

**A little about seizures...**

- Well-known to the ancients
  - Early Greek writings--Hippocrates.
  - Bible--in the Gospel (Mark 9:14-29)
- One of the most common neurological conditions, affecting 1% of the population world-wide.
- Aliases:
  - Epilepsy: "the falling disease"
  - The Sacred disease
  - Idiocy, fits, spells, attacks

**Famous people with epilepsy:**

- Aristotle proposed an association with genius...
- Historical figures: Socrates, Alexander the Great, Julius Caesar, Napoleon Bonaparte, Harriet Tubman
- Authors: Charles Dickens, Agatha Christie, Truman Capote, Dostoyevsky (*The Idiot*)
- Artists: Van Gogh
- Actors: Richard Burton, Danny Glover, Margaux Hemmingway

**Epilepsy and driving in NJ**

**NJ MVC medical review FAQ**

- **How long do I have to be seizure free before I can drive again?**  
*NJAC 13:19-5.1 et. seq. requires that you be seizure free for one year before you may re-apply, however, all medical review cases are handled on an individual basis. You can contact the Medical Review Unit for further information.*
- **If I am suspended for being medically unqualified to drive, how do I re-apply?**  
*You can contact the Medical Review Unit and the appropriate forms will be sent to you. You will be contacted by mail on the outcome of our review.*
- **If I have a recurrent seizure disorder, can I have a CDL?**  
*According to Chapter 49 of the Commercial Federal Regulation (CFR) 391.41 and by authority of NJAC 13:21-14.5, a person is disqualified from driving a commercial motor vehicle if he/she has an established medical history or diagnosis of epilepsy or any other condition which is likely to cause loss of consciousness or loss of ability to control a commercial motor vehicle.*

**Seizure**

- Paroxysmal discharge of neurons in the brain resulting in a clinical change in neurologic behavior or activity.

**Convulsions**

- Involuntary skeletal muscular activity associated with a seizure.

**Epilepsy**

- Definition variable and controversial
- Condition of the brain with numerous potential causes which predisposes the individual to have recurrent epileptic seizures

- Can be acquired
- Threshold and association with brain abnormality
- Cannot be a single seizure
  - Happens to 7% of population

**Automatisms**

- Stereotyped motor or behavioral phenomena carried out in a state of impaired consciousness and of which the individual usually has no knowledge.
  - No lateralizing diagnostic value

**Conversion Reaction**

- A defense mechanism by which the anxiety stemming from an unconscious conflict is converted and expressed symbolically as a physical symptom; transformation of an emotion into a physical reaction as in conversion hysteria.

**Pseudoseizures**

- Spells which resemble epileptic seizures by their description but are of non-epileptic, usually psychogenic, origin.

**Reflex epilepsies**

- Rare
- Seizures provoked consistently by specific sensory stimuli
  - flickering lights
  - video games or television
  - specific piece of music
  - reading
  - immersion in hot water
  - Etc.

**Status Epilepticus**

- Prolonged epileptic state
  - Series of seizures which are closely spaced
    - In the case of generalized tonic-clonic seizures consciousness is not regained between attacks.
  - Single continuous seizure, usually defined as lasting longer than 30 minutes.

- 60,000-150,000/yr in U.S.

**Six Key Descriptive Terms**

- Partial vs. Generalized
- Simple vs. Complex
- Primary, Secondary

**Partial seizures**

- Focal
- Limited to one area of brain

**Motor Homunculus**

- What do real estate and seizures have in common?
  - Location, location, location!

**Simple partial seizures**

- Involves local motor, sensory, or autonomic dysfunction
- Consciousness is not impaired

- Examples
  - Focal motor seizure
  - Jacksonian/"marching" seizure
  - Aura preceding GTC

**Complex partial seizures**

- Involves focal activity that affects mental status, mood, behavior
  - Temporal lobe most common origin
  - Psychomotor
  - May involve automatisms

**Generalized seizures**

- Produces widespread neurologic malfunction
- Seizure activity that spreads to the entire cerebral cortex
- Convulsive or non-convulsive

**(Nonconvulsive) Childhood absence epilepsy (CAE)**

- Generalized, non-convulsive seizures
- Common: 4-12 y/o
  - Peak 5-6 y/o
- Staring, blinking, chewing/mouthing
- Prone to clustering
- No postictal confusion
- Often outgrown by adulthood
- 3 Hz spike and wave EEG

**(Convulsive) generalized seizures**

- Myoclonic
- Tonic
- Atonic
- Clonic
- Tonic-clonic

**Generalized Tonic-Clonic Seizures (GTC)**

- Typical progression
  - Aura
  - (Loss of consciousness)
  - Tonic phase
  - Hypertonic phase
  - Clonic phase
  - Postictal phase (coma, stupor)

**Key Observations**

- Prodrome?
- Involuntary movements
- Consciousness
- Progression
- Postictal signs?
- Duration
  - Majority < 30 seconds
  - 90% of seizures last less than 90 seconds
- Hyperthermia can be confounding
  - Not all hot kids had a febrile seizure!

**Key Management Principles**

- Scene safety
- Watch and document the seizure evolution and progression

- Assure airway, ventilation, and oxygenation
- Assure substrates oxygen and glucose
- Correct reversible causes
  - Hypoxia, hypoglycemia, arrhythmia
- Anticonvulsant for prolonged seizure

**Summary**

- Not all seizures have convulsions and not all convulsive spells are seizures.
- Careful history and observations about seizure progression are key in diagnosis.
- Most are short and rarely require anticonvulsant therapy.

Seizures can be systematically described and classified.

