

Epilepsy/Seizures

OVERVIEW

Definition

The Epilepsy Foundation's definition of epilepsy: "epilepsy is a medical condition that produces seizures affecting a variety of mental and physical functions. It is also called a seizure disorder. When a person has two or more unprovoked seizures, they are considered to have epilepsy. Seizures happen when clusters of nerve cells in the brain signal abnormally, which may briefly alter a person's consciousness, movements or actions"

Incidence

According to the Centers for Disease Control and Prevention, epilepsy affects 2.2 million Americans. The Institute of Medicine, in their recent report "Epilepsy Across the Spectrum," states "the 2.2 million prevalence estimate is most accurately viewed as approximating a midpoint in a wide potential range of 1.3 million to 2.8 million people with epilepsy."

Epilepsy affects approximately 65 million people worldwide.

Causes

According to the Epilepsy Foundation, "seizures are symptoms of abnormal brain function. With the exception of very young children and the elderly, the cause of the abnormal brain function is usually not identifiable. When seizures start, the physician will try to identify an underlying etiology (cause). This is because the most specific diagnosis as to why seizures are occurring depends on finding a cause, and proper therapy, and prognosis (or long term outcome) will depend on the cause.

If a specific diagnosis or cause cannot be made, then the epilepsy will be described according to seizure type or epilepsy syndrome.

Symptomatic seizures are called that when they can be linked to identifiable diseases or brain abnormalities. Potential causes of symptomatic seizures include infection (meningitis), fever (febrile seizures), head injury, brain tumor (rare), some congenital conditions (Down syndrome, Angelman's syndrome, tuberous sclerosis and neurofibromatosis).

Cryptogenic seizures are diagnosed when no cause for the seizures can be found. Idiopathic or primary seizures are diagnosed when a genetic (or family) cause for the seizures is suspected. When it is necessary to classify epilepsy according to cause, similar terms are used."

Types of Seizures

Seizures happen when the electrical system of the brain malfunctions. Instead of discharging electrical energy in a controlled manner, the brain cells keep firing. The result may be a surge of energy through the brain, causing unconsciousness and contractions of the muscles. If only part of the brain is affected, it may cloud awareness, block normal communication, and produce a variety of undirected, uncontrolled, unorganized movements.

Most seizures last only a minute or two, although confusion afterwards may last longer. An epilepsy syndrome is defined by a collection of similar factors, such as type of seizure, when they developed in life, and response to treatment.

There are many different types of seizures. People may experience just one type or more than one. The kind of seizure a person has depends on which part and how much of the brain is affected by the electrical disturbance that produces seizures. Experts divide seizures into several categories:

- Generalized seizures (absence, atonic, tonic-clonic, myoclonic)
- Partial (simple and complex) seizures
- Non-epileptic seizures
- Status epilepticus

Most seizures end after a few moments or a few minutes. If seizures are prolonged, or occur in a series, there is an increased risk of *status epilepticus*, which is a continuous state of seizure. If a seizure lasts longer than 5 minutes, there is a risk of it progressing to *status epilepticus*.

Health Risks

Most people with epilepsy live a full life span. However, there are several factors associated with living with epilepsy and seizures that may increase the risk of injury or untimely death:

- Safety issues. There should be precautions in place to reduce the risk of injury during a seizure, especially head injury.
- Epilepsy is linked to suicidal behavior. This may be related to the diagnosis or the medication.
- Sudden Unexpected Death in Epilepsy (SUDEP). Most common risk factors are poorly controlled seizures, treatment with multiple anticonvulsant drugs, and/or having long-standing chronic epilepsy.

Treatment

Treatment choice depends on the identified or suspected cause of the seizure(s).

Medication: If epilepsy -- that is, a continuing tendency to have seizures -- is diagnosed, the doctor will usually prescribe regular use of seizure-preventing medications.

Surgery: If the seizure was caused by an underlying correctable brain condition, surgery may stop them.

Other: If drugs are not successful, other methods may be tried, including surgery, a special diet (called a *ketogenic* diet), complementary therapy, or vagus nerve stimulation (VNS).

The goal of all epilepsy treatment is to prevent further seizures, avoid side effects, and make it possible for people to lead active lives.

SCHOOL MANAGEMENT

First Aid

It would be prudent for all school staff to know the basics of first aid for a seizure. The goal is to keep the person safe until the seizure stops naturally by itself.

