

# Seizure Recognition & First Aid



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Epilepsy Foundation

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## Objectives

- Recognize the four most common seizure types and their possible impact on people
- Know appropriate first aid & response
- Learn common seizure triggers/precipitants
- Recognize when a seizure is a medical emergency



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## What is a Seizure?

A brief, excessive discharge of electrical activity in the brain that alters one or more of the following:

- Movement
- Sensation
- Behavior
- Awareness



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## What is Epilepsy?

- Epilepsy is a chronic neurological disorder characterized by a tendency to have recurrent seizures
- Epilepsy is also known as a “seizure disorder”



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## Epilepsy is More Common Than You Think

- 2.2 million Americans
- Approximately 30,000 Iowans
- 1 in 26 people will develop epilepsy
- 1 in 10 people will have a seizure in their lifetime
- Epilepsy is more common than Cerebral Palsy, Parkinson's Disease and Multiple Sclerosis combined

CDC 2012. Epilepsy in Adults and Access to Care – United States, 2010. MMWR 61(45):909-913  
\*National Survey of Children's Health. NSCH 2007. Data query from the Child and Adolescent Health Measurement Initiative.  
Data Resource Center for Child and Adolescent Health website.  
‡OM (Institute of Medicine). Epilepsy Across the Spectrum: Promoting Health and Understanding. Washington, DC: The National Academies Press, 2012



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## Did You Know That...

- Most seizures are NOT medical emergencies
- People may NOT be aware they are having a seizure and may NOT remember what happened
- Epilepsy is NOT contagious
- Epilepsy is NOT a form of mental illness
- It is rare for a person to die during a seizure
- A person can NOT swallow his/her tongue during a seizure



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## Common Causes of Epilepsy

- For seventy percent (70%) of people with epilepsy the cause is unknown
- For the remaining thirty percent (30%) common identifiable causes include:
  - Brain trauma/injury (major identified cause of epilepsy in teens & adults)
  - Stroke (major identified cause of epilepsy in elderly)
  - Brain lesions (e.g. tumors)
  - Poisoning (lead)
  - Infections of the brain (e.g. meningitis, encephalitis, measles)
  - Brain injury at birth
  - Abnormal brain development



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## Seizures after TBI

- Generally, seizures after TBI can appear early (within one week of the injury) or later.
- Early seizures should be treated promptly, because they can produce further damage to the already-injured brain.
- Later seizures, those that begin at least one week after the injury, tend to become recurrent and therefore qualify as “epilepsy.”



“Understanding Post-Traumatic Epilepsy” Authored by: Evaristo Montalvo MD | Selim R. Benbadis MD on 6/2014

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## Post-Traumatic Epilepsy

- TBI is the most significant cause of symptomatic epilepsy in people from 15 to 24 years of age.
- Post-traumatic epilepsy (PTE) is by definition from a focal (localized) injury, and the frontal and temporal lobes are the most frequently affected regions.
- Preventing head trauma is the key to the prevention of the post-traumatic epilepsy. The preventive use of anti-epileptic drugs can decrease the risk of early post-traumatic seizures, but may not prevent late seizures.



“Understanding Post-Traumatic Epilepsy” Authored by: Evaristo Montalvo MD | Selim R. Benbadis MD on 6/2014

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## Post-Traumatic Epilepsy

- The likelihood of developing (post-traumatic) epilepsy after a TBI is higher with greater severity of the trauma, for example *penetrating* head injuries, when there is intracranial hematomas (bleeding), depressed skull fractures, a coma lasting more than 24 hours, and early seizures.
- About 80% patients with PTE start having seizures within the first two years after the injury. Eventually the risk decreases after five years, and about half of the patients with late PTE have remission spontaneously.
- As is true for non-traumatic epilepsy, imaging (MRI) often fails to show the cause, and, in that situation, it can be difficult to establish that epilepsy is post-traumatic.



Understanding Post-Traumatic Epilepsy\* Authored by: Evaristo Montalvo MD | Selim R. Benbadis MD on 6/2014

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## Seizure Triggers or Precipitants

- **Flashing lights** and **hyperventilation** can trigger seizures in some people with epilepsy
- Factors that might increase the likelihood of a seizure in people with epilepsy include:
  - Missed or late medication (#1 reason)
  - Stress/anxiety
  - Lack of sleep/fatigue
  - Hormonal changes
  - Illness
  - Alcohol or drug use
  - Drug interactions (from prescribed or over the counter medicines)
  - Overheating/overexertion
  - Poor diet/missed meals
  - Extreme heat/cold temperatures
  - Certain smells



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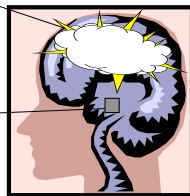
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## Seizure Types

