

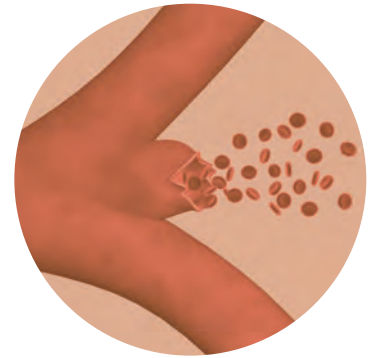
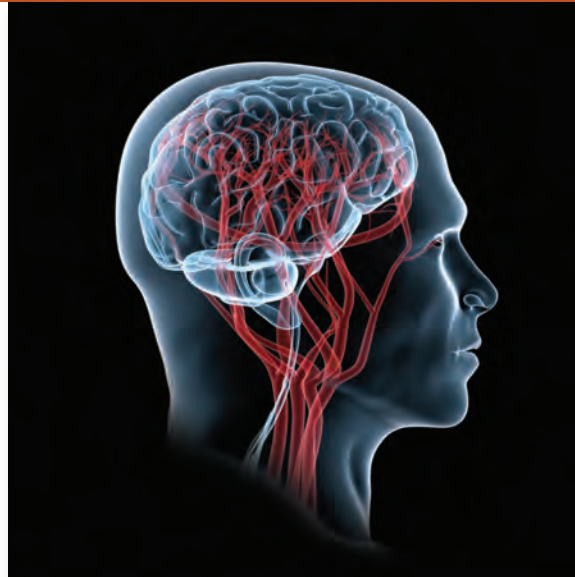
# STROKE

# NRS

NEUROPSYCHOLOGY  
REHABILITATION  
SERVICES

*Rehabilitation for Cognitive,  
Emotional and Behavioral  
Brain Function*

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## VALUE OF THE NEUROPSYCHOLOGIST FOR THE STROKE PATIENT

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

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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## Overview

- A neuropsychologist works with stroke patients in a variety of ways and clinical settings.
- A neuropsychologist can examine a post-stroke patient with a brief cognitive screening exam, or a more in-depth **neuropsychological examination (NPE)**. This is done either in the acute care hospital or in the outpatient office once discharged. The purpose of either examination is to determine what aftercare and level of rehabilitation services are needed.
- The neuropsychologist plays a critical role in the rehabilitation treatment by assessing and diagnosing cognitive (thinking) dysfunction and emotional-behavioral changes that may impede rehabilitation progress and attainment of functional goals.
- Neuropsychological follow-up and reassessment of emotional and cognitive deficits during rehabilitation evaluate each patient's progress, need for special accommodations in their environment, and potential need for additional postdischarge treatment.

## American Heart Association Guidelines

- The rehabilitation process for stroke patients includes 6 areas of focus:
  1. Management of comorbid illness and medical complications
  2. Training for maximum independence
  3. Facilitation of maximum psychosocial coping by the patient and family
  4. Prevention of secondary disability by promoting resumption of home, family, recreational, and vocational activity
  5. Enhancement of quality of life in view of residual disability
  6. Prevention of recurrent stroke and other vascular conditions
- Because the clinical symptoms of a stroke are multifaceted and complex, a team of rehabilitation professionals coordinating treatment is the optimal approach for helping patients maximize functional independence goals.

## Clinical Utility of the NPE in Cerebral Vascular Accident (CVA) Patients

1. Identification of factors associated with prediction of functional outcome.
2. Examination of specific cognitive deficits having significant prognostic value for stroke recovery and functional outcomes.

### Example:

- a. **Broca's aphasia** patients tend to experience minimal or no effect on the level of daily functioning or overall mobility.
  - b. Patients with **Neglect** do demonstrate significant functional impairment.
  - c. Patients who suffer a subarachnoid hemorrhage (**SAH**) and are found to have a ruptured aneurysm of the anterior communicating artery (**ACoA**) present with significant cognitive, behavioral, and personality changes, even without showing obvious neuropsychological deficits (**ACoA syndrome**).
3. Determines a stroke patient's insight into their cognitive deficits. This has important implications for adjustment to post-stroke living.
  4. Traditional screening measures (eg, Mini Mental Status Exam [MMSE]) and functional outcome assessments (eg, Functional Independence Measure [FIM]) underestimate the impact of subtle cognitive deficits on independent living.
  5. Useful for determining whether a stroke patient demonstrates cognitive deficits associated with **dementia**.