According to the Epilepsy Foundation , when providing seizure first aid for generalized tonic-clonic seizures, these are the key things to remember:

- Keep calm and reassure other people who may be nearby.
- Don't hold the person down or try to stop his movements.
- Time the seizure with your watch.
- Clear the area around the person of anything hard or sharp.
- Loosen anything around the neck that may make breathing difficult.
- Put something flat and soft, like a folded jacket, under the head.
- Turn him or her gently onto one side. This will help keep the airway clear. Do not try to force the mouth open with any hard implement or with fingers. It is not true that a person having a seizure can swallow his tongue. Efforts to hold the tongue down can cause injury.
- Do not attempt artificial respiration except in the unlikely event that a person does not start breathing again after the seizure has stopped.
- Stay with the person until the seizure ends naturally.
- Be friendly and reassuring as consciousness returns.

Seizure Action Plan

School nurses should have Seizure Action Plans (SAP) in place for students with known seizure disorders. The SAP is developed with input from the parents/guardians, physician and/or neurologist. It has detailed health and medical information about a student and his/her epilepsy or seizure disorder and provides guidelines for responding to a seizure. It also explains when a seizure is an emergency and when 911 should be dialed.

Every individual who interacts with a student who has a seizure disorder will benefit from this information. Specifically, school teachers, school nurses, coaches, and other individuals with supervisory roles should receive and review the SAP.

It is advisable for a school nurse to have the SAP in the student's file, and the classroom teacher(s) should have a copy. Parents and physicians usually keep a copy as well.

Resources for developing a SAP

Planning Ahead <http://www.eparent.com/uploads/1/WEB-ed-epilepsyvaleant.pdf> :

“Planning Ahead Can Save the Life of a Child with Epilepsy,” by Laura Apel and Jan Carter Hollingsworth. This is a primer article on the necessity for a seizure emergency plan and for

added awareness and education about the administration of emergency seizure medication within the school environment.

Seizure Action Plan

<http://www.epilepsysandiego.org/media/Resources/SeizureActionPlanforChildren-Students.pdf>

http://www.akepilepsy.org/parent_guide/forms/Seizure%20Action%20Plan%20-%20What%20it%20is%20-%20Final.pdf

http://www.akepilepsy.org/parent_guide/forms/03.Seizure%20Action%20Plans/d.WA%20SeizActPlan.pdf

Emergency Seizure Medication

“Diastat®--diazepam rectal gel and its trademark administration system is at present the only emergency seizure medication approved for and specifically designed for use by parents, caregivers and other nonmedical personnel.

This brief excerpt from EMS World article <http://www.emsworld.com/article/10319446/seizure-control> describes the serious problems posed by extended or repetitive seizures:

Most seizure patients, no matter how well managed through maintenance medication, will likely experience breakthrough seizures throughout their lifetime. Possibly as many as 35% of patients on antiseizure medications may not be adequately controlled.³ Although these occasional breakthrough seizures are mostly benign, extended, cluster or repetitive seizure activity can lead to life-threatening consequences. Cluster seizures, also referred to as acute repetitive seizures, are best defined as numerous seizures that occur over a time period from minutes to hours and generally fall outside of what would be considered normal for that patient.⁴ Progression of these types of seizures can manifest as status epilepticus, which should be considered a true medical emergency that can be identified by a number of clinical scenarios. Any generalized seizure lasting more than five minutes or any three consecutive seizures over a one-hour period would be classified as status in nature. SE would also include any type of recurrent seizure without a recognizable postictal recovery period. Finally, any other type of seizure (e.g., partial complex or focal) lasting more than 30 minutes would be defined as SE.⁵ Between 50,000 and 200,000 generalized convulsive status epilepticus (GCSE) seizures occur every year in the United States, with an overall mortality rate of 20%.⁶ Additional statistics show that status seizures lasting more than one hour have a mortality rate of 32%, compared with 2.7% for seizures of shorter duration.⁷ Although the etiology of the seizure and age of the patient are contributing factors, it is clear that morbidity and mortality associated with status epilepticus are directly related to duration of the seizure activity. Therefore, timely administration of an effective anti-convulsant and

subsequent termination of seizure activity would be considered a lifesaving intervention.

