

School Nurse Webinar

TRAINING ON SEIZURE FIRST AID,
RECOGNITION AND EPILEPSY
AWARENESS



**EPILEPSY
FOUNDATION**

Eastern Pennsylvania

Objectives: Medical

- ▶ Define Seizures and Epilepsy
- ▶ Recognize common seizure types
- ▶ Describe types of seizure emergencies
- ▶ Describe side effects and risks of seizures, medicines and other treatments for epilepsy

What is Epilepsy?

- ▶ Seizure is a symptom of a disturbance in the electrical activity of the brain
- ▶ Epilepsy is a disorder characterized by tendency to recurrent, unprovoked seizures
 - ▶ *Recurrent* - 2 or more
 - ▶ *Unprovoked* - not caused by other known medical problems
- ▶ EPILEPSY = SEIZURE DISORDER

Epilepsy is a Common Problem

- ▶ Almost 3 million Americans have epilepsy, > 65 million worldwide
- ▶ 1 in 10 people will have a single seizure in their lifetime
- ▶ 1 in 26 people will develop epilepsy in their lifetime
- ▶ 200,000 people with newly diagnosed epilepsy each year
- ▶ *Epilepsy is the 4th most common neurological disorder after stroke, Alzheimer's and migraine*

What Causes Epilepsy?

- ▶ For approximately 70% of people who are diagnosed with epilepsy the cause is unknown
- ▶ For the remaining 30%, the seizures are symptoms of a known cause (i.e., lesions, trauma)

Causes of Symptomatic Seizures

- ▶ Brain trauma
- ▶ Brain lesions (i.e. tubers, tumors)
- ▶ Poisoning (lead, alcohol, drugs)
- ▶ Infections of the brain (i.e. meningitis, encephalitis)
- ▶ High fever
- ▶ Brain injury at birth
- ▶ Congenital malformations

Children with Epilepsy

- ▶ Seizures at an early age (starting before age 1 is highest)
- ▶ Neurodevelopmental delays
- ▶ Intellectual disabilities and cerebral palsy
- ▶ Children can outgrow epilepsy – may be seizure free and off medications as adults
- ▶ Some children have more than one type of seizure
- ▶ About 2/3 of children have complete or almost complete seizure control when they take medication as prescribed

Seizure Triggers & Precipitants

- ▶ Missed or late medication
- ▶ Change in medication
- ▶ Sleep deprivation
- ▶ Hormonal changes
- ▶ Alcohol, recreational drugs
- ▶ Drug interaction
- ▶ Fever or illness
- ▶ Specific stimuli
 - ▶ Flashing lights Hyperventilation
 - ▶ Sudden loud noises

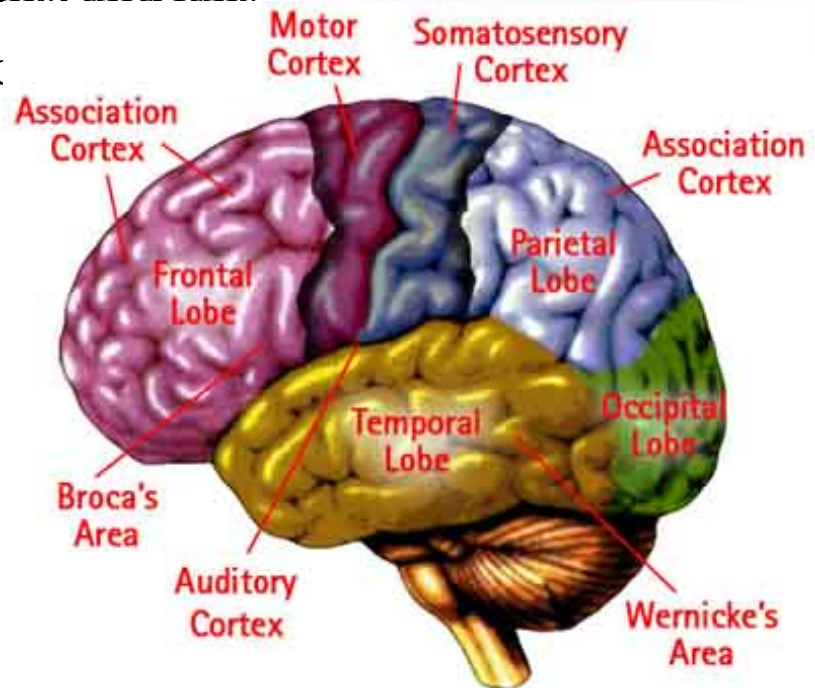
Seizure Classification

- **Generalized Seizures**

- Involves whole brain
- Convulsions, staring, muscle spasms. and falls
- Most common are absence & tonic