- **Generalized Seizures**
  - Involve the whole brain
  - Common types include absence and tonic-clonic
  - Symptoms may include convulsions, staring, muscle spasms and falls
- **Partial Seizures**
  - Involve only part of the brain
  - Common types include simple partial and complex partial
  - Symptoms relate to the part of the brain affected



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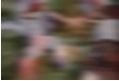

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## Absence Seizures

- Pause in activity with blank stare
- Brief lapse of awareness
- Possible chewing or blinking motion
- Usually lasts 1 to 10 seconds
- May occur many times a day
- May be confused with:
  - Daydreaming
  - Lack of attention
  - ADD

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## Generalized Tonic-Clonic

- A sudden, hoarse cry
- Loss of consciousness
- A fall
- 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

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## First Aid Generalized Tonic-Clonic Seizure

- Stay calm and track time
- Check for epilepsy or seizure disorder I.D. (bracelet, necklace)
- Protect person from possible hazards (chairs, tables, sharp objects, etc.)
- Turn person on his/her side
- Cushion head
- After the seizure, remain with the person until awareness of surroundings is fully regained
- Provide emotional support

Document seizure activity

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## Convulsive Seizure in a Wheelchair

- Do not remove from wheelchair unless absolutely necessary
- Secure wheelchair to prevent movement
- Fasten seatbelt (loosely) to prevent student from falling from wheelchair
- Protect and support head
- Ensure breathing is unobstructed and allow secretions to flow from mouth
- Pad wheelchair to prevent injuries to limbs



Follow relevant seizure first aid protocol

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## Convulsive Seizure on a Bus

- Safely pull over and stop bus
- Place student on his/her side across the seat facing away from the seat back (or in aisle if necessary)
- Follow standard seizure first aid protocol until seizure abates and child regains consciousness
- Continue to destination or follow school policy



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## Convulsive Seizure in the Water

- Support head so that both the mouth and nose are always above the water
- Remove the student from the water as soon as it can be done safely
- If the student is not breathing, begin rescue breathing
- Always transport the student to the emergency room even if he/she appears fully recovered



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## Simple Partial Seizures

- Full awareness maintained
- Rhythmic movements (isolated twitching of arms, face, legs)
- Sensory symptoms (tingling, weakness, sounds, smells, tastes, feeling of upset stomach, visual distortions)
- Psychic symptoms (déjà vu, hallucinations, feeling of fear or anxiety, or a feeling they can't explain)
- Usually lasts less than one minute
- May be confused with: **acting out, mystical experience, psychosomatic illness**

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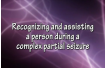
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## Complex Partial Seizures

- Awareness impaired/inability to respond
- Often begins with blank dazed stare
- AUTOMATISMS (repetitive purposeless movements)
- Clumsy or disoriented movements, aimless walking, picking things up, nonsensical speech or lip smacking
- Often lasts one to three minutes
- Often followed by tiredness, headache or nausea
- May become combative if restrained
- May be confused with:
  - **Drunkenness or drug abuse**
  - **Aggressive behavior**

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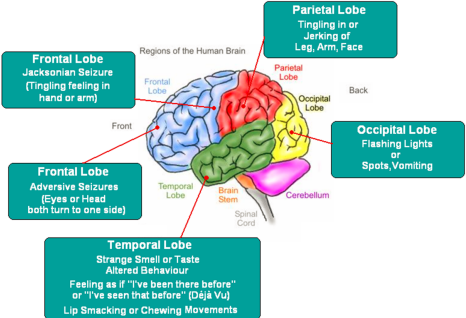
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## More on Partial Seizures



**Frontal Lobe**  
Jacksonian Seizure (Tingling feeling in hand or arm)


**Frontal Lobe**  
Adversive Seizures (Eyes or Head both turn to one side)

**Temporal Lobe**  
Strange Smell or Taste  
Altered Behaviour  
Feeling as if "I've been there before" or "I've seen that before" (Déjà Vu)  
Lip Smacking or Chewing Movements

**Parietal Lobe**  
Tingling in or Jerking of Leg, Arm, Face

**Occipital Lobe**  
Flashing Lights or Spots, Vomiting

**Regions of the Human Brain:** Frontal Lobe, Parietal Lobe, Occipital Lobe, Temporal Lobe, Brain Stem, Cerebellum, Spinal Cord.

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## First Aid - Complex Partial Seizure

- Stay calm, reassure others
- Track time
- Check for medical I.D.
- Do not restrain
- Gently direct away from hazards
- Don't expect person to obey verbal instructions
- Stay with person until fully alert and aware
- If seizure lasts 5 minutes beyond what is routine for that person or another seizure begins before full consciousness is achieved, follow emergency protocol



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## Dangerous First Aid!

