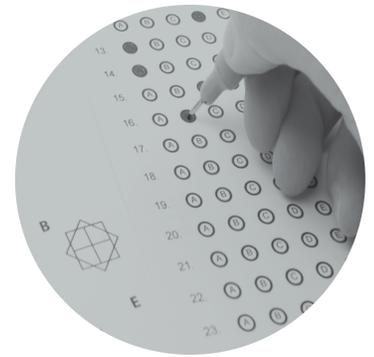


NRS

NEUROPSYCHOLOGY
REHABILITATION
SERVICES

*Rehabilitation for Cognitive,
Emotional and Behavioral
Brain Function*

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NEUROPSYCHOLOGY AND THE NEUROPSYCHOLOGICAL EXAMINATION

The goal of this brochure is to inform and increase awareness of the application of neuropsychological services and the practice of neuropsychology.

Neuropsychology is the profession that treats patients who have suffered some injury to their brain with a corresponding change in thinking abilities and personality. Furthermore, neuropsychology is the relationship between the brain and its functional expression through our daily behaviors.

The neuropsychologist examines the brain by administering a neuropsychological examination (NPE), an assembly of many tests specifically designed to evaluate thinking abilities and behavior (our type of MRI). The purpose of the NPE is to evaluate each patient's brain rather than each patient's complaints.

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About the NPE

The NPE is usually recommended when there are symptoms or complaints involving some change in your thinking or cognition.

NPEs are requested to help your doctors and other professionals understand how the different cognitive systems of your brain are working.

The results of an NPE provide information to patients that relates to real-world, daily functioning. The NPE can be used to examine any age group, starting as young as age 3.

THE CLINICAL UTILITY OF THE NPE IS THREEFOLD

1. Determine if there is objective evidence of impaired cognitive brain functions.
2. Analyze the pattern of the NPE findings and determine if they suggest diffuse, lateralized, or regionalized cerebral dysfunction.
3. Analyze the pattern of cognitive deficits and determine if it is compatible with known brain disorders in a given patient.

SIX USES OF THE NPE

1. Describes disturbances in cognitive functioning in patients with a known or suspected brain disorder quantitatively and qualitatively.
2. Monitors changes in cerebral functioning over time with and without treatment.
3. Helps diagnose and identify clinically relevant syndromes.
4. Describes cognitive processes that affect the patient's independence or return to work.
5. Develops a "blueprint" of the nature of impaired cognitive dysfunction and how the patient will be managed within rehabilitation.
6. Provides a basis with which to counsel patients and families concerning life decisions. (Does the patient appear cognitively capable of living alone? Of being supervised? Of returning to work?)

Outcome studies

- Neuropsychologists are frequently asked to help neurologists determine if a patient's complaints correlate with objective measures of brain functioning. The differential diagnostic question of neurologic versus psychiatric disorders persists, despite advances in neuroimaging.
- Identifying patients who have **epileptic** versus **nonepileptic** seizures can potentially save the health care system several million dollars per year. Neuropsychologists are in a position to assist in this **differential diagnosis** (Martin et al.). Neuropsychological research has demonstrated how the patient's reported symptoms can be compared to their performance on the NPE (Fargo et al.).
- Neuropsychologists can administer **presurgical NPEs** to patients with Parkinson's disease or to patients being considered for a deep brain stimulator to determine their cognitive profile (Pillion et al.).
- Neuropsychologists can assist in **medical decision-making** when neurosurgeons request information about change in neurocognitive functioning after surgery (Dodrill and Ojemann).
- Neuropsychologists can provide documentation for **planning patient treatment** for rehabilitation teams, psychiatrists, and other physicians.
 - For example, Prigatano et al. demonstrated patients who received a holistic neuropsychological rehabilitation program involving counseling, biofeedback, family education, etc. were described as having significantly less frequent psychiatric symptoms than patients who did not receive such treatment.
- The **legal profession** benefits from the use of NPEs in a variety of medicolegal cases. Questions range from whether or not a patient is legally competent to make economic decisions to whether or not the patient, because of a brain injury, can return to previous life activities.



