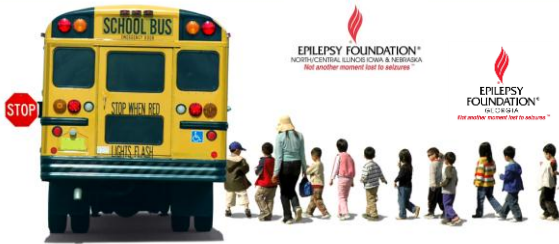


Epilepsy & the School Bus Driver



Dispelling Common Myths



- The tongue **cannot** be swallowed during a seizure
- Never put anything **in the mouth** of a person having a seizure
- Epilepsy is not contagious
- Epilepsy can begin at any age from fetus up to 99+.
- Most seizures are NOT medical emergencies
- Most seizures in epilepsy are NOT convulsive.
- Children can outgrow their epilepsy.
- Medication does not stop all seizures.
- People with epilepsy are not necessarily developmentally delayed nor mentally ill.

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Epilepsy is....

- A condition of **recurrent** and **unprovoked** seizures
- “Seizure Disorder” = Epilepsy
- Greek word *επιληψία*: seized by forces from without



What is a Seizure?



- Excessive/disorderly discharge of nerve tissue
- Imbalance between **excitation** and **inhibition** of nerve cell activity
- Seizures can be many things – depending on
 - > **where in the brain** and
 - > **how much of the brain is affected**



Eileen P.G. Vining, MD
Johns Hopkins University:

“**Anything** your brain can do normally, it can do abnormally as a seizure.”



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Epilepsy is common!

“The statistics are stark and sobering—and for the uninitiated (which is to say most of us), startling. **Epilepsy in America is as common as breast cancer**, and takes as many lives.”

- **1 in 26** will develop epilepsy at some time during their life!
- Inst. of Medicine, March 2012: <http://www.iom.edu/Reports/2012/Epilepsy-Across-the-Spectrum.aspx>

[Jon Meacham in Newsweek, April 10, 2009]

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Incidence Rate for Seizures at School

- 1:50 people under the age of 18 (potentially 1 student in each standard size bus)
- **1:3 students with a developmental disability**
 - (highly likely in special ed bus fleet)



Bus Driver Support for Children with Epilepsy

- **Be a good driver! Pull over safely.**
- **Stay calm** during a seizure!
- **Be supportive** & encourage positive peer interaction!
- **Be familiar** with child's Seizure Action Plan and seizure patterns
- **Know** the child's medications & side effects

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Special Issues to Consider

- Is student in a wheelchair / mobile?
- Coordination with dispatch: When? & How?
- Keeping other students calm & safe
- "Rescue Medication"-Does student use one?
- Does student have an IEP or IHP?



Special Challenges

- Communicating with parents
 - Language barrier
 - Parents unwilling/unable to share information
 - Parents in denial
- Medically fragile students
- Finding a responsible adult at drop off.
- Bullying by other students



Signs of Seizures in Children

- Short **attention blackouts**
- Sudden **falls** for no reason / Unexplained **clumsiness**
- Brief periods of **unresponsiveness**
- Unusual **sleepiness** & **grouchiness** when awakened from sleep
- Frequent complaints that they see, smell, taste or hear "funny" or "strange" things (**Strange sensory experiences**)
- Confusion/sleepiness following sudden **stomach pain**
- Repeated **unnatural movements** that look strange



Previous Terminology

- **Grand mal:** convulsive seizure
 - **Generalized Tonic-Clonic Seizures**
- **Petit mal:** any non-convulsive seizure
 - **Absence**
 - **Complex Partial**

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Current Terminology Types of Seizures

Partial (or Focal) Seizures

- **Simple Partial**
- **Complex Partial**
 - Awareness impaired/lost
- **Partial Seizures can secondarily generalize**

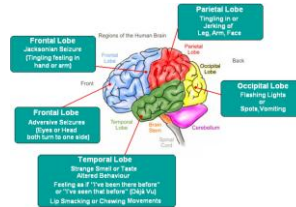
Generalized Seizures

- **Absence**
 - Typical
 - Atypical
- **Myoclonic**
- **Tonic-Clonic**
- **Atonic**

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Partial (Focal) Seizures



Motor
Sensory/Perceptual
Autonomic
Psychic

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Complex Partial (Focal) Seizures

- Blank staring
- Unaware of surroundings - but able to move
- Unresponsive or inappropriately responsive
- Repetitive movements of mouth and/or hands
- Confused speech / repetitive phrases
- Usually lasts 2-4 minutes



Absence Seizures (Petit mal)

- **Most common** seizure type in primary & elementary school students
- **Blank staring**, possible eye blinking/rolling
- **Unresponsive** to outside stimulus
- **Automatic behaviors** (lip smacking, picking at clothes)
- Lasts a matter of **seconds**



