

### **What is an EMG?**

Electromyography (EMG) is a diagnostic procedure to assess the health of muscles and the nerves that control them (motor neurons). Motor neurons transmit electrical signals that cause muscles to contract.

EMG has two parts; Nerve Conduction Study and Needle EMG. An EMG uses tiny devices called electrodes to transmit or detect electrical signals.

During a needle EMG, a needle electrode inserted directly into a muscle records the electrical activity in that muscle.

A nerve conduction study, another part of an EMG, uses electrodes taped to the skin to measure the speed and strength of signals traveling between two or more points. EMG results can reveal nerve dysfunction, muscle dysfunction or problems with nerve-to-muscle signal transmission.

### **Why is it done?**

Your doctor may order an EMG if you have signs or symptoms that may indicate a nerve or muscle disorder. Such symptoms may include:

- Tingling
- Numbness
- Muscle weakness
- Muscle pain or cramping
- Certain types of limb pain

EMG results are often necessary to help diagnose or rule out many conditions such as:

- Disorders of nerves outside the spinal cord (peripheral nerves), such as carpal tunnel syndrome or peripheral neuropathies
- Muscle disorders, such as muscular dystrophy or polymyositis
- Diseases affecting the connection between the nerve and the muscle, such as myasthenia gravis
- Disorders that affect the motor neurons in the brain or spinal cord, such as amyotrophic lateral sclerosis or polio
- Disorders that affect the nerve root, such as a herniated disk in the spine

### **What are the risks?**

EMG is a minimal-risk procedure, and complications are extremely rare. In some cases, there is a small risk of bleeding, and/or infection, even less likely nerve injury where a needle electrode is inserted.

### **How to prepare**

Precautions:

- If you are taking blood-thinning medications such as Warfarin, Xarelto, Pradexa (or similar medications) ask your primary care provider or the prescribing physician if you can hold it for 48-72 hours prior to the testing. If not possible to do that, simply let the neurologist know at the beginning of the testing. This way, adjustments can be made in the beginning of the procedure to minimize the risk of bruising or bleeding.
- Other than blood thinners you do not need to stop any prescription or over-the-counter medications before the exam

Bathing:

- Take a shower or bath shortly before your exam to remove oils from your skin. Don't apply lotions or creams before the exam. You can continue to use perfumes and deodorants.

**Planning**

When you schedule your EMG, you may need to:

- Arrive at least 15 minutes before the scheduled time in the waiting room area and inform the reception desk of your arrival.
- You can bring a friend or relative to the waiting area, but they **cannot** accompany you into the examination room.

**During your EMG:**

You'll likely be asked to change into a hospital gown for the procedure and lie down on an examination table. The following can help you understand what will happen during the exam and procedure:

- **Electrodes.** The neurologist places surface electrodes at various locations on your skin depending on where you're experiencing symptoms. Then the neurologist may insert needle electrodes at different sites depending on your symptoms.
- **Sensations.** The electrodes will at times transmit a tiny electrical current that you may feel as a twinge or spasm. The needle electrode may cause discomfort or pain that usually ends shortly after the needle is removed. If you're concerned about discomfort or pain, you may want to talk to the neurologist about taking a short break during the exam.
- **Instructions.** During the needle EMG, the neurologist will assess whether there is any spontaneous electrical activity when the muscle is at rest — activity that isn't present in healthy muscle tissue — and the degree of activity when you slightly contract the muscle.

You'll be given instructions on resting and contracting a muscle at appropriate times. Depending on what muscles and nerves the neurologist is examining, you may be asked to change positions during the exam.

**After your EMG:**

- You may experience some temporary, minor bruising where the needle electrode was inserted into your muscle. This bruising should fade within a few days. If it persists, contact your primary care doctor.
- You can use warm or cold compress or simple over-the-counter medications such as Ibuprofen or Tylenol for any potential aches and pains after the procedure.

**Results**

The neurologist will interpret the results of your exam and prepare a report within a week or two. Your primary care doctor, or the doctor who ordered the EMG, will discuss the report with you at a follow-up appointment.