- **Focal Seizures**

- Start in one part of brain
- Symptoms relate to the part of the brain effected



Phases of a Seizure

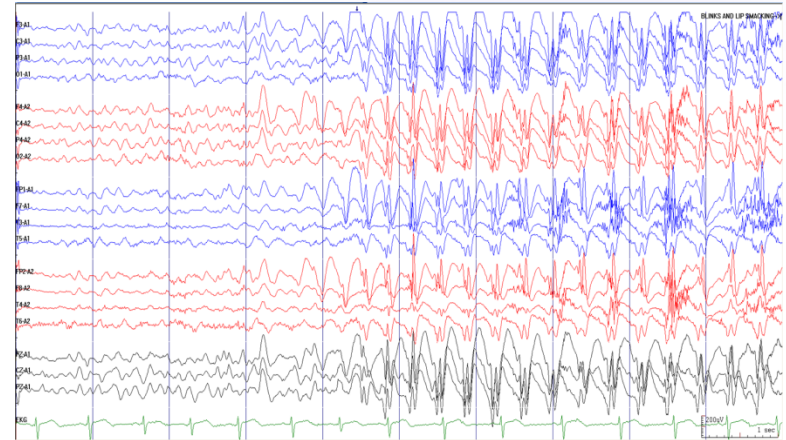
- ▶ **Aura** – First symptom of a seizure, often called a ‘warning’.
 - ▶ Most commonly seen with focal seizures.
- ▶ **Ictus**- What is seen/felt during a seizure
- ▶ **Postictal**- What is seen/felt after the seizure, until the brain recovers to baseline

Tonic-Clonic Seizure

- ▶ A sudden hoarse cry
- ▶ Loss of consciousness
- ▶ May fall if standing
- ▶ Muscles become tonic or stiff
- ▶ Convulsions (stiffening of arms and legs followed by rhythmic jerking)
- ▶ Shallow breathing and drooling may occur
- ▶ Possible loss of bowel or bladder control
- ▶ Occasionally skin, nails, lips may turn blue
- ▶ Generally lasts 1 to 3 minutes
- ▶ Usually followed by confusion, headache, tiredness, soreness, speech difficulty

Absence Seizures

- ▶ Pause in activity with blank stare
- ▶ Brief lapse of awareness
- ▶ Possible chewing or blinking motion
- ▶ Usually Lasts 1-10 seconds
- ▶ No postictal phase
- ▶ May be confused with:
 - ▶ Daydreaming
 - ▶ Inattentiveness/ADHD



Other Forms of Generalized Seizures

- ▶ *Myoclonic* – brief muscle contractions, may occur singly or in clusters, affect certain muscle groups, or one or both sides of body
- ▶ *Tonic* - stiffening or posturing of body
- ▶ *Atonic* (drop attack) – loss of tone, may result in drop of head, trunk, or whole body

“Simple” Focal Seizures

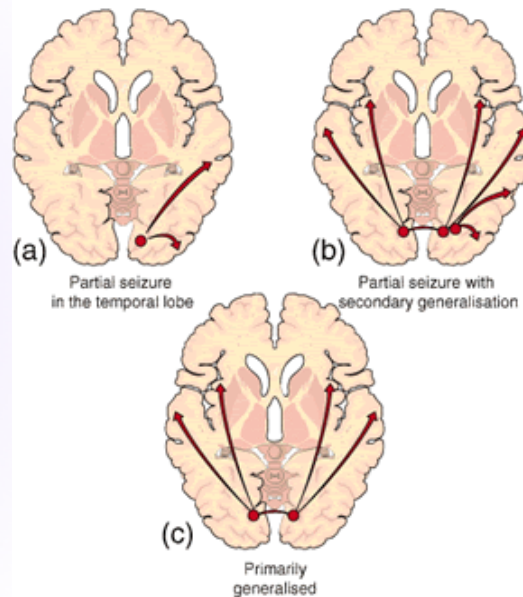
- Consciousness is not impaired
- Involuntary movements (isolated twitching of arms, face, legs)
- Sensory symptoms (tingling, weakness, sounds, smells, tastes, visual distortions)
- Psychic symptoms (déjà vu, hallucinations, fear, anxiety, “a feeling they can’t explain”)
- Duration is usually less than 1 minute
- May be confused with:
- acting out, mental illness or psychosomatic illness

“Complex” Focal Seizures

- ▶ Altered awareness
- ▶ Blank stare/dazed look
- ▶ AUTOMATISMS (picking at clothes, lip smacking, chewing)
- ▶ Nonsensical speech or lip smacking
- ▶ Clumsy or disoriented movements
- ▶ Aimless walking
- ▶ Picking things up
- ▶ Often lasts 1 to 3 minutes
- ▶ Often followed by tiredness, headache or nausea
- ▶ May be confused with:
 - ▶ **Drunkenness or drug abuse**
 - ▶ **Aggressive behavior**

