

# Let's Talk About...

## Seizures

**A** seizure happens when brain cells (called neurons) send messages again and again in an uncontrolled manner. This is called “misfiring.” This may cause a sudden change in a person’s level of consciousness, behavior, motor activity, or sensation. The person is not able to control these changes.

When a person has one or more seizures from any cause, and the seizures do not go away over time, it is called epilepsy (ep-ih-lep-see). You may hear another term, “seizure disorder,” used. This describes more than one seizure that has either a known cause or an unknown cause.

Seizures and epilepsy are actually quite common. Overall, any person has about a 2-4% chance of having at least one seizure. Also, about 1 in every 100 people has a seizure disorder. Seizures are more common in children and elderly adults. Famous people like Socrates, Tchaikovsky, and Julius Caesar had seizures. It is obvious that the seizure disorder did not prevent these people from having a full life.



### What are the types of seizures?

Seizures are classified in two ways:

**1** Generalized seizures are seizures in which the whole brain is misfiring. Two common types are:

- **Convulsive seizures** (often called “tonic-clonic” or “grand mal”). These are generalized seizures that cause stiffening, jerking, limpness of the arms and legs, loss of consciousness, and sometimes loss of bowel and bladder control.
- **Absence seizures** (also called “petit mal”). These are very short, generalized seizures that cause a complete loss of consciousness without a convulsion. There may be eye fluttering, blinking, and a blank stare.

**2** Partial seizures are seizures in which only one part of the brain is misfiring. Some of the common types of partial seizures are:

- **Simple partial** (also called “focal”). These cause one-sided jerking, numbness, or limpness. Only one part of the body is affected and consciousness is not affected.
- **Complex partial** (also called “psychomotor”). These cause changes in consciousness (such as a trance-like state) and a series of automatic movements or behaviors, followed by confusion.

Other problems that may be caused by seizures include staring, brief jerks, brief falling, jack-knifing, and infantile spasms (sudden total body jerks or stiffening spells that happen in clusters in infants under 18 months of age).

### What causes seizures?

Seizures are a symptom or a sign of an underlying problem. Most seizures, however, are not caused by serious brain problems and are treatable. Most seizures in childhood are referred to as “idiopathic.” This means:

- no definite cause is found
- the seizures can be outgrown

- the seizures will not cause other problems with the brain
- the seizures may be passed on within the family

Other seizures may be caused by a variety of brain disturbances or neurologic diseases.

These may include:

- metabolic problems (chemical imbalances)
- infections (such as meningitis or encephalitis)
- abnormal brain development
- brain injury
- rarely, difficulties at birth or very early in a baby's life

### What tests are done to find out about my child's seizures?

Doctors want to know the cause of your child's seizure so they can best treat it. For example, if the seizure is caused by spinal meningitis, the doctor needs to treat the meningitis causing the seizure. He may also need to give a seizure medicine. It is important to remember that every child is different. The doctor will choose the tests needed to find the cause of the seizure and then decide the best way to treat the individual child. In general, the doctor will include the following:

- **Medical history:** The doctor asks about your child's past and present health as well as the seizures. It is important to provide the doctor with as many details as you can.
- **Physical exam:** The physical exam helps the doctor learn about the general health of your child, especially about his or her nervous system.
- **Developmental exam:** The doctor asks questions about your child's abilities to reach various developmental milestones such as sitting, crawling, standing, walking, and talking. The doctor also sees how well

your child performs some simple tests. None of these tests are painful, and they give your doctor useful information about your child's nervous system.

- **Laboratory tests:** Blood, urine, and sometimes spinal fluid tests are done to look for chemical imbalances, infections, and other problems that may be causing seizures. The doctor tries to select only the lab tests your child needs.

The doctor may also choose some of the following tests to find out exactly what is happening in your child's brain:

- **Electroencephalogram (EEG):** The EEG may help the doctor learn about what type of seizure your child has and what part of the brain it comes from. Small disks attached to wires are placed on your child's head to measure electrical waves coming from the brain. Some children with normal EEGs have seizures and some children with abnormal EEGs do not have seizures. The EEG is not a painful test, and there is no risk of injury for your child. See the hand-out *Let's Talk About . . . Electroencephalogram (EEG) for more information.*
- **CT scan:** The CT scan is an x-ray of the brain. It creates a picture of the brain and allows the doctor to look for possible causes of the seizures.
- **MRI scan:** The MRI scan uses magnetic energy instead of an x-ray to create a picture of the brain. It creates a clearer picture than the CT scan, and in some cases gives better information.