First Aid: Simple Partial & Absence

- **Stay calm**
- **Protect from harm**
- **Reassure all students**
- **Time & Observe the seizure**
- **Document & Report**



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First Aid: Complex Partial

1. **Pull over.** Stop bus as safely as possible.
2. **Protect** from hazards. Contact Dispatch.
3. **Time** the seizure.
4. **Speak softly & calmly.**
5. **Don't grab** or hold. Allow student to move as is safe.
6. **Follow emergency protocol** if seizure lasts >5 minutes or is unusual for that student.
7. Make sure student is dropped off with a **responsible adult**



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Tonic Clonic Seizures (grand mal)

- Shaking / convulsive activity
- Teeth grinding
- Shallow breathing
- Loss of consciousness / unaware of surroundings
- Fluids from mouth
- Usually lasts 2-4 minutes (occasionally longer)



First Aid: Tonic-Clonic

1. Pull over & stop. Contact Dispatch.
2. Cushion **head**. **Protect** from injury.
3. Turn on side and keep **airway** clear
4. **NOTHING** in the mouth
5. **Time** and Observe seizure.
6. Don't hold down.
7. Follow seizure action plan, if one exists.
8. Leave student with responsible adult.

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Seizure in a Wheelchair

- Do not remove from chair unless absolutely necessary
- Secure wheelchair
- Fasten seatbelt loosely to prevent falling from chair.
- **Support & Protect head**
- **Keep airway open** and allow secretions to flow from mouth
- **Pad wheelchair** to prevent further injury
- Follow student's seizure first aid plan.



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Status Epilepticus: A Neurological Emergency

- **30 minutes or more** of seizure activity
- **3 or more** seizures within 1 hour
- **Continuous** / seizure after seizure without stopping
- **Life threatening**—Seek immediate emergency care

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What makes a seizure an EMERGENCY?

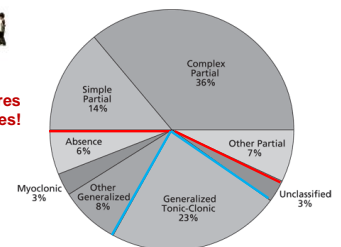
- **First time seizure**
- Convulsive seizure lasting **>5 minutes**
- **Repeated seizures** without regaining awareness
- More seizures than usual, or change in type
- Student is injured, has **diabetes** or is **pregnant**
- Fluid has been inhaled into lungs
- Distance to medical help is unknown or excessive

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Incidence of Seizure Types

Over ½ of all epilepsy seizures are partial seizures!



Less than ¼ are convulsive!

Based on Information from Epilepsy—A Comprehensive Textbook, J. Engel Jr & T.A. Pedley, editors, Lippincott-Raven, 1998

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What can seizures look like:

- Fainting
- Migraines
- Behavior disorders
 - ADHD
 - **Oppositional Defiant Disorder**
- Sleep disorders
- Tourette's
- Panic Attacks
- Movement disorders

* **Psychogenic Non-Epileptic Attack [PNEA]**

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Seizure? or Behavior?

SEIZURES ARE:

- **Stereotypical**
 - Same behaviors
 - In the same sequence
- **Paroxysmal**
 - Sudden
 - unexpected
- **Unchanged** by behavior modification

BEHAVIORS ARE:

- Variable, **situation dependent**
- **A response** to specific situation or stimuli
- **Altered** by behavior modification techniques

LOOK FOR A PATTERN!

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Seizure Observation

- Detailed seizure reporting helps the treating physician.
- Identifies:
 - **seizure triggers**
 - **patterns**
 - **precautions**

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Observation

Seizure Observation Record

Student Name:			
Date & Time			
Seizure Length			
Pre-ictal Observation (briefly list behaviors, triggering events, activities)			
Conscious (awake/alerted)			
Injuries (briefly describe)			
Neck/Trunk/Body Movements	Right/Left arm jerking		
	Loss of consciousness		
	Fall down		
	Rocking		
	Staring/blank stare		
Extremity Movements	(R) arm jerking		
	(L) arm jerking		
	(R) leg jerking		
	(L) leg jerking		
	Random Movement		
Other			

Seizure Observation Form available from: www.epilepsyfoundation.org

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Seizure Triggers

- Missed or late medication (#1 reason)
- Stress/anxiety
- Lack of sleep / fatigue
- Poor diet / Missed meals
- Constipation / Full bladder
- Drug interactions (antibiotics!)
- Menstruation
- Flashing lights
- Hyperventilation
- Overheating/overexertion

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Treatment of Epilepsy

- **Lifestyle changes**
- **Medication**
- **Surgery**
 - Brain surgery
 - VNS = Vagus Nerve Stimulator
- **Diet Therapies**

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Lifestyle Changes Can Help

- **Dietary:**
 - Caffeine – Avoid it!
 - Insulin spikes – Avoid them! (eat a low glycemic diet)
 - No alcohol
- **Regular Schedule & Sleep** (Get enough of it!)
- **Stress**
 - Avoid it
 - Use relaxation techniques
- **Avoid Seizure Triggers**
 - Flashing lights in only 1 to 3% of people with epilepsy

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Medication: The Main Therapy

- **Monotherapy** control in 50-60%
- **Polytherapy:** additional 10-20% controlled
- **Treatment resistant:** 20-30%
- **Side effects!** All epilepsy drugs have potential side effects, some serious.

