



NATIONWIDE CHILDREN'S

When your child needs a hospital, everything matters.™

Helping Hand™

Health Education for Patients and Families

EMG (Electromyogram) and NCS (Nerve Conduction Study) - Neurology

An **EMG**, or **electromyogram** (e-LECK-tro-MY-oh-gram), is a test that is done to show the electrical activity of the muscles.

Electrical activity is normal and necessary for muscle movement. This test shows any change in that electrical activity.

The **NCS**, or **nerve conduction** (NERV kon-duc-shun) **study** exam, tests the health of the nerves outside the brain and spinal cord.

Why the test is done

Your child's doctor may order an EMG and NCS if they have signs or symptoms that may show a nerve or muscle disorder. Such symptoms may include:

- tingling
- numbness
- muscle weakness
- muscle pain or cramping
- certain types of limb pain

For Outpatient Use Only

Child's name: _____

Appointment:

Date _____ **Time** _____

☐ Your child **will not be sedated.**

Please bring your child to the registration desk at the main lobby of the hospital. You will get a pass and directions to the EMG lab on H10A. You will be directed to the elevators that will take you to the EMG lab.

Once you leave the elevator, turn left at the large turtle and swipe your pass to enter through the glass doors.

Register your child at the EMG registration area on the right side of the hallway behind the glass windows. Please come 20 minutes before your appointment to allow time to register.

☐ Your child **will be sedated.**

You will get a phone call from a nurse in the procedure center before the exam day. The nurse will give you directions about when and where to arrive and when your child is to stop eating and drinking.

You may park in the underground garage at 630 Children's Dr.

Before the test

The neurologist doing the EMG will need to know if your child has certain medical conditions. Tell the neurologist and other EMG lab staff if your child:

- has a pacemaker, any other electrical medical device or a central catheter (central line)
- takes blood-thinning medicines
- has hemophilia (a blood-clotting disorder that causes prolonged bleeding)

For non-sedated studies, parents may stay with their child during the test if they can help the child relax. In some cases, it may be better for parents to wait in the waiting room. It is best if other children do not come with you. Please turn off all cell phones before going into the EMG lab.

Risks of the test

- An EMG is a low-risk procedure. Complications are rare.
 - There is 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 is a small risk that it could cause air to leak into the area between the lungs and chest wall, causing a lung to collapse (pneumothorax).
 - After the test, your child may have some temporary, minor bruising where the needle electrode was inserted into the muscle. This bruising should fade within several days. If it persists, contact your child's primary care doctor.
- NCS tests are non-invasive and there is no risk of side effects unless your child has an implanted medical device. Nothing is put into the skin, so there is no chance of infection. The voltage of electrical pulses is not high enough to cause an injury. If your child has a pacemaker, cardiac defibrillator or other implanted medical device please tell the Neurology Department at (614) 722-4625.

How to prepare for the test

- If your child is old enough, explain to them how the test is done (see page 3).
- Give your child their usual prescription medicines. Give medicine with a small sip of plain water.
- If your child uses a medicine patch, remove the patch before the test. Put the sticky sides together, and flush it down a toilet. After the test replace your child's patch with a new one.
- Be sure to tell the doctor if your child has any allergies. Bring a list of all the medicines your child is taking.

Try to keep your child awake before the test so that they will be sleepy. If the child is an infant, please bring formula, a clear liquid drink and a pacifier if your child uses one. Children may bring favorite blankets or toys. Older children may bring a tablet or smart phone with headphones or earbuds.

Have your child wear or bring loose-fitting shorts and a short-sleeved top. Children are more relaxed in their own clothes. Your child's skin should be clean and free of lotions and creams.

How the test is done

- Your child will lie on a table. Small stickers, called electrodes, are placed on your child's legs and arms. Wires to the EMG machine (Picture 1) connect these electrodes.
- There are 2 parts to the test: the nerve conduction study (NCS) test and the muscle or EMG test. The doctor will do the NCS first. Most children do not mind the tingling feeling of the small electric stimulation during these tests.
- To check the electrical activity in the muscle, the doctor inserts a very thin, coated wire into the muscle. The wire is like an antenna. It lets the doctor see and hear the electrical activity. You and your child will also see and hear the response.
- Some children say this test hurts and others say they do not feel the wire at all. Any discomfort should only last a few minutes.
- The length of time the test takes is different for each child. Usually the test takes between 30 to 90 minutes to complete.



Picture 1 Children may wear their own clothes during the test.

After the test

- Your child may return to normal activity.
- The test results will be sent to the doctor who sent your child for the test. The health care provider who ordered the test will explain the results to you.
- If you have any questions or your child cannot keep the appointment, please call the Nationwide Children's Hospital Neurology Department at (614) 722-4625.