging from no measurable impairment to severe impairment on neuropsychological tests. Improvement from 1 year after injury to 5 years was also variable. Using the Reliable Change Index, 22.2% improved, 15.2% declined, and 62.6% were unchanged on test measures. It was concluded that Neuropsychological recovery after TBI is not uniform across individuals and neuropsychological domains. For a subset of persons with moderate to severe TBI, neuropsychological recovery may continue several years after injury with substantial recovery. For other persons, measurable impairment remains 5 years after injury. Improvement was most apparent on measures of cognitive speed, visuoconstruction, and verbal memory.

**Neurological Disease**

Neuropsychological testing is used in persons with documented changes in cognitive function to differentiate neurologic diseases (i.e., one of the types of dementia) or injuries (e.g., traumatic brain injury, stroke) from depressive disorders or other psychiatric conditions (e.g., psychosis, schizophrenia) when the diagnosis is uncertain after complete neurological examination, mental status examination, and other neurodiagnostic studies (e.g., CT scanning, MR imaging). The clinician presented with complaints of memory impairment or slowness in thinking in a patient who is depressed or paranoid may be unsure of the possible contribution of neurological changes to the clinical picture.

Neuropsychological testing is also used in the initial evaluation of cognitive deterioration associated with Alzheimer’s disease. It is also used for persons diagnosed with Alzheimer’s disease receiving medication for dementia, to evaluate deterioration in cognitive functioning to distinguish between diminished effect of the medication and organic worsening of the disease. Serial administration of parallel forms of memory tests has been employed to investigate the effects of cholinergic agents and other drugs on dementia of the Alzheimer’s type. Available medications for Alzheimer disease provide only a temporary cessation of the organic deterioration associated with Alzheimer’s disease, such that repeat testing may be necessary to aid in deciding whether or not to increase or discontinue the drug.

In a study by Balas, Balash et Gurevich (2010), Twenty five participants with multiple system atrophy (MSA) were examined to determine the influence of mood on cognitive performance. The aim was to differentiate between parkinsonism-predominant (MSA-P) and cerebellar-predominant (MSA-C) MSA based on those parameters. Fifteen MSA-P and 10 MSA-C patients underwent neuropsychological tests that examined executive functions (working memory, response inhibition, and verbal reproduction), verbal learning and memory, verbal and visual reasoning, and processing speed. Anxiety and depression
were also assessed. The findings on their cognitive performance and mood were compared to those of healthy controls and also discussed in relation to a group of Parkinson’s disease (PD) patients. The results showed that cognitive and mood characteristics could distinguish MSA-P from MSA-C and that anxiety and depression are related to cognitive decline. Compared with healthy controls, MSA-P patients showed reduced verbal retrieval while MSA-C patients had difficulties in learning new verbal information and in controlling attention. These data indicate that MSA-P and MSA-C appear to have, at least in part, different cognitive and mood profiles. The neuropsychological assessments of MSA patients should test for and then take into account their level of anxiety and depression, insofar as it might have an adverse effect on their cognitive performance.

Seizures

Neuropsychological testing may be indicated in persons with epilepsy. Neuropsychological testing is used in these patients to monitor the efficacy and possible cognitive side effects of drug therapy (e.g., new anti-convulsant drug therapy) by comparing baseline performance with subsequent testing performance. Neuropsychological testing is also used to assess post-surgical changes in cognitive functioning to guide further treatment services. Preferably, these tests should be administered by a certified psychologist trained to conceptualize the neuro-anatomical and the neurobehavioral implications of the diagnostic entities under consideration and who is capable of interpreting patterns of test scores in view of principles of lateralization and localization of cerebral function (Wilson et. al., 2015).

Acquired Immunodeficiency Syndrome

Neuropsychological testing is used for initial evaluation of cognitive deterioration associated with acquired immunodeficiency syndrome (AIDS), and for re-evaluation of persons with AIDS who show further deterioration, to distinguish between organic-based deterioration and deterioration from depression of chronic illness, in order to direct appropriate treatment.

