# NORAN NEUROLOGY

**What are EMG and NCS?**

Electromyography (EMG) and nerve conduction studies (NCS) are two tests used to help diagnose nerve and muscle disorders.

- EMG measures electrical impulses in the muscles.
- Nerve conduction studies measure the speed and intensity of electrical signals that travel along the nerves, and the time it takes muscles to respond to these signals.

**When are these tests helpful?**

They are often used when a patient has symptoms such as muscle weakness, numbness, spasms, paralysis or pain.

EMG is used to help evaluate or diagnose

- Muscle diseases
- Amyotrophic lateral sclerosis (Lou Gehrig's disease)
- Nerve compression in the neck, back or extremities
- Peripheral polyneuropathies
- Disorders of neuromuscular transmission
- Cervical and lumbar radiculopathies
- Generalized weakness
- Focal weakness

Nerve conduction studies are used to help evaluate or diagnose

- Carpal tunnel syndrome and other mononeuropathies of the extremities
- Focal numbness and weakness
- Peripheral polyneuropathies
- Generalized weakness
- Myasthenia gravis

**Why are these tests helpful?**

Nerves send electrical signals to muscles, cueing them to contract or relax, and muscles produce electrical activity when they move. When injury or disease affects nerves or muscles, the electrical activity changes. Electromyography and nerve conduction studies show those changes and help your physician make a diagnosis and determine treatment options.

**How is EMG conducted?**

In EMG, the health care provider gently inserts a thin needle electrode into each muscle to be studied. You may feel a brief pain as the electrode is inserted, but because of its small size and because nothing is inserted through the electrode, the pain is less than a typical hypodermic injection. Most people tolerate the minor discomfort quite well.

A fine wire connects the electrodes to an electronic instrument that measures electric currents in the muscle. You'll be asked to slowly flex muscles so the electrical activity can be measured.

Usually, the test takes about a half hour and is done on an outpatient basis. You can resume normal activities once the EMG is over.

**How are Nerve Conduction Studies performed?**

In nerve conduction studies, stimulating electrodes are held against your skin. No needles are used. A tiny impulse is sent through your nerves and the responses are recorded.

This current is harmless and lasts 0.1 to 0.2 milliseconds. You may feel a tingling, or your muscles, fingers or toes might twitch.

Usually, the test takes about an hour and is done on an outpatient basis. You can resume normal activities once the nerve conduction study is over.

**Who conducts EMG and Nerve Conduction Studies?**

A board-certified neurologist typically conducts these tests and interprets the results. Some neurologists are board certified in electromyography, indicating advanced training in the field. In some appointments, a qualified EMG technician will conduct the nerve conduction study portion of the testing, while a neurologist will always conduct the EMG.

The specialized neurologist also interprets the results, which requires analysis of the data transmitted to the computer and listening to the electrical impulses during the tests. Results are forwarded to your physician.

**How do I prepare for my test?**

- Eat your normal meals (but it is advised to avoid tobacco or caffeine for a few hours prior to your test).
- Bathe or shower on the day of the test. Wash arms and legs well to remove body oils. Don't use lotion, bath oils or creams on the day of your test.
- Wear comfortable, loose-fitting clothes.
- If you are taking blood-thinning medications or pyridostigmine (Mestinon®), contact our office prior to your exam.
- Bring a list of your current medications the day of your test.
- Tell the health care provider if you:
  - Bruise easily
  - Have hemophilia
  - Have a pacemaker
  - Have a skin infection
- Take over-the-counter pain medication if you desire. They do not affect the test results.

**Contact Us**

Please feel free to call our office at 612.879.1000 if you have questions concerning your upcoming appointment.