



Tests and Procedures

Electromyography (EMG)

Electromyography (EMG) is a diagnostic procedure to assess the health of muscles and the nerve cells that control them (motor neurons).

Motor neurons transmit electrical signals that cause muscles to contract. An EMG translates these signals into graphs, sounds or numerical values that a specialist interprets.

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 (surface electrodes) 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 it's 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 a number of conditions such as:

- Muscle disorders, such as muscular dystrophy or polymyositis
- Diseases affecting the connection between the nerve and the muscle, such as myasthenia gravis
- Disorders of nerves outside the spinal cord (peripheral nerves), such as carpal tunnel syndrome or peripheral neuropathies
- 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

Risks

EMG is a low-risk procedure, and complications are rare. There's a small risk of bleeding, infection and nerve injury where a needle electrode is inserted.

When muscles along the chest wall are examined with a needle electrode, there's a very small risk that it could cause air to leak into the area between the lungs and chest wall, causing a lung to collapse (pneumothorax).

How you prepare

Precautions

The specialist conducting the EMG will need to know if you have certain medical conditions. Tell the neurologist and other EMG lab personnel if you:

- Have a pacemaker or any other electrical medical device
- Take blood-thinning medications
- Have hemophilia, a blood-clotting disorder that causes prolonged bleeding

Questions to ask

When you schedule your EMG, you may want to ask the following questions:

- What time do I need to arrive?
- Where is the EMG lab, and what's the best way to find it in the hospital or clinic?

- Do I need to stop taking any prescription or over-the-counter medications before the exam?
- Can a friend or relative be with me during the exam?

Bathing

Take a shower or bath shortly before your exam in order to remove oils from your skin. Don't apply lotions or creams before the exam.