

Electrodiagnostic Evaluation

An electrodiagnostic evaluation is often requested to help diagnose problems involving the peripheral nervous system and muscles. The information on this handout should help you understand what the test includes and why it was ordered. Remember, this is a nerve function test and not a pain test. This test does not examine the nerves that cause pain very well. A normal study does not mean that you do not have pain. It is merely intended to examine your peripheral nerve and muscle function.

There are two parts to an electrodiagnostic evaluation: the Nerve Conduction Study and Electromyography (EMG).

1. Nerve Conduction Study

A nerve conduction study examines how information is sent that allows you do things such as walk or reach and hold objects. The speed and number of nerve fibers are evaluated in this section of the test. Measurements will be made and marked on your skin. A recording device, made of a small metal disk or sticker, is placed on your fingers or foot. A stimulator will send an electrical impulse to your nerve and the recording device displays an image on the computer screen, which will then be analyzed.

Most patients do not find this portion of the test uncomfortable. The activation of the stimulator has been described as feeling like “static electricity” – similar to when a person rubs their feet on carpet and then touches another person or a doorknob. If pain is experienced, it will last only a very short time – less than a second.

2. Electromyography (EMG)

A small pin electrode is placed into your muscle and the examiner will listen to sound and look at waveforms on a screen that are produced by the electrical activity produced by your muscle both at rest and when the nerve is "talking" to the muscle (during muscle contraction).

Most patients do not find this portion of the test painful, but it may be slightly uncomfortable. In most cases, the pin placement into your muscle will not cause bleeding. However, just as immunizations or a medication shot can cause bleeding, this can easily be controlled with pressure from the examiner's hand and a cotton pad.

To determine if a muscle can contract normally, the examiner may ask you to move a body part. For example, if the examiner is focusing on your upper leg muscle (quadriceps), you will be asked to slightly straighten your leg. While the pin is in your muscle, you will hear a recording machine “pop” and “snap” – much like popcorn in a microwave. This is a muscle fiber “firing” to move your leg. You will then be asked to straighten your leg very hard so that more muscle fibers can be examined at one time. You may need to have up to 10 muscles examined for proper diagnostic information to be collected.

If, for any reason, you feel that you cannot continue with the study, do not hesitate to tell the examiner to stop. The information provided will help determine a diagnosis and guide your treatment. The examiner may ask if you can tolerate further testing. If you cannot, this is understood and you will not be forced to continue.

Hopefully, the above information will help decrease any anxiety or concerns you may have about the testing and help you understand how it is performed, so that you can complete the entire study.