Education Code 49414.7 :

Senate Bill 161 (Huff) was signed by Governor Brown on October 7, 2011 and went into effect January 1, 2012. California Education Code Section 49414.7 is an optional law, as school districts are not required to implement it. This law permits a school district, county office of education, or charter school to create a program to provide nonmedical school employees with voluntary emergency medical training to administer Diastat, in the absence of a credentialed school nurse or other licensed nurse onsite at the school or charter school.

The law is very proscriptive. Districts or schools who choose to implement the law must closely follow the developed regulations in recruiting volunteers, training guidelines, and record keeping.

CDE [Final Regulations](#) (DOC)

Learning Issues

Many individuals with epilepsy have normal intelligence, however, children with epilepsy are more likely than others to have learning problems. Potential reasons include medications that make a child tired or drowsy, frequently missing school for medical appointments, regularly “blinking out” due to absence seizures (which sometimes are not recognized or diagnosed for a long time), worry/anxiety, attention disorders, or problems with memory or learning in the part of the brain where the seizure occurs.

Students with seizures may need special education services or 504 accommodations.

RESOURCES

School Management Resources

Overview of school management resources from the Epilepsy Foundation (parent page):
<http://www.epilepsyfoundation.org/livingwithepilepsy/parentsandcaregivers/parents/your-child-at-school.cfm>

Seizure Observation Record

<http://www.epilepsysandiego.org/media/Resources/SeizureObservationRecord.pdf>

Epilepsy Classroom has lesson plans for teaching about epilepsy, seizure first aid, how to talk to the students after a classmate has a seizure, a seizure incident report, and more:

<http://www.epilepsyclassroom.com/>

First Aid

<http://www.epilepsyfoundation.org/aboutepilepsy/firstaid/index.cfm>

Seizures training video and PowerPoint

<http://www.epilepsyfoundation.org/livingwithepilepsy/educators/socialissues/helpingchildrenunderstand/trainingforteachersandschoolpersonnel/seizurestrainingforschoolpersonnel.cfm>

Managing Students with Seizures program (offered annually at SDCOE through the Epilepsy Foundation of San Diego).

Diastat

Sample IHP forms available on the CSNO website "Diastat Issues" page:

<http://www.csno.org/diastat-issues>

Diastat website:

Directions for administering Diastat to children and adults in English and Spanish:

<http://www.diastat.com/how-to-administer.aspx>

Resources for school nurses:

<http://www.diastat.com/hcps/nurses/nurse-resource-center.aspx>

Forms

<http://www.diastat.com/hcps/planning/forms.aspx>

Demonstration videos

<http://www.youtube.com/watch?v=t5DDLggheO4>

http://www.publichealthtools.com/videos?task=viewvideo&video_id=25F

For parents:

Epilepsy & My Child Toolkit -A resource for parents with a newly diagnosed child:

http://www.epilepsysandiego.org/media/Resources/Epilepsy_Tool_Kit.pdf

Living with epilepsy (for teens):

<http://www.epilepsyfoundation.org/livingwithepilepsy/youth/youngadults/index.cfm/school%20personnel%20training.html>

Additional References/Resources:

Overview/general information

<http://www.epilepsyfoundation.org/aboutepilepsy/>

<http://www.epilepsysandiego.org/>

<http://www.cdc.gov/epilepsy/>

<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001714/>

Suicide risk <http://www.epilepsyfoundation.org/aboutepilepsy/healthrisks/suicide.cfm>

Sudden Unexpected Death in Epilepsy

<http://www.epilepsyfoundation.org/aboutepilepsy/healthrisks/sudep/index.cfm>

Medications

<http://www.epilepsyfoundation.org/aboutepilepsy/treatment/medications/index.cfm>

<https://seizuretracker.com/STH/Seizure-Medications.php>

Seizure tracking tool

<https://seizuretracker.com/>

Vagus nerve stimulation (VNS)

<http://us.cyberonics.com/en/>

Ketogenic Diet

<http://www.epilepsyfoundation.org/aboutepilepsy/treatment/ketogenicdiet/index.cfm?qclid=CIPFIYHX8rMCFQhyQgod73oA1A>

<http://www.webmd.com/epilepsy/guide/ketogenic-diet>

<http://www.charliefoundation.org/>

Legal References

The Americans with Disabilities Act/Section 504

Education Code 49414.7

Legal Rights of Children with Epilepsy in School & Child Care – a comprehensive guide to help parents protect their children's rights:

<http://www.epilepsyfoundation.org/resources/epilepsy/legal/loader.cfm?csModule=security/getfile&PageID=36466>