## Neuropsychological Examination of Patients Having Undergone Cerebral Revascularization

- The patient, in addition to having suffered an SAH, can also have had a ruptured aneurysm of the ACoA or another artery. Due to advancements in surgical interventions, the survival rate following surgery has increased dramatically.
- ACoA patients present with formidable cognitive, behavioral, and personality changes, even without obvious neurological deficits (Bornstein et al.).
- Treatment for cerebral aneurysms typically involves placing a clip at the neck of the aneurysm to prevent further bleeding. Clipping requires the need for a craniotomy, which itself has complications and risk factors.
- More recently, a coiling procedure has been developed that diminishes the need for craniotomy.

## General Neuropsychological Profile Following ACoA Rupture and Repair

- Patients who suffer a rupture of the ACoA are particularly susceptible to neurobehavioral impairments.
- Cognitive deficits include memory, confabulation, executive dysfunction, and motor impairment; for example, **Alien Hand Syndrome (AHS)**.
- The major role of the neuropsychologist remains documenting the cognitive, behavioral, and emotional strengths and weaknesses after ACoA aneurysm.
- Treatment planning and post-treatment placement are essential.

## Areas of Usefulness of Neuropsychological Services in ACoA Patients

### Value to the Medical Team

- a. Presurgical consultation concerning neuropsychological status.
- b. Monitoring course of acute recovery (eg, abulia, confabulation, amnesia).
- c. Objective monitoring of potential benefits of medication trials (eg, abulia, attention).
- d. Contribute to acute discharge planning (eg, home versus rehabilitation hospital).

### Value to the Rehabilitation Team

- a. Inform team on cognitive/emotional/personality issues (eg, AHS).
- b. Monitoring course of recovery (eg, confabulation, amnesia, personality, abulia).
  - c. Differentiate between “organic” versus “psychiatric” interpretations of behavior.
    - Depression versus diminished initiation.
    - Confabulation versus delusion or psychosis.
- d. Contribute to discharge planning.
  - Return to work.
  - Discharge to home versus assisted living.
  - Need for continued rehabilitation services.
- e. Design and monitor rehabilitation interventions.
  - Confabulation, behavioral treatment plan.
  - Awareness training plan.
  - Cognitive remediation.

### Value to the Family

- a. Inform family regarding expected cognitive/behavioral changes (eg, personality change).
- b. Inform family regarding expected course of recovery.
- c. Provide instructions and support for addressing difficulties at home.



## Objective and Subjective Values of Having Neuropsychological Input as Part of the Standard of Care for CVA Patients

1. The hospital benefits from neuropsychological services through a **continuum of care**.
2. The physician benefits from neuropsychological services through **feedback** regarding the stroke patient's cognitive-behavioral profile.
  - a. For example, the detection of a **progressive dementia** in a CVA patient may have a profound impact on medical care.
  - b. The physician may have the neuropsychologist see their patient and family, resulting in satisfaction with psychological services and reflecting well upon his/her care.
3. The NPE can protect the physician from **lawsuits**. That is, the NPE can clarify what may be unsafe behaviors for a patient, enabling the physician to make appropriate decisions.
4. The patient's quality of life has been enhanced and complications avoided. Patients benefit from the NPE results whereby they can be placed in a **safe environment** or helped to make choices that avoid potentially catastrophic consequences, such as driving or prematurely returning to work.
5. The family benefits from the NPE results by identifying what their family member needs by way of further care. This is crucial when getting third-party payers to reimburse for rehabilitation services as well as when **court-appointed guardianship** is needed.

## Summary: Objective and Subjective Value of Neuropsychological Services in Stroke Treatment

### Hospital

*Objective:* CARF accreditation vs no CARF accreditation

*Subjective:* Patient satisfaction after being seen by a neuropsychologist

### Physician

*Objective:* Knowledge of cognitive status assisting medical decisions

*Subjective:* Patient satisfaction after being seen by a neuropsychologist

### Patient

*Objective:* Fewer accidents

*Subjective:* Reduced confusion or frustration

### Family

*Objective:* Documentation of needs to obtain necessary medical care

*Subjective:* Sense of burden is reduced

### Third-Party Payer

*Objective:* Cost minimization for necessary services

*Subjective:* Insured is happy with their coverage

The value of **neuropsychological services** in predicting functional outcome, recognizing cognitive dysfunction and awareness, and diagnosing comorbid dementia syndromes are important goals in the care of the stroke patient.