- **DO NOT** put anything in the person's mouth during a seizure
- **DO NOT** hold down or restrain
- **DO NOT** attempt to give oral medications, food or drink during a seizure



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## Intractability in Epilepsy

People with intractable seizures:

- Fail to respond to standard antiepileptic drug therapy or other treatment modalities
- May have underlying structural brain or neurological conditions
- Pose the greatest challenge to achieve seizure control



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## Status Epilepticus

- Medically defined as 30 minutes of uninterrupted seizure activity and may include:
  - one prolonged seizure or
  - multiple seizures without recovery to baseline
- Is a **“medical emergency”** and requires immediate action to stop the seizure activity
- Every person’s Seizure Action Plan should clearly define what constitutes a seizure emergency and detail an emergency response plan




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## When is a Seizure an Emergency?

- First time seizure (no medical ID and no known history of seizures)
- Seizure lasting more than 5 minutes
- Repeated seizures without regaining consciousness
- More seizures than usual or change in type
- Person is injured, has diabetes or is pregnant
- Seizure occurs in water
- Normal breathing does not resume




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## Non-Epileptic Seizures

- Events that look like epileptic seizures but on EEG monitoring have no correlation
- Also called psychogenic seizures or pseudo seizures
- Video-EEG monitoring is the most effective way of diagnosing
- Can be caused by a variety of psychological factors




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## Treatment Options

- Antiepileptic Drugs (AEDs)
  - PRN medications (acute seizures and seizure emergencies)
- Brain Surgery
- Ketogenic Diet
- Vagus Nerve Stimulation (VNS) Therapy




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## Rescue Medications

<p>Rectal</p> <p>Intranasal</p> <p>Buccal</p> <p>Sublingual</p>	<p><b>Diazepam Gel</b></p> 	<p><b>Lorazepam</b></p> 	<p><b>Midazolam</b></p> 
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## Vagus Nerve Stimulator

- Device implanted just under the skin in the chest with wires that attach to the vagus nerve in the neck
- Delivers intermittent electrical stimulation to the vagus nerve in the neck that relays impulses to widespread areas of the brain
- Used primarily to treat partial seizures when medication is not effective
- Use of special magnet to activate the device may help person prevent or reduce the severity of an oncoming seizure
- Person may still require antiseizure medication


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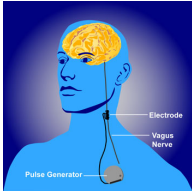
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## VNS: Vagus Nerve Stimulator




Labels in diagram: Electrode, Vagus Nerve, Pulse Generator



Label: Device





- One quick swipe of magnet over device (usually left chest just below collarbone).
- Wait 1 minute and swipe again if needed.
- In many people, the VNS will decrease the intensity and severity of the seizure.

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## Factors that Impact People with Seizures

<p><b>Factors:</b></p> <ul style="list-style-type: none"> <li>• Seizures</li> <li>• Medication side effects</li> <li>• Underlying brain abnormalities</li> <li>• Comorbid conditions</li> <li>• Attitudes, beliefs, experiences</li> </ul>	<p><b>Impacts:</b></p> <ul style="list-style-type: none"> <li>• Learning</li> <li>• Behavior</li> <li>• Self-concept</li> <li>• Stigma</li> <li>• Psychosocial development</li> <li>• Overall quality of life</li> </ul>
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## The Impact on Learning & Behavior

- People with uncontrolled seizures have difficulty with learning, memory, concentration, and attention (Sperling 2004, Herman 1993)
- After a seizure, work may have to be re-taught
- Learning problems can persist even after seizures have been controlled (Silanpaa et al, 1998)
- Medications may cause drowsiness, inattention, concentration difficulties and behavior changes
- People with epilepsy are more likely to suffer from low self-esteem

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## Impact on Psychosocial Development

There is an association between seizures/epilepsy and the following:

- Impaired self-image/self-confidence (Shame/embarrassment)
- Low self-esteem
- Anxiety, depressions
- Delayed social development

*Once seizures are under control, the psychosocial impact may outweigh the medical impact.*



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## Tips for Supporting People with Epilepsy

- Stay calm during seizure episodes
- Be supportive
- Be familiar with person's seizure types and seizure action plan
- Be familiar with seizure triggers
- Encourage positive peer interaction



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## YouTube Seizure Video

### “Understanding & Assisting People with Epilepsy”

*Epilepsy Foundation of America, Inc.*

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<https://www.youtube.com/watch?v=SJWfJovgWQc>



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## Resources

Epilepsy Foundation: [www.epilepsy.com](http://www.epilepsy.com)

Epilepsy Foundation – Iowa: [www.epilepsyiowa.org](http://www.epilepsyiowa.org)

Centers for Disease Control: [www.cdc.gov/epilepsy](http://www.cdc.gov/epilepsy)

National Institute of Neurological Disorders and Stroke: [www.ninds.nih.gov/disorders/epilepsy](http://www.ninds.nih.gov/disorders/epilepsy)

Seizure Videos:  
[www.youtube.com/user/EpilepsyFoundation](http://www.youtube.com/user/EpilepsyFoundation)



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## Contact Information

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