### How are seizures treated?

If there is a problem such as a head injury or infection causing the seizures, the doctor will treat those problems. Many children with seizures need medicines to control the seizures. If the first seizure is not severe, your doctor may suggest not using the medicine if the

likelihood of another seizure is not great. If a medicine is needed, then your doctor will choose one based on the type of seizure your child has.

All medicines can have side effects and your child's doctor makes every effort to select the best medicine with the least side effects. Primary Children's Pediatric Neurology Division publishes a booklet called *What You Should Know About Your Child Who Has Seizures* that explains the different types of seizure medicines. You can ask your doctor for one of these booklets, or call PCMC's Pediatric Neurology Division: (801) 588-3385.

There are other new ways to treat seizures, but these are not usually recommended until other options have been tried. These include:

- Vagal (VAY-gul) nerve stimulation. This is done by a small device placed in the chest that sends an electrical impulse to the vagal nerve in the neck to prevent seizures.
- Surgery
- A special diet called a ketogenic (key-toe-JEN-ick) diet.

Ask your doctor about these treatments if you want to know more information.

### **How do I make sure my child is safe?**

The seizure itself is rarely a major hazard to a child. The hazards relate more to what your child is doing when a seizure happens. If seizures are under control for several months, most activities are safe. It is important not to overprotect a child with seizures. Try the following suggestions to make sure your child is safe:

- Have your child take showers instead of baths to prevent drowning, and lower the temperature of your water heater. Do not allow a child of any age who has seizures to take a bath without constant supervision by an adult.

- Do not allow a child with seizures to swim until they have had no seizures for 3 months. They should always be well supervised by a responsible adult who is strong enough to pull the child out of the water in case of an emergency. If your child swims in a lake, always have her wear a life jacket.
- Bike riding in traffic is dangerous for any child, but more so for children with seizures. After your child has no seizures for several months, she can ride her bike in non-traffic areas. Always have her wear a helmet!
- Skiing or any other activity that poses a risk to your child's safety should be avoided until your child's doctor okays them. This is usually after seizures are controlled for three or more months. Call your doctor if you are unsure about an activity.

### **How do I help my child if she is having a seizure?**

- Help her lay on her right side and turn her head to the side if possible, so that saliva or vomiting doesn't result in choking
- Keep objects away from her face to help breathing and prevent injury.
- DO NOT try to put anything into her mouth or between her teeth. Your child cannot swallow her tongue and tongue biting is rare. Placing an object in her mouth may break teeth, causing them to lodge in the lung, which could cause serious problems.
- Protect your child from banging her head or body against sharp or hard objects. If possible, place something soft and flat under her head.
- Do not restrain flailing arms or legs.

If a seizure lasts more than 5 minutes, or seizures are continuous, call the paramedics for transport to the hospital.



### **After the seizure . . .**

- Allow your child to lie quietly until she wakes up.
- Reorient her to her surroundings and recent events if necessary.
- If your child is not breathing, call 911 and start CPR.
- Record an accurate description of the seizure, including the length of the seizure, and the activity before, during, and after the seizure. This assists you and your physician in monitoring seizure activity.
- Call your physician to report the seizure activity.

### **Are there complications to seizures?**

It is very rare that seizures themselves cause physical or mental complications. Since seizures may be one sign of an underlying

problem, physical, mental, and emotional complications are usually caused by the same underlying problem.

At times, side effects from seizure medicines may make a learning or behavior problem worse. If you see changes in behavior or learning—or you have concerns about behavior, intelligence, or learning—let your doctor and appropriate school personnel know.

### **Where can you get more information?**

You can get more specific information from your child's doctor. Information can also be requested from the Epilepsy Foundation of America: 1-800-EFA-1000.

For the seizure booklet *What You Should Know About Your Child Who Has Seizures*, call PCMC's Pediatric Neurology Division: (801) 588-3385.



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Pediatric Education Services  
(801) 588-4060 Rev 6/02  
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