Electrodiagnostic Tests:
Nerve Conduction Studies (NCV) and Electromyography (EMG)

Why is an electrodiagnostic study ordered?

Your doctor may order an electrodiagnostic study when additional information about the nervous system is needed. Electrodiagnostic studies allow your physician to measure nerve activity and can help pin-point potential damage sites. Unlike X-ray or MRI which take a picture of your bones and joints, electrodiagnostic studies provide useful information about how well your nerves and muscles are functioning. Using electrodiagnostic studies, your physician can identify the presence of and severity of conditions like carpal tunnel syndrome or a pinched nerve around the spine (called radiculopathy). An electrodiagnostic study consists of two parts: the nerve conduction study (NCS) and electromyography (EMG).

What is a nerve conduction study (NCV)?

The nerve conduction study measures how fast nerve impulses travel within your body. Nerve impulse slowing or blockage may indicate nerve injury. Your physician will place electrodes on your arm or leg. The nerve will then be stimulated using a small handheld electrical stimulator. You will feel a brief electrical sensation along the course of the nerve. Your hand or foot may twitch with each stimulation as the nerve will fire, activating the muscle to which it's attached. Most patients have good tolerance of these sensations. The nerve responses are recorded by computer and analyzed by your physician.

What is an electromyography (EMG)?

During the needle examination portion of the test, your physician will use a very small needle electrode (much smaller than a standard needle for drawing blood). A new electrode is used for each patient, and it is thrown away after each test. The electrode will be inserted into a series of muscles in your arm or leg, as well as some muscles in your neck or back. You will be asked to contract the muscle for a few seconds. Your physician will look at and listen to the electrical signals that travel to the EMG machine from your muscle. Although this portion of the examination can sometimes be a little uncomfortable, the discomfort is brief and passes quickly.

How long will these tests take?

The tests usually take 30 to 60 minutes. You may do any of your normal activities like eating, driving and exercising, before and after the tests. You may take your regularly scheduled medications, including pain medication prior to the test. If you are on blood thinners such as Coumadin or Warfarin, your doctor may sometimes check to make sure your levels (INR) are not too high prior to performing the test. There are no lasting side effects.

When will I know the test results?

Your doctor will discuss your results with you immediately after completion of the test. He will also send them to your referring doctor. The doctor who sent you for your electrodiagnostic study will then discuss the next step in your care.