- The NPE results can assist with **practical decisions** regarding patient independence. Is the patient safe to return home after medical treatment? Is the patient safe to operate a car? Has he/she recovered adequately to return to part-time or full-time work following the onset of a brain disorder?
- The NPE is critical in the care and treatment of the **dementia population**. Beginning with **mild cognitive impairment (MCI)**, the examination can differentiate the level and pattern of findings consistent with a variety of dementing conditions. Studies have begun to show that memory rehabilitation techniques are helpful with these patients (Belleville et al.). Complementary studies (Suhr et al.) have shown that patients with Alzheimer's disease can learn progressive muscle relaxation techniques via biofeedback with a decrease in psychiatric and behavioral disturbance.

Clinical objective – evidence of patient value

COST-BENEFIT RATIO

Medicolegal advantages result when a patient's cognitive functioning through the NPE is objectified. For example, a young male patient working for years suffers a traumatic brain injury. Documentation of the extent and nature of his neuropsychological deficits can demonstrate that his capacity to maintain his line of work is now reduced. This information can translate into a large sum of money as a result of the brain injury.

SAVINGS ASSOCIATED WITH DIFFERENTIAL DIAGNOSES

Many individuals in their early 60s complain of memory disorder, and some individuals show mild cognitive impairments associated with early Alzheimer's disease (Bayley et al.). If the NPE reveals the patient suffers from depression, psychiatric treatment may help the individual to regain a productive lifestyle.

On the other hand, if findings are indicative of early dementia of the Alzheimer's type, further medical expenditures may follow. In the long run, the neuropsychological information can help the patient's family plan for the patient's early decline in cognitive and behavioral functioning.

THE COST OF FAILING TO REQUEST AN NPE

For example, a 65-year-old businessman undergoes surgical resection of an **arteriovenous malformation (AVM)** in the left temporal lobe. Neurological recovery is substantial, and his attending neurosurgeon identifies no cognitive disturbances. The patient presses his neurosurgeon to allow him to return to work. The neurosurgeon, pleased with the outcome of the surgery, agrees to do so. Three months later the patient loses more than \$100,000 in poor investments for his company. He is fired and not placed on medical disability. He is referred for an NPE that documents impairment of his cognitive profile that contributes to his errors in judgment. He might well have been spared the loss, the resources, and the emotional trauma if he had undergone the NPE before returning back to work.

THE NPE CAN HELP DETERMINE THE EFFECTIVENESS OF VARIOUS TREATMENTS

For example, is a drug affecting cognitive functioning and is a treatment effective? Moreover, neuropsychological results can help determine the benefit of medical or surgical interventions.

PROVIDE A CONTINUUM OF CARE AND AFFECT HOSPITAL CARE

Studies have documented brief neuropsychological testing in a hospital unit can predict outcomes from inpatient neurorehabilitation (Prigatano and Wong). The **hospital consultation** provides the family with information helping them deal with the intermediate and long-term cognitive and behavioral deficits exhibited by the brain-dysfunctional patient.

PROVIDE CONTINUING EDUCATION

Physicians and other professionals appreciate how various brain disturbances affect cognitive functions. Without this information, physicians may make poor decisions such as returning patients to work prematurely. Such decisions cause considerable pain and suffering for patients and families and have catastrophic economic and personal consequences.

Personal/subjective evidence of patient value

VALIDATION

Many brain-impaired patients experience disturbances in higher cerebral functioning that they feel others do not understand. The NPE results, reviewed with the neuropsychologist, help the patient validate their concerns and worries by identifying the source of their problem. The patient thereafter is pleased in knowing their problems are real instead of imagined.

UNDERSTANDING IMPLICATIONS

The patient and family are made aware of the nature of their cognitive deficits. However, they may not understand the implications. The neuropsychologist can reduce the patient's confusion and frustration over what they are experiencing.

HELP FAMILIES MAKE DIFFICULT DECISIONS

Many family members struggle with placing a loved one in a residential setting, and feel guilty about doing so. The NPE can objectively document a patient's risk of hurting themselves or others. This can provide the family a rationale for making this difficult decision. Family members express relief when the neuropsychologist clarifies the impact of their loved one's condition on daily functioning and provides recommendations for care.