In a study by Robertson et. al. (2012) the AIDS Clinical Trials Group (ACTG) A5199 compared the neurological and neuropsychological (NP) effects of 3 antiretroviral regimens in participants infected with human immunodeficiency virus type 1 (HIV-1) in resource-limited settings. Participants from Brazil, India, Malawi, Peru, South Africa, Thailand, and Zimbabwe were randomized to 3 antiretroviral treatment arms. Standardized neurological and neuropsychological (NP) screening examinations (grooved pegboard, timed gait, semantic verbal fluency, and finger tapping) were administered every 24 weeks from February 2006 to May 2010. Associations with neurological and neuropsychological function were estimated from linear and logistic regression models using generalized estimating equations. The median weeks on study was 168 for the 860 participants. NP test scores improved with the exception of semantic verbal fluency. No differences in neurological and neuropsychological functioning between treatment regimens were detected. Significant country effects were noted on all NP tests and neurological outcomes. The study detected no significant differences in neuropsychological and neurological outcomes between randomized ART regimens. Significant improvement occurred in neurocognitive and neurological functioning over time after initiation of ARTs. The etiology of these improvements is likely multifactorial, reflecting reduced central nervous system HIV infection, better general health, and practice effects. This study suggests that treatment with either of the World Health Organization –recommended first-line antiretroviral regimens in resource-limited settings will improve neuropsychological functioning and reduce neurological dysfunction.
Neurotoxic effects of drug and alcohol abuse

Psychological and neuropsychological testing has been used to assess the neurotoxic effects of alcohol and/or drug abuse or dependence. Chronic alcohol abuse can result in cognitive and memory defects which resolve to a varying degree depending on the duration of abstinence and the extent of neuronal loss or atrophy. However, it is inappropriate to perform psychological and neuropsychological testing in a patient to assess the neurotoxic effects of alcohol or drug abuse or dependence during the detoxification period or within the early period of abstinence from the offending drug. The results of psychological and neuropsychological assessment are unreliable when an individual is actively abusing alcohol or drugs and for some period of time after the acute phase of alcohol or drug withdrawal (Van Valen et. al., 2012.)

Learning Disorders

Psychological and neuropsychological testing has been used in the educational context in children with suspicion of a learning disorder leading to changes in school performance, so as to differentiate between mental subnormality, emotional disturbance, and the specific learning disabilities in speech and reading (e.g., dyslexia). Psychological and neuropsychological testing are also used to develop a specialized treatment plan to help the child improve the performance of these cognitive functions leading to a better performance in school, work, and personal relationships. However, psychological and neuropsychological testing for educational reasons is not covered, exclude educational testing. In addition, psychological and neuropsychological testing performed for educational reasons is not considered treatment of disease. This testing is usually provided by school systems under applicable state and federal rules (Stebbins, 2007).

Attention deficit/hyperactivity disorder

Psychological and neuropsychological testing of children for the purpose of diagnosing attention deficit/hyperactivity disorder (ADHD) is not necessary, unless there is strong evidence of a possible neurological disorder or co-morbid behavioral health disorder. There are few medical conditions which present with ADHD-like symptoms and most patients with ADHD have unremarkable medical histories. In general, attention deficit disorders are best diagnosed through a careful history and the use of structured clinical interviews and dimensionally based rating scales. Most psychologists obtain behavior ratings at home from the parents and at school from the teacher. Examples of rating scales commonly used by psychologists are the Achembach Child Behavior Checklist, Connors Rating Scales, and the ADHD Symptoms Rating Scale. Psychological and neuropsychological testing may be used to assess functional competence in relationship to legal matters. However, such use is not considered treatment of disease.

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 medical necessity for the use of neuropsychological testing in the assessment and/or management of chronic fatigue syndrome is not supported in the medical literature.
Migraines

The published literature regarding the clinical utility of neuropsychological testing for patients with headaches and migraines 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). There is insufficient clinical evidence that demonstrates that neuropsychological testing is useful in clinical decision making or will improve management of these conditions.

Concussion

A mild or minor traumatic brain injury (TBI) is a temporary and brief interruption of neurologic function after head trauma, and may involve a loss of consciousness. A concussion is a type of minor TBI usually caused by acceleration-deceleration or rotational injury to a freely mobile head, and is frequently associated with contact sports. Almost all patients with minor TBI will have rapid and complete symptom resolution; with no long-term sequelae. The majority (80–90%) of concussions resolve in a short (7–10 day) period, although the recovery time frame may be longer in children and adolescents (McCrory, et al., 2013). The effects of multiple mild TBIs may be cumulative, especially if there is minimal duration of time between injuries and less biomechanical force results in subsequent mild traumatic brain injury (CDC, 2015). Neuropsychological testing may be medically necessary when the concussion is associated with a change in mental status, there is also a suspicion of an underlying central nervous system condition and standard treatment has failed.