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Side Effects Bus Drivers May See

- **Sleep:** Difficulty falling asleep / staying asleep / Sleeping all the time
- **Appetite:** ↑ OR ↓
- **Behavior:** Hyperactivity and/or Aggression
- **Fatigue, Dizziness, Blurred Vision**
- **Slowed thinking:**
 - Forgetfulness
 - Short term memory problems
 - Word recall problems

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Dangerous Side Effects

- **Liver** inflammation / failure
- **Blood**
 - Aplastic Anemia
 - Seriously low white blood cell counts
 - Seriously low platelet counts
- **RASH!** – Stevens-Johnson Syndrome
 - Any epilepsy patient with a rash should consult their treating physician immediately

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RASH: Refer to physician

Mild Stevens-Johnson Syndrome



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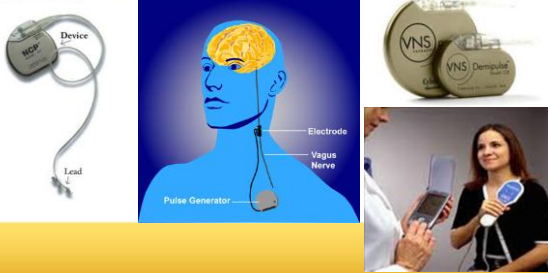
More AED Side Effects

- Some **antibiotics** decrease effectiveness
- **Bone loss** – osteoporosis
- **Dental** – gum overgrowth & swelling
- **Leg cramps**
- **Skin** – Acne, rash, brown spots
- **Hair** – overgrowth OR breakage/loss

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VNS: Vagus Nerve Stimulator



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VNS: Difficulties

- Side Effects
 - Coughing
 - Hoarseness or voice changes
 - Shortness of breath
 - Throat pain
 - Sleep apnea
- Must be programmed and reprogrammed
- Battery runs out & must be changed surgically

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First Aid: VNS Magnet

- ✓ One quick swipe of magnet over device (usually left chest just below collarbone).
- ✓ Wait 1 minute and swipe again if needed.



<http://us.cyberonics.com/en/vns-therapy-for-epilepsy/patients-and-families>

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Rescue Medications

Rectal diazepam gel



Buccal lorazepam/(Ativan)



Midazolam Nasal Spray



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Seizure Preparedness at School

- Forms available from Epilepsy Foundation
 - ✓ Seizure Action Plan
 - ✓ Parent Questionnaire (Child has Epilepsy)
 - ✓ Seizure Observation Record
- www.epilepsyfoundation.org/livingwiththeepilepsy/educators/socialissues/schoolnurseprogram/index.cfm

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Seizure Action Plan

- Individualized
 - seizure/health information
 - seizure first aid & emergency response
- Prepared by: School Nurse & Parents
- Approved by: Treating physician
- Distributed to relevant school personnel
 - At diagnosis
 - At beginning of school year,
 - Change in health status occurs

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Epilepsy Education for Students

- **Elementary:** “Thinking About Epilepsy”
- **Middle/High School:** “Take Charge of the Facts”



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Seizure First Aid: Review

- Basic first aid depends on type of seizure:
 - No change in consciousness (**Simple Partial Seizure**)
 - Altered Awareness (**Complex Partial Seizure** and **Absence**)
 - Loss of Consciousness / Convulsions (**Generalized Tonic-Clonic**)

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Seizure First Aid: Review

- **Stay calm!**
- Most seizures are **not** medical emergencies
- Always **time** a seizure!
- Nothing in the mouth
- Don't hold down

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Epilepsy Foundation Video

Share this video!

<http://www.epilepsyfoundation.org/livingwith/epilepsy/educators/index.cfm>

(Scroll to bottom of page.)

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People with epilepsy:

Supreme Court Justices



And Doctors



Resources

- **Epilepsy Foundation:** (800) 332-1000, Email: ContactUs@efa.org, www.epilepsyfoundation.org
- Your local affiliate: EFNCIL, (800) 221-2689 www.epilepsyheartland.org
- www.epilepsyclassroom.com
- www.epilepsy.com

