

Is it a seizure?

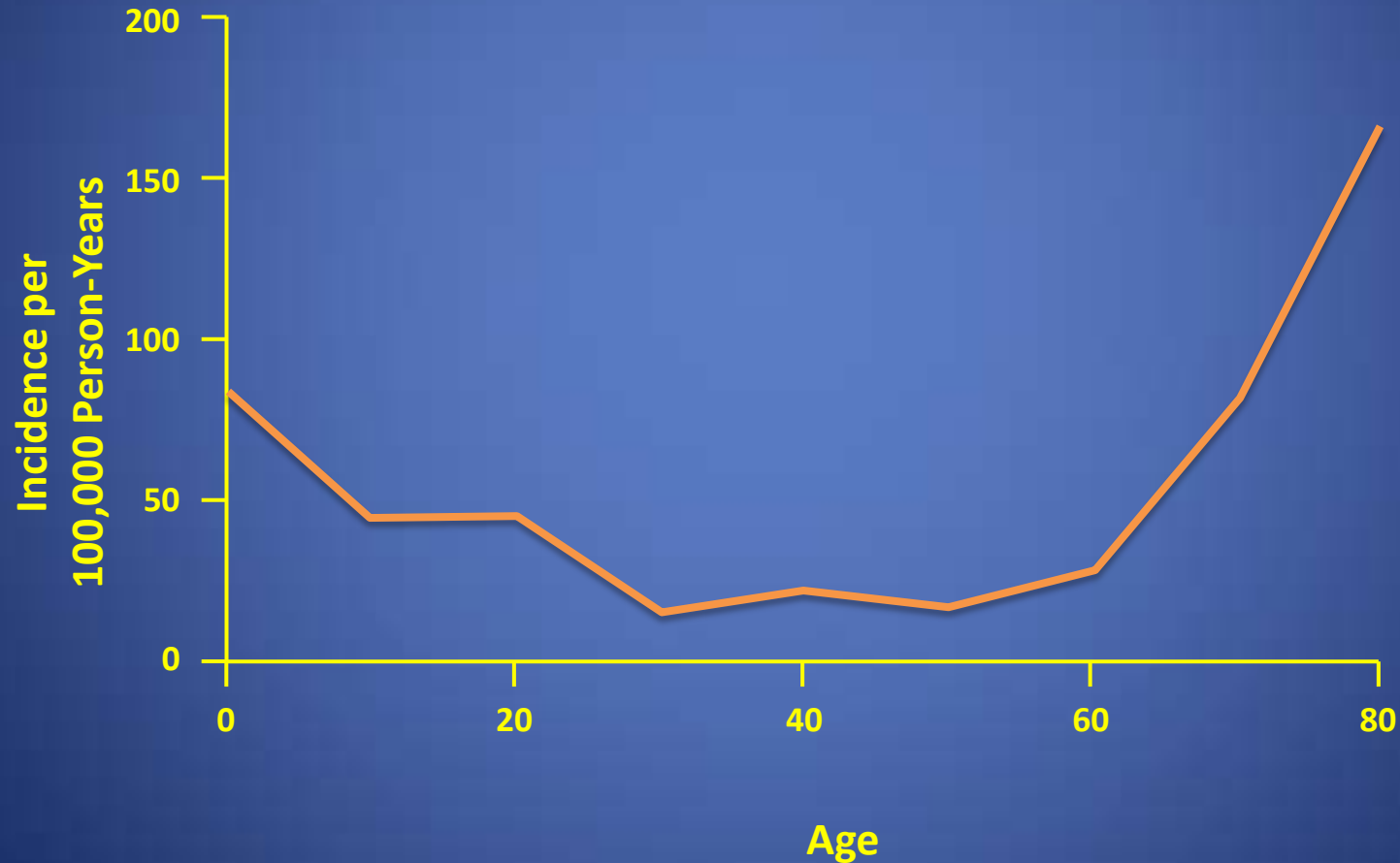
David Teeple, MD

Epidemiology of Epilepsy

- ~3 Million people in the US
 - 50 million worldwide
- 4rd most common neurological disorder
 - Equal in prevalence to:
 - Cerebral palsy
 - MS
 - Parkinson's disease
 - COMBINED

Epidemiology

Age Specific Incidence of Epilepsy



Current ILAE Classification of Epilepsy

Partial Onset Seizures Originate From 1 Cerebral Hemisphere