A small percentage of patients may report persistent symptoms (e.g., headache, sensory sensitivity, memory or concentration difficulties, irritability, sleep disturbance, depression) for extended periods after trauma. These symptoms are referred to as postconcussion or postconcussive syndrome (Heegaard and Biros, 2014). The condition is defined in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition as three months’ duration of three (or more) of the following symptoms: fatigue; disordered sleep; headache; vertigo/dizziness; irritability or aggressiveness; anxiety or depression; personality changes; and/or apathy (Halstead, et al., 2010). Patients with persistence of symptoms may need referral for neuropsychological testing.

Testing

The two basic approaches to testing include a fixed or a flexible battery. The fixed battery approach requires that the same tests are administered to every patient in a standardized manner. One example of a fixed battery is the Halstead–Reitan battery (Hill, et al., 2016). An advantage to the fixed battery approach is that the information gathered is comprehensive and systematically assesses multiple domains of cognitive functioning.

Disadvantages the fixed battery approach include its length which may be too long for some patients to tolerate.

In contrast, the flexible battery approach allows neuropsychologists to develop a test battery based on the referral question, patient’s history, and clinical interview (Hill, et al., 2016). In this approach, a brief set of basic tests is initially administered, and additional tests of more specific abilities are used to conduct in-depth follow-up assessments based on each particular patient’s needs.

A complete evaluation generally takes between two and five hours to complete, but can take up to eight hours, depending on the complexity of the issues to be addressed by the evaluation and the patient’s
condition (for example, fatigue, confusion, and motor slowing can extend the time required for an evaluation). Occasionally, it is necessary to complete the evaluation over two or more sessions. In general, the clinician attempts to elicit the patient’s best possible performance under optimal conditions (UNC School of Medicine, 2020).

Psychological and neuropsychological testing performed as part of a research program is also not considered treatment of disease. The types and numbers of neuropsychological tests given for each condition is not standardized. Most psychologists will perform an in-depth interview after the patient has filled out a standardized questionnaire asking questions about history, symptoms and functioning, and based on this evaluation the psychologist will plan the testing regimen.

**Regulatory Status**

The services herein referenced are not universally subject to specific regulation by the Federal Drug Administration or any other referenced Federal entity. However, devices marketed as medical devices used for testing purposes are subject to such regulation.

The following codes are for reference purposes only and do not imply that the service is covered or non-covered. Applicable codes may include but are not limited to:

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>96116</td>
<td>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 face-to-face time with the patient and time interpreting test results and preparing the report</td>
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<tr>
<td>96121</td>
<td>Neurobehavioral status examination (clinical assessment of thinking, reasoning and judgment, [eg, 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; each additional hour (List separately in addition to code for primary procedure)</td>
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<tr>
<td>96130 - 96131</td>
<td>Psychological 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</td>
</tr>
<tr>
<td>96132-96133</td>
<td>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</td>
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<tr>
<td>96136-96137</td>
<td>Psychological or neuropsychological test administration and scoring by physician or other qualified health care professional, two or more tests, any method</td>
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</tbody>
</table>
Psychological or neuropsychological test administration and scoring by technician, two or more tests, any method

Psychological or neuropsychological test administration, with single automated, standardized instrument via electronic platform, with automated result only

Scientific references


Robertson, H. Jiang, J. Kumwenda, K. Supparatpinyo, S. Evans, T. B. Campbell, R. Price, S. Tripathy, N. Kumarasamy, A. La Rosa, B. Santos, M. T. Silva, S. Montano, C. Kanyama, S. Faesen, R. Murphy, C. Hall, C. M. Marra, C. Marcus, B. Berzins, R. Allen, M. Housseinipour, F. Amod, I. Sanne, J. Hakim, A. Walawander, A. Nair, the AIDS Clinical Trials Group, the 5199 study team, Improved Neuropsychological and Neurological Functioning Across Three Antiretroviral Regimens in Diverse Resource-Limited Settings:
AIDS Clinical Trials Group Study A5199, the International Neurological Study, Clinical Infectious Diseases, Volume 55, Issue 6, 15 September 2012, Pages 868–876, https://doi.org/10.1093/cid/cis507


**Policy implementation and updates**

Feb 2017 Original publication

April 2018 Format revision, Limited content change.

April 2019 Format revision, Updated applicable codes.

April 2020 Format revision, clarification of coverage criteria and required documentation. CPT code updates. Background content added.

March 2021  No changes to policy coverage.