Secondarily Generalized Seizures

- Focal seizure that spreads to involve entire brain
- May spread rapidly or occur after a typical focal seizure



Routine First Aid

MOST SEIZURES ARE **NOT** MEDICAL EMERGENCIES

Basic first aid may vary depending on whether there is a change in awareness or consciousness

No first aid may be needed for absence seizures or seizures with no loss of awareness

Do not give anything by mouth until the student is back to normal state and able to swallow normally

First Aid – Focal seizure

- ▶ Speak softly and calmly
- ▶ Guide away from potentially harmful objects such as tables, chairs and doors
- ▶ Allow for wandering in a contained area
- ▶ If lasts **5 minutes** beyond what is routine for that person or another seizure begins before full awareness is regained, **call 911**
- ▶ **DO NOT** restrain or grab (may result in combativeness)
- ▶ **DO NOT** shout or expect verbal instructions to be obeyed

First Aid – Generalized tonic clonic seizure

- ▶ Protect from potentially harmful objects
- ▶ Observe and time events: **a seizure lasting more than 5 minutes is a medical emergency, Call 911**
- ▶ Ensure airway is unobstructed
- ▶ Cushion and protect head
- ▶ Turn person on one side
- ▶ Remain with person until fully conscious
- ▶ **DO NOT** put anything in mouth
- ▶ **DO NOT** restrain

Type of Emergencies

▶ Seizure Emergencies

- ▶ **Potential emergency**- changes in typical seizure clusters or frequency
- ▶ **Actual emergency** – status epilepticus; a prolonged seizure; seizure lasting more than 5 minutes is a medical emergency

▶ Injuries or Adverse Events

- ▶ Physical injuries
- ▶ Delayed or unrecognized complications of seizures, i.e. aspiration pneumonia, head trauma, fracture
- ▶ Serious treatment side effects
- ▶ Worsening of comorbid conditions

Emergency Medications

- ▶ Commonly used medications to abort a prolonged seizure or seizure cluster include:
 - ▶ Diazepam – rectal formulation
 - ▶ Clonazepam - orally disintegrating tablet
 - ▶ Lorazepam - liquid
 - ▶ Midazolam – nasal spray
 - ▶ Vagal nerve stimulator – magnet swipe



Convulsive Status Epilepticus

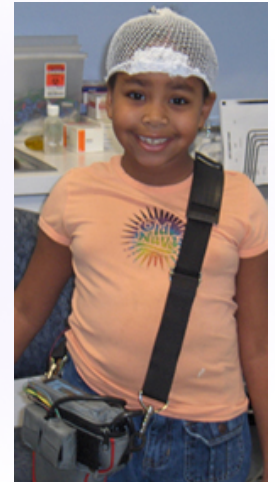
- ▶ Definitions may vary, most commonly considered to occur with:
 - ▶ One tonic-clonic seizure lasting 5 minutes or longer
 - ▶ Multiple seizures without recovery to baseline between events

Death in Epilepsy

- ▶ Death can occur during a seizure or due to complications from a seizure
- ▶ The most common form of death in epilepsy is SUDEP (Sudden Unexplained Death in Epilepsy)
 - ▶ Occurs in someone known to have epilepsy, in the absence of an obvious cause for the death
 - ▶ 1/1000 people with epilepsy per year die from SUDEP – less common in children
 - ▶ Risk factors include convulsive seizures, multiple medications, early age at epilepsy onset

Non-Epilepsy Seizures or Events

- ▶ Events that look like seizures but on EEG monitoring have no association with abnormal electrical discharges
- ▶ EEG monitoring can be the most effective way of diagnosing events
- ▶ Can be caused by a variety of physical or psychological factors



Current Treatment Options

- ▶ **ANTIPILEPTIC MEDICATIONS
(antiseizure medications)**
- ▶ **SURGERY**
- ▶ **DIETS**
- ▶ **VAGUS NERVE STIMULATOR**

Effectiveness of Antiepileptic Drugs (AEDs)

- ▶ Before 1993, drug choices for epilepsy were limited
- ▶ Since 1993, many new products
- ▶ Approximately 60-70 % of those with newly-diagnosed epilepsy become seizure free on medication
- ▶ About 1/3 of people with epilepsy have seizures that are not controlled by medication

Older AEDs

- ▶ Carbamazepine (Tegretol, Tegretol XR, Carbatrol)
- ▶ Chlorazepate (Tranxene)
- ▶ Clonazepam (Klonopin)
- ▶ Ethosuximide (Zarontin)
- ▶ Phenobarbital
- ▶ Phenytoin (Dilantin, Phenytek)
- ▶ Valproic acid (Depakene)
- ▶ Valproate sodium (Valproate)

Medications (AEDs since 1990)

