

# Your Electrodiagnostic Study

## The EMG/NCV

### What is this test?

This is a diagnostic study that is made up of two parts.

*EMG* is the abbreviation for the *electromyography portion of the study*.

*NCV* is the abbreviation for *nerve conduction velocity study*.

### How is the NCV performed?

The nerve conduction velocity study (*NCV*) is typically done at the same time as the electromyography study (*EMG*).

Surface electrodes are placed over the various nerves that need to be tested.

A stimulator is used to give progressively stronger stimulations to the muscle. These are microvolts of stimulation, (not sticking your finger in an electric outlet which I would guess is megavolts).

The impulses are then measured downstream from the stimulation. These impulses are recorded on what appears to be a computer screen and by evaluating the shape, size, and speed of the electrical impulses produced, abnormalities of the nerves can be detected.

### How is the EMG (electromyography) portion of the study performed?

As already discussed, the EMG is frequently performed at the same time as the nerve conduction velocity study.

EMG is a test that is used to record the electrical activity of muscles. Therefore, this test can be used to detect abnormal electrical activity of muscles that can occur in a number of diseases and conditions.

A thin sterile needle electrode is slipped through the skin and into the muscle. This aspect of the test makes static like sound as the muscle is stimulated and the motor unit activity of that muscle is displayed visually on an EMG screen referred to as an oscilloscope. The electrical activity of the muscle gives information regarding the health of the nerve connection to that muscle.

### Why did my physician or healthcare provider order this EMG/NCV?

It was recommended because she is trying to determine if your muscles and nerves are working correctly. This is often performed for evaluation of weakness, pain, or numbness in one or more extremity. These symptoms can be caused by an interruption in the circuitry of the nerve and communication of nerves to various muscles.

Examples of this includes peripheral neuropathy in a diabetic where nerves are damaged by excess sugar in the blood stream causing foot numbness.

Carpal tunnel syndrome is a common problem however the severity of nerve involvement or damage can only be assessed by this study.

Another example of nerve circuit interruption is a lumbar disc herniation pressing on a nerve root in the spine affecting the nerve communication to a muscles in the leg. The result is weakness or sciatica symptoms in that leg.

### Is the EMG/NCV painful?

Let's get this question out of the way!

The most common thing I hear in my practice is "*My best friend came over last night and told me that this was the worst test in the world and I couldn't sleep a wink.*"

My response to this is twofold.

First- it depends on who and how the test is performed

Second-you might want to find a new best friend.

The most accurate nerve conduction study should use the least amount of stimulation to obtain the maximal nerve response. Therefore, our goal is to use the least amount of stimulation possible.

You should be in a relaxed position throughout the entire study. This will help in obtaining a better result at a lower stimulation.

Sensitivity to the needle placement during the EMG portion of the test can be diminished by the use of a freeze spray.

There is usually no bleeding or bruising. Sometimes your muscles will feel sore following the study, as if you have been through a workout.

There can be a slight amount of discomfort but this diagnostic test is usually very well tolerated.

### **Who performs my EMG/NCV study?**

Some physicians do use technicians to perform the NCV or EMG aspect of the study.

I prefer to perform the entire test, both the NCV and EMG, as the outcome of the test is dependent on the experience of the professional performing the study.

### **How do I prepare for the test?**

On the day of the test, take a bath or shower to remove oil from the skin. DO NOT APPLY ANY LOTION, OIL, OR OINTMENT TO THE SKIN.

Take all medicine as you would normally but tell the doctor if you are on blood thinning agents such as Coumadin, plavix, aspirin, or an anti-inflammatory. This can cause some slight bleeding or bruising at the site of the EMG needle. Please inform the doctor or the scheduling nurse if you have a bleeding disorder, hepatitis history, HIV history, or pacemaker.

### **Are there contraindications to this test?**

*IF YOU HAVE AN IMPLANTED DEFIBRILLATOR OR PACEMAKER, WE WILL NOT PERFORM THE NCV ASPECT OF THIS TEST FOR YOUR SAFETY.*

### **How long will the test take?**

Depending on the number of limbs tested, the test will last anywhere from 30 to 60 minutes.

### **Are there any limitations following the study?**

*There are no restrictions to your activities either prior to or following the test.*

### **Is it safe to have this test if I am pregnant?**

*Absolutely. This is the easiest and safest way to assess nerve compression and injury during pregnancy. Certain nerve compression abnormalities such as carpal tunnel syndrome are more common during pregnancy.*

**When will the results be available?**

The physician will discuss the results on your follow up appointment but a preliminary reading can often be given at the end of the test.

*Please note that if you need to cancel or change your appointment, contact our office within 48 hours of your appointment as you will be the only patient scheduled in that 45 – 60 minute time slot.*

*Because such a large amount of time is allotted for this study, a charge of 150 dollars will be billed to you of which you are personally responsible if a cancellation occurs with less than 48 hours notice. Insurance is not responsible for this cancellation fee.*