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## Epilepsy in children

Epilepsy is a brain disorder in which a person has repeated seizures over time.

A seizure is a sudden change in the electrical and chemical activity in the brain. A single seizure that does not happen again is not epilepsy.

## Causes

Epilepsy may be due to a medical condition or injury that affects the brain. Or the cause may be unknown.

Common causes of epilepsy include:

- Traumatic brain injury
- Damage or scarring after infections of the brain
- Birth defects that involve the brain
- Brain injury that occurs during or near birth
- Metabolic disorders present at birth (such as phenylketonuria)
- Benign or malignant brain tumor, often very small
- Abnormal blood vessels in the brain
- Stroke
- Hereditary conditions (run in families)
- Other illnesses that damage or destroy brain tissue

Epileptic seizures usually start between ages 5 and 20. But they can happen at any age. There may be a family history of seizures or epilepsy.

A febrile seizure is a convulsion in a child triggered by a fever. Most of the time, a febrile seizure is not a sign that the child has epilepsy.

## Symptoms

Symptoms vary from child to child. Some children may simply stare. Others may shake violently and lose alertness. The movements or symptoms of a seizure may depend on the part of the brain that is affected.

Your child's health care provider can tell you more about the specific type of seizure your child may have:

- Absence (petit mal) seizure: Staring spells
- Generalized tonic-clonic (grand mal) seizure: Involves the entire body, including aura (specific warning symptoms), rigid muscles, and loss of alertness
- Partial (focal) seizure: Can involve any of the symptoms described above, depending on where in the brain the seizure starts

Some children can have more than one type of seizure. Most of the time, the seizure is similar to the one before it, although that may change over time. Some children have a strange sensation before a seizure. Sensations may be tingling, smelling an odor that is not actually there, feeling fear or anxiety for no reason or having a sense of déjà vu (feeling that something has happened before). This is called an aura.

## Exams and Tests

The provider will:

- Ask about your child's medical and family history in detail
- Ask about the seizure episode
- Do a physical exam of your child, including a detailed look at the brain and nervous system

Your child's provider may order an electroencephalogram (EEG) to check the electrical activity in the brain. This test often shows any abnormal electrical activity in the brain. In some cases, the test shows the area in the brain where the seizures start. The brain may appear normal after a seizure or between seizures.

To diagnose epilepsy or plan for epilepsy surgery, your child may need to:

- Wear an EEG recorder for few days during day-to-day activities
- Stay in the hospital where brain activity can be watched on video cameras (video EEG)

Your child's provider also may order other tests, including:

- Blood chemistry
- Blood sugar
- Complete blood count (CBC)
- Kidney function tests
- Liver function tests
- Lumbar puncture (spinal tap)
- Tests for infectious or metabolic diseases

Head CT or MRI scan are often done to find the cause and location of the problem in the brain. Much less often, PET scan of the brain is needed to help plan surgery.

## Treatment

Treatment for epilepsy includes:

- Medicines
- Lifestyle changes
- Surgery

If your child's epilepsy is due to a tumor, abnormal blood vessels, or bleeding in the brain, surgery may be needed.

Medicines to prevent seizures are called antiseizure medicines. They are also known as anticonvulsants or antiepileptic medicines. These may reduce the number of future seizures.

- These medicines are taken by mouth, but some can be given by feeding tube, or intravenously (IV). The type of medicine prescribed depends on the type of seizure your child has.
- The dosage may need to be changed from time to time. Your provider may order regular blood tests to check for side effects.
- Always make sure your child takes the medicine on time and as directed. Missing a dose can cause your child to have a seizure. Do not stop or change medicines on your own. Talk to your child's provider first.

Other medicines are used to stop a seizure that doesn't stop on its own. These can be given under the tongue or by an injection into the muscle. They are called rescue medicines.

Many antiseizure medicines may affect your child's bone health. Talk to your child's provider about whether your child needs vitamins and other supplements.

Epilepsy that is not well controlled after trying a number of antiseizure medicines is called medically refractory epilepsy. In this case, your child's provider may recommend surgery to:

- Remove the abnormal brain cells causing the seizures.
- Place a vagal nerve stimulator (VNS). This device is similar to a heart pacemaker. It can help reduce the number of seizures.

Some children are placed on a special diet to help prevent seizures. The most popular one is the ketogenic diet. A diet low in carbohydrates, such as the Atkins diet, also may be helpful. Be sure to discuss these options with your child's provider before trying them.

Epilepsy is often a lifelong or chronic illness. Important management issues include:

- Taking medicines
- Staying safe, such as never swimming alone, fall-proofing your home and avoiding activities that could lead to a fall
- Managing stress and sleep
- Avoiding alcohol and medicine or illegal drug abuse
- Keeping up in school
- Managing other illnesses

Managing these lifestyle or medical issues at home can be a challenge. Be sure to talk with your child's provider if you have concerns.

## **Support Groups**

The stress of being a caretaker of a child with epilepsy can often be helped by joining a support group. In these groups, members share common experiences and problems.

## **Outlook (Prognosis)**

Most children with epilepsy live a normal life. Certain types of childhood epilepsy go away or improve with age, usually in the late teens or 20s. If your child does not have seizures for a few years, your provider may suggest stopping their medicines.

For many children, epilepsy is a lifelong condition. In these cases, the medicines need to be continued.

Children who have developmental disorders in addition to epilepsy may face challenges throughout their life.

Knowing more about the condition will help you take better care of your child's epilepsy.

## **Possible Complications**

Complications may include:

- Difficulty learning
- Breathing in food or saliva into the lungs during a seizure, which can cause aspiration pneumonia
- Irregular heartbeat
- Injury from falls, bumps, or self-caused bites during a seizure
- Permanent brain damage (stroke or other damage)
- Side effects of medicines

## **When to Contact a Medical Professional**

Call 911 or the local emergency number if:

- This is the first time your child has a seizure
- A seizure occurs in a child who is not wearing a medical ID bracelet (which has instructions explaining what to do)

If your child has had seizures before, call 911 or the local emergency number for any of these emergency situations:

- The seizure is longer than the child normally has or the child has an unusual number of seizures
- The child has repeated seizures over a few minutes
- The child has repeated seizures in which consciousness or normal behavior is not regained between them (status epilepticus)
- The child gets injured during the seizure
- The child has difficulty breathing

Contact your child's provider if your child has new symptoms:

- Nausea or vomiting
- Rash
- Side effects of medicines, such as drowsiness, restlessness, or confusion
- Tremors or abnormal movements, or problems with coordination

Contact your child's provider even if your child is normal after the seizure has stopped.

## Prevention

There is no known way to prevent epilepsy. Proper diet and sleep may decrease the chances of seizures in children with epilepsy.

Reduce the risk of head injury during risky activities by wearing a helmet. This can decrease the likelihood of a brain injury that leads to seizures and epilepsy.

## Alternative Names

Seizure disorder - children; Convulsion - childhood epilepsy; Medically refractory childhood epilepsy; Anticonvulsant - childhood epilepsy; Antiepileptic drug - childhood epilepsy; AED - childhood epilepsy

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