

Your doctor has just ordered a test called an EMG. EMG stands for Electromyogram which loosely translated means electrical testing of muscles, but in fact has come to mean electrical testing of nerves and muscles. The EMG is performed by a specialist, the Electromyographer, who is a Physiatrist, a medical doctor trained in Physical Medicine and Rehabilitation. It is an in-office procedure and does not require hospitalization. On average, an EMG takes anywhere between 30 minutes and 2 hours, depending on how extensive a testing your doctor orders for you. It can be done at any time during the day and, with few exceptions, does not require any special preparation.

Sometimes EMGs are thought to be a treatment of some sort, or a type of acupuncture. This is not true; an EMG is only a test, much like an EKG or an x-ray.

### **What are some problems for which EMGs are ordered?**

EMGs are usually ordered when patients are having problems with their muscles or nerves. They test the nerves and muscles of the body's extremities, looking for a problem in either one of these areas. An EMG may be ordered to see if you have a pinched nerve in the back or the neck. If you have tingling or numbness in your arms or legs, an EMG may show if you have a nerve entrapment somewhere or a nerve injury. Weakness of the muscles or "fatigue" (tiredness) may be indicative of nerve or muscle disease and require an EMG. There are many other medical problems that might suggest the need for an EMG. If you have any doubts as to why you need this test, ask your doctor.

### **What happens during an EMG?**

During this test, you will be lying on an examination table, next to an EMG machine (which looks like a desktop or laptop computer). The test consists of two parts, though at times one may be done without the other. The first part is called Nerve Conduction Studies. In this part, some brief electrical shocks are delivered to your arm or leg in an effort to determine how fast or slowly your nerves are conducting the electrical current and therefore in what state of health or disease they may be. You see, a nerve works something like an electrical wire. If you want to see if the wire is functioning properly, the easiest thing to do is run electricity through it. If there are any problems along its length, you will know it by a failure of the current to go through. To do this, the doctor will attach small recording electrodes to the surface of one part of your limb, and will touch your skin at another point with a pair of electrodes delivering the shock. When this happens, you will feel a tingling sensation that may or may not be painful. Between the brief shocks you will not feel pain. As there are several nerves in each extremity which need to be tested, the procedure is repeated three or four times or more per extremity studied. The amount of current delivered is always kept at a safe level. Patients wearing pacemakers or other electrical devices need not worry since this current will rarely interfere with such devices. During the nerve conduction study, the doctor performing the study will occasionally be pausing to make calculations and measurements.

The second part of the test is called Needle Examination and as the name implies, involves some needle sticking. The needles used are thin, fine and about one and a quarter inches long. This part tests the muscle to see if there has been any damage to it as a result of the nerve problem or if the disease involves the muscle itself rather than the nerve. Usually five to six muscles are sampled in one extremity, but occasionally, if you have problems in more than one area, additional muscles may need to be studied. The needle is usually inserted in the relaxed muscle and moved inside gently in order to record the muscle activity. When this is done, you will be able to hear the sound of the muscle activity amplified by the EMG machine; it will sound something like radio static. The painful part of this section is when the needle is first inserted through the skin since all of the pain receptors are located in this area. Once inside the muscle, the sensation is usually perceived as discomfort or pressure rather than pain. During the needle exam, no electrical shocks are delivered. Also, since the needle probe is used here only as a recording device, no injections are given through the needle into the muscle. On the average, a muscle can be sampled in one to three minutes though this may vary with the type of problem being investigated.

### **How long does an EMG take?**

The nerve conduction part of the test usually takes longer than the needle exam because one needs to make calculations and measurements during it. On average, if one extremity is studied, the nerve conduction takes anywhere between 15 and 30 minutes. The needle exam for one extremity usually takes 15 to 20 minutes. You can count on being in the examination room for about one hour if only one extremity is requested; longer if more extremities need to be tested.

### **What kind of preparations are necessary for an EMG?**

Few preparations are needed on the day you have an EMG. You do not need to fast, or eat any particular kinds of food before the test. You can drive yourself to and from the test, so you do not need to bring a friend or a relative with you, any more than you would say if you went to the dentist. You can count on resuming your regular activity after the test is completed. As for clothing, it is not as much what you wear as it is what you don't wear. Since in a great majority of cases the low back and buttocks area may need to be studied or in cases of neck problems, the back of the neck and shoulder areas studied, it is best not to wear clothes which will interfere with access to these areas.

With few exceptions, you may continue taking medication prescribed by your physician as ordered without this interfering with the EMG. If you are taking a blood thinner, you should notify the physician performing the test. If you have any doubts about other medications you are taking, it is best to check with the physician to be on the safe side.

If you have a cardiac pacemaker, automatic defibrillator, spinal cord stimulator or other electronic device, the EMG test will not interfere with the electronic device; however, you should notify the physician performing the test that you have such a device.

### **How soon will I find out the results?**

Though the physician performing the test has a general idea of what the findings are during the test, the full results are only arrived at after more calculations and measurements are performed after the end of the test. The results are therefore usually not ready until later that day or even the next in complicated cases. They are usually not released directly to

the patient. Instead they will be conveyed to the referring physician since he or she has to assess the results in light of the patient's other findings.

#### **How much will an EMG cost?**

As a rule, the more areas you need studied, the more the test will cost. However costs may vary from one physician to another and is different in different states. It is always best to inquire about cost with your physician.

Most insurance policies cover EMGs, though frequently the coverage is not 100 percent and the primary care or insurance physician will have to approve it before it can be ordered. It is best to have your doctor's office find out what kind of coverage you have for an EMG.