

About EMG and NCS

WHAT ARE EMG AND NCS?

These important diagnostic tools can help detect the causes of problems such as muscle weakness, cramping, numbness, paralysis, or pain. They can determine if the problem involves the nerves, muscles, spinal cord, or brain. EMG (electromyography) measures the electrical activity of muscles and NCS (nerve conduction studies) measure the speed and intensity of electrical signals that travel along nerves. Your doctor will use this information to produce a better diagnosis, which is an important step in choosing an effective treatment.

WHAT ARE THE MAJOR USES OF EMG AND NCS?

They can help diagnose:

1. Pinched nerves and inflamed muscles, due to injury or a ruptured or herniated disk
2. Carpal tunnel syndrome, which is pressure on a major nerve causing pain in the wrist or hand
3. Primary muscle disorders, such as muscular dystrophy (when certain muscles waste away)
4. Neuromuscular disorders, such as myasthenia gravis (causing chronic muscle weakness)
5. Nerve disorders, such as amyotrophic lateral sclerosis (a.k.a. Lou Gehrig's disease)

HOW SHOULD I PREPARE FOR THE TESTS?

In general, no special preparation is necessary. You may be asked to bathe or shower to remove body oils and to not to use any body lotions or creams the day of the test. Dress comfortably in loose-fitting clothing to make sure you are not too tense during the tests, which can interfere with results. Tell your physicians about any medications you take, especially aspirin or blood thinners. Also, be sure to tell the doctor if you bruise easily, have hemophilia or diabetes, have a pacemaker, or if you have a skin infection. The doctor will be happy to answer any questions you may have about the tests or any forms.

WHO PERFORMS THE EMG AND NCS?

Neurologists perform these tests with the assistance of a neurodiagnostic technician. The doctor has completed additional training to perform these tests safely and accurately. Neurodiagnostic technicians are also fully trained.

HOW LONG WILL THE TEST TAKE?

Together, the EMG and NCS will usually take 1 hour. If you are testing both arms and legs, the test will take up to 2 hours. You can resume normal activities following these tests. Your muscles may feel tender or sore for a few hours. If so, you can apply an ice pack, and ask your doctor about taking pain medication. Otherwise, there are no lasting side effects.

HOW DO EMG AND NCS WORK?

Nerve and muscle cells produce small amounts of electricity. Nerves send electrical signals to muscles, telling them to contract or relax. If a nerve or muscle is injured or damaged by a disease, the electrical activity changes, and the EMG and NCS equipment detects that change. Electrodes record the electrical activity of a nerve or muscle, a computer displays and analyzes the data, and speakers allow the electrical activity to be heard.

WHAT HAPPENS DURING A NCS TEST?

1. You will lie or sit down in a comfortable and relaxed position. You may be asked to roll up your sleeves or pants cuffs to expose certain areas of your skin.
2. Recording electrodes will be attached to your skin.
3. A specific nerve will be stimulated with a small amount of electricity, and the response will be recorded. You may feel a tingling or a slight shock at first. When there is enough electricity going down the nerve, the shock will feel stronger, and the muscles controlled by that nerve will contract. For example, your thumb will twitch when a nerve is stimulated at the wrist. There is no danger to you since the stimulations are mild and you will be grounded.

WHAT HAPPENS DURING AN EMG TEST?

1. You will lie or sit down in a comfortable and relaxed position. You may be asked to roll up your sleeves or pants cuffs to expose certain areas of your skin.
2. One needle electrode will be gently inserted into muscles. You may feel some dull ache, or pressure as the electrode is inserted.
3. You will be asked to slowly flex the muscle to measure the electrical activity. No electricity will be applied from the machine. Your doctor and the technician will do their best to ensure that as few muscles as possible are tested, while still obtaining the maximum amount of information about your muscle function so that an accurate diagnosis can be made.

WHEN WILL I GET THE RESULTS OF THE TESTS?

The performing neurologist will generate a formal report the day of the test and send to the referral doctor in 1-2 days (the neurologist may also order the test.) You will follow-up with the referral or the test doctor himself to go through the results in detail and help you determine what the best next steps should be.