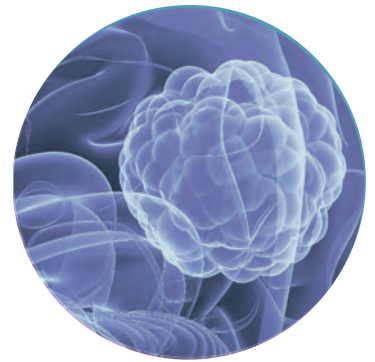


# NRS

NEUROPSYCHOLOGY  
REHABILITATION  
SERVICES

*Rehabilitation for Cognitive,  
Emotional and Behavioral  
Brain Function*

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## NEUROPSYCHOLOGICAL EXAMINATION (NPE) AND TREATMENT OF PATIENTS WITH BRAIN TUMORS

The goal of this brochure is to inform and increase awareness of the application of neuropsychological services in the treatment of Brain Tumors.

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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**R. Sica, S. Greco & Associates**

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# TUMOR

## Overview

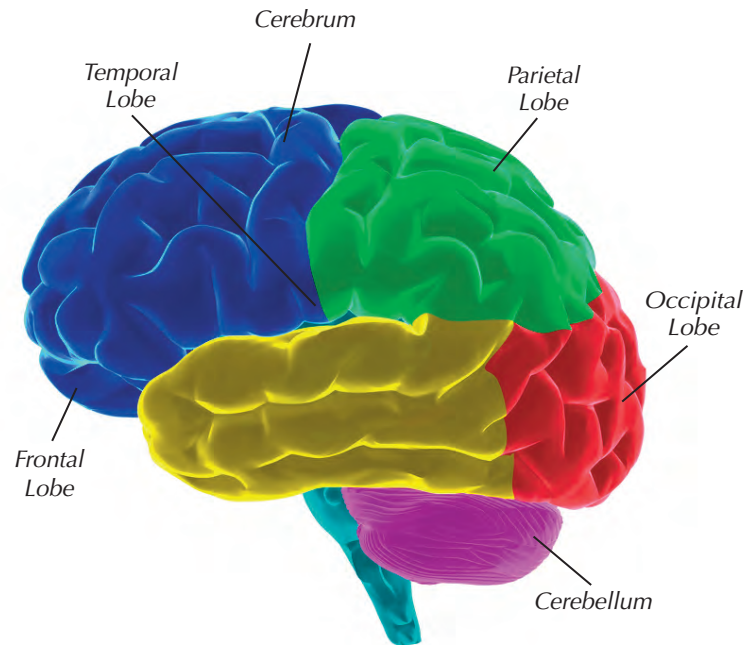
- Until recently neuropsychological services for patients with brain tumors were rarely offered. However, the value of these services is increasingly being recognized, stemming from improved survival of certain brain-tumor patients, with the resulting need for disability evaluations, rehabilitation, and other type of uses of neuropsychological services.
- **Neuropsychological examinations (NPE) and services** are increasingly recognized as valuable in:
  1. Assessing cognitive brain systems
  2. Decision to continue or change antineoplastic treatment
  3. Evaluating intervention efficacy
  4. Assessing whether new treatments offer more favorable risk-benefit ratios
  5. Providing accurate cognitive diagnoses to assist patient management, rehabilitative/palliative interventions, and end-of-life care

## Assessment Issues

Although it is the standard of the medical community and other health care professions to rely on brief mental status assessments, more extensive NPE is also needed. Brain-tumor patients manifest different cognitive impairment secondary to varying locations, progression, and treatment effects (Scheibel et al.).

One study highlighted the potential pitfalls when an NPE was not utilized appropriately. The authors used the Mini-Mental Status Exam (MMSE) to monitor cognitive function in patients with high-grade gliomas undergoing radiation therapy and reported no cognitive decline (Taylor et al.) despite extensive literature contradicting this assertion.

Brief examinations such as the MMSE only detect moderate-to-severe global cognitive impairment and are not sensitive to specific deficits related to brain tumors or brain-tumor therapy.



## Utility for Treatment Decisions

1. Preoperative NPE – establish a cognitive baseline.
2. Postoperative NPE – evaluate for potential cognitive changes.
3. NPEs can monitor the functional cognitive status of brain-tumor patients, assisting the treatment team in clinical decision-making. For instance, neurocognitive tests are independent predictors of survival in brain-tumor patients (Myers et al.) and detect cognitive decline nearly a month in advance of neuroimaging evidence of tumor progression (Myers et al.).

## Utility for Patient Care

Understanding of patient complaints is critical for effective palliation.

1. The NPE can be used to determine suitability of pharmacologic and behavioral interventions.

For instance, methylphenidate has been proven to be very helpful in improving cognitive function and functional status in primary-tumor patients even when the tumor has progressed or worsened due to radiation injury (Myers et al.).

2. Most new anticancer drugs for brain-tumor patients have similar outcomes. Thus, the rationale for choosing one over the other is the impact on neuropsychological functioning; ie, rate of cognitive deterioration. Serial NPEs can determine the trajectory of treatment toxicity.
3. Cognitive remediation has recently been applied to brain-tumor patients. Such interventions can prove to be both beneficial and cost-effective (Sherer et al.).
4. End-of-life issues: Brain-tumor patients and their families face a complex terminal phase that includes cognitive deterioration as well as psychological and spiritual issues. The neuropsychologist is in a unique position to assist with psychological concerns through counseling.



## Objective and Subjective Indicators of Value

**Objective** value of neuropsychological services includes:

1. Reduction of health costs because of improved management of patients with cognitive dysfunction.
2. The NPE functionally expresses the cognitive residuals of the tumor.
3. Identify patients who might be more vulnerable to develop adverse effects from their brain-tumor therapy because of preexisting conditions; for example, elderly patients with brain tumors also suffering from **Alzheimer's or cerebrovascular disease**. Patients may also have preexisting psychological disorders that compromise their ability to comply with their treatment regimen.
4. The NPE contributes to the diagnostic decision process for disability determination.

**Subjective** value for this patient population:

1. Improved quality of life – Increased satisfaction at the workplace and home.
2. End-of-life care issues – At this stage, patients and families are frightened and confused. More than any other time, the patient and family will resort to resources to improve their quality of life and find meaning in the process of dying.
3. Education – Informing patients and caregivers is essential for the best care and can reduce hospital visits and calls. Very early on, the neuropsychologist explains the results of the NPE to the patient. The impact of the patient's impairments in their daily life, in conjunction with the patient's family, can set realistic goals to use at home.

## Summary:

### Neuropsychological Services for Brain Tumor Patients

- **Differential neurocognitive diagnosis and treatment**
  - Tumor versus treatment effects
  - Psychiatric versus neuropsychological conditions
- **Treatment decisions**
  - Determination of cognitive profile
  - Determination of psychological profile
  - Prediction of survival, prognosis
  - Aggressiveness of neurosurgery
  - Change or continuation of current brain tumor therapy
- **Patient care**
  - Rehabilitation
  - Pharmacologic interventions for symptoms
  - Disability determinations
  - End-of-life care