- ▶ Felbamate (Felbatol)
- ▶ Tiagabine (Gabitril)
- ▶ Levetiracetam (Keppra, Keppra XR)
- ▶ Lamotrigine (Lamictal, Lamictal XR)
- ▶ Gabapentin (Neurontin)
- ▶ Oxcarbazepine (Trileptal, Oxtellar XR)
- ▶ Topiramate (Topamax, Trokendi XR)
- ▶ Zonisamide (Zonegran)
- ▶ Pregabalin (Lyrica)
- ▶ Vigabatrin (Sabril)
- ▶ Lacosamide (Vimpat)
- ▶ Rufinamide (Banzel)
- ▶ ACTH (Acthar)
- ▶ Clobazam (Onfi)
- ▶ Retigabine (Potiga)
- ▶ Perampanel (Fycompa)

Side Effects Overview

- ▶ Side effects can be unpredictable. Some are dose dependent, others occur regardless of dose
- ▶ Newer medications generally have fewer cognitive effects
- ▶ Behavior and mood changes are often difficult to sort out and are not necessarily dose-related
- ▶ Long term effects are unclear, but even mild side effects can have a significant impact
- ▶ Report any physical, cognitive, mood or behavioral changes to student's family and to health care provider as requested

Common Side Effects

Dose-related/toxic:

- ▶ Blurry vision
- ▶ Dizziness
- ▶ Lightheadedness
- ▶ Sedation
- ▶ Slowed thinking
- ▶ Feeling disoriented
- ▶ Coordination problems
- ▶ Unsteady walking

Drug-related:

- ▶ Cognitive problems
- ▶ Fatigue
- ▶ Weight gain or loss
- ▶ Cosmetic – acne, excessive hair growth or hair loss
- ▶ Hyperactivity
- ▶ Slowed movements
- ▶ Personality or mood changes

Drug Reaction Warning Signs

- ▶ Rash
- ▶ Prolonged fever
- ▶ Severe sore throat
- ▶ Mouth ulcers
- ▶ Easy bruising
- ▶ Weakness
- ▶ Excessive fatigue
- ▶ Change in appetite
- ▶ Increased seizures

▶ **Contact
Child's
Healthcare
Provider**



Generic versus Brand Name AEDS

- ▶ In most situations, generic forms of AEDs are appropriate
- ▶ Change in seizures or side effects may occur
Switching between formulations is the major concern
 - ▶ From brand to generic or generic to brand
 - ▶ From one generic manufacturer to another

Epilepsy Surgery

- Considered for people with refractory epilepsy
- Surgical evaluations: Video EEG monitoring, neuropsychological testing, imaging (i.e., MRI, SPECT, PET), MEG
- Different types of surgery: focal resection (temporal lobectomy most common) lesionectomy, hemispherectomy, corpus callosotomy



Ketogenic Diet

- Produces ketotic state using diet high in fat, low in carbohydrate, adequate protein
- Easiest to use in children with control of food choices
- Effective for all seizure types
- May require hospitalization to start strict diet
- Compliance may be problematic
- Side effects can include constipation, metabolic acidosis, weight changes, kidney stones

Vagus Nerve Stimulator (VNS)

- ▶ A programmable pulse generator implanted subcutaneously in upper left chest
- ▶ Electrode wrapped around the left vagus nerve
- ▶ Side effects at time of stimulation may include hoarseness, coughing and shortness of breath
- ▶ Settings or 'dose' of stimulation is preprogrammed during clinic visits



About Us: The EFEPA

- ▶ *The Epilepsy Foundation Eastern PA is a non-profit 501(c)(3) voluntary health agency whose mission is to lead the fight to stop seizures, find a cure and overcome challenges created by epilepsy. We choose to fulfill that mission by meeting the non-medical needs for people affected by epilepsy/seizure disorder to enhance their lives and build supportive communities.*
- ▶ The EFEPA provides education, support and advocacy for people with epilepsy and their families across 18 counties in eastern PA. We have a satellite office in Wilkes-Barre, PA and support staff in Lancaster and Allentown.

About Us: EFWCP

- ▶ *The Epilepsy Foundation Western/Central Pennsylvania (EFWCP) is a private, non-profit service organization providing public education and supportive services to individuals and families affected by epilepsy/seizure disorders. Our mission is to lead the fight to stop seizures, find a cure and overcome challenges created by epilepsy.*
- ▶ With offices in Pittsburgh, Harrisburg and Johnstown, the EFWCP offers services to residents in 49 counties throughout western and central PA.

Other Available School Programs

The EFEPA and EFWCP offer additional on-site training programs for School Personnel and Students on First Aid & Seizure Recognition. We also offer assistance in IEP/504 Planning. Check out our website or contact us to set up your school's next session today!

- Eastern PA:
<http://www.efepa.org/programs-and-resources/school-information/>
- Western/Central PA:
<http://efwp.org/programs/ProgramsPSA.xml>

Contact Information for Programs



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