

## WHAT IS ELECTRODIAGNOSIS?

### EMG

### NERVE CONDUCTION

### EVOKED POTENTIALS

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NCS and EMG studies can be helpful in evaluating weakness, numbness, pain and symptoms such as fatigue, cramps and abnormal sensation. The two main procedures used to study nerves and muscles are nerve conduction studies (NCS) and the electromyographic (EMG) examination.

These studies, unlike many routine medical tests such as urinalysis or a blood study, are an extension of the doctor's physical examination. They should be performed by a physician who has had special training.

#### **Nerve Conduction Studies**

(Carpal Tunnel Study)

To perform nerve conduction studies, small metal electrodes are taped on the skin and a brief electric stimulus is applied to one portion of a nerve. Nerve stimulation will cause a tingling sensation. The physician can then evaluate the electric response of the nerve or muscle to which the nerve is attached and determine if the nerve impulse is (a) conducted normally, (b) at a slow speed, or (c) not transmitted at all, suggesting damage to the nerve.

#### **EMG Studies**

The time required to complete the study varies, but generally takes approximately 30 to 60 minutes. There are no restrictions relative to activities before or after the test and no permanent aftereffects.

During an EMG, the physician analyzes the electric activity in muscles by inserting a fine needle electrode into selected muscles. Needle insertion may cause temporary discomfort. The needle is not used for injection and no shocks are given. The physician can determine whether the muscle is working normally by seeing the electric activity on a screen and listening over a loudspeaker. The needles are discarded after use to prevent transmission of AIDS, hepatitis and other infections.

#### **Evoked Potentials**

These studies use different stimuli, such as auditory clicks, a changing visual pattern such as a checkerboard, or small electric stimuli applied to specific nerves. The recordings are made over the surface of the head and the spine to evaluate whether the sensory impulses are conducting normally through the nerves, spinal cord, or brain.

#### **Special Precautions**

The patient does not need to do anything special to prepare for this test, except to keep the skin free of any lotions or creams on the day of the examination. Be sure to inform the physician, however, if you are taking blood-thinning medication such as Coumadin, have hemophilia or a cardiac pacemaker. Patients with myasthenia gravis should ask their physician whether or not to take anticholinesterase medications on the day of the test.