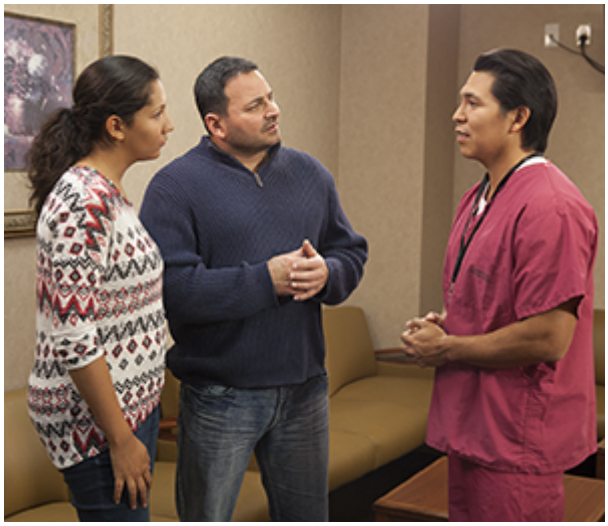
Diagnosing Nervous System Disorders in Children: Possible Tests



The information below describes possible tests used to diagnose and gather information about nervous system disorders in children. Your child's healthcare provider will talk with you about which tests they recommend for your child and why.

Angiography

This test checks the health of the blood vessels (arteries or veins) going to and inside the brain. During the exam, a thin plastic tube (catheter) is placed in a blood vessel. Fluid called contrast dye is used to make the blood vessels show up clearly on X-rays. Specialized angiograms can also be done in combination with CT or MRI (see below). The amount of time needed for these tests can vary. Talk with your child's healthcare provider beforehand so that you know how long the test will take. Your child will need to lie still for this test. Your child may need medicine to relax (sedation) during the test. Or your child may need medicine to go to sleep (general anesthesia) during the exam.

CT scan

This test combines X-rays and computer technology to form detailed pictures of the brain. Radiation is used during the test. Your child will need to lie still during this exam. But a CT scan is generally quick. Many children are able to complete the exam without much help. Sedation or anesthesia may be needed.

Electroencephalogram (EEG)

This test records the brain's electrical activity. During the test, round discs with wires (electrodes) are placed on the scalp with adhesive paste. The electrodes send electrical signals that record electrical brain activity. Sometimes this test is done while your child is asleep. Sometimes it is done while they are awake. In some cases, it is done while your child is being watched on a video. This helps to coordinate your child's brain wave activity with their physical activity. You may be asked to keep your child awake for a longer time before the test.

Electromyography

Electromyography (EMG) measures muscle response or electrical activity in response to a nerve's stimulation of the muscle. During the test, small needle electrodes are placed in certain muscles. As your child rests and tightens these muscles, the electrical activity is recorded. Your child will need to work with the technician giving the test. Your child must be able to follow simple directions. This test is often done with a nerve conduction study (see below).

Somatosensory Evoked Potentials (SSEP)

These tests check how fast and well the body’s nerves respond to certain types of sensory stimulation. These can include flashing lights, loud sounds, or electrical signals sent to the arms and legs. During the test, electrodes are placed on the skin. The electrical activity is then recorded.

MRI

This test uses strong magnets, radio waves, and computer technology to form detailed pictures of the brain. No radiation is used during the test. Because of the magnets, you must tell your child's healthcare provider if your child has any metal in their body. Metal may affect the quality of the study. Certain metals, including some braces, may not be OK to use in an MRI machine. Check with the healthcare provider before the test date if your child has any reasons not to have an MRI. MRI machines are also very noisy. Some young children may have trouble lying still for this exam because of the noise. They may also have trouble lying still for the whole exam. This can often be longer than 20 minutes. Talk with the healthcare provider if you think your child will need sedation for this exam.

Nerve conduction tests

This test checks the nerve function in the arms and legs. During the test, electrodes are placed on the skin along the pathways of the nerves they are testing. An electrical current is then used to stimulate these nerves. The electrical activity is recorded by measuring how fast the electrical signal travels down the nerve.

PET scan

This test uses computer technology to take a picture of brain activity rather than brain structure. An IV (intravenous) line is placed in your child's arm before the test. During the test, a sugar (glucose) tracer is injected into the bloodstream. The tracer helps highlight areas of high and low brain activity in the picture. PET scans are sometimes done in combination with a CT scan (PET/CT scan).

Spinal tap (lumbar puncture)

This test removes and checks a sample of cerebrospinal fluid (CSF). This is done to check the health of the brain, meninges, and spinal cord. During the test, the low back is numbed. A needle is then inserted into the spinal canal and a CSF sample is taken and studied. This test takes only a few minutes if your child stays completely still without moving, which is necessary.

Doppler

This test uses high-frequency sound waves to show blood flow through the blood vessels in the brain. There is no radiation used during this test. Your child will need to be still. But a little movement is OK during this exam.

Ultrasound

This test uses sound waves to form a picture of the brain. There is no radiation used during this test. This test is only effective in imaging the brain in infants when the soft spot in the skull (fontanelle) is still open. Once this closes, at a few months of age, ultrasound is not an effective way to image the brain. That's because sound waves can't go through the skull.

Helping your child get ready

Many hospitals have people trained to help children cope with their medical care or hospital experience. These people are often called child life specialists. Check with your child’s healthcare provider if child life programs or other similar services are available for your child. There are also things you can do to help your child get ready for a test or procedure. How best to do this depends on your child’s needs. Start with the tips below:

- Use short and simple words to describe the test to your child. Tell them why it’s being done. Younger children tend to have a short attention span. So do this shortly before the test. Older children can be given more time to understand the test in advance.

- Tell your child what to expect in the hospital during the test. For instance, you can talk about who will be giving the test. Or what the hospital room will look like.

- Make sure your child understands which body parts will be involved in the test.

- As best you can, describe how the test will feel. For instance, an electrode may be placed on the skin. The electrode is round and may feel sticky.

- Let your child ask questions. Answer these questions truthfully. Your child may feel nervous or afraid. They may even cry. Let your child know that you’ll be nearby during the test.

- Use play when telling your child about the test, if appropriate. With younger children, this can mean role-playing with a child’s favorite toy or object. With older children, it may help to read books or show pictures of what happens during the test.

- Most of these tests require children to stay still without moving. Some children can't do this. If you are concerned that your child won't be able to lie still for the required time, talk with the healthcare provider. Specialized pediatric centers often provide pediatric sedation services. These can help your child stay calm and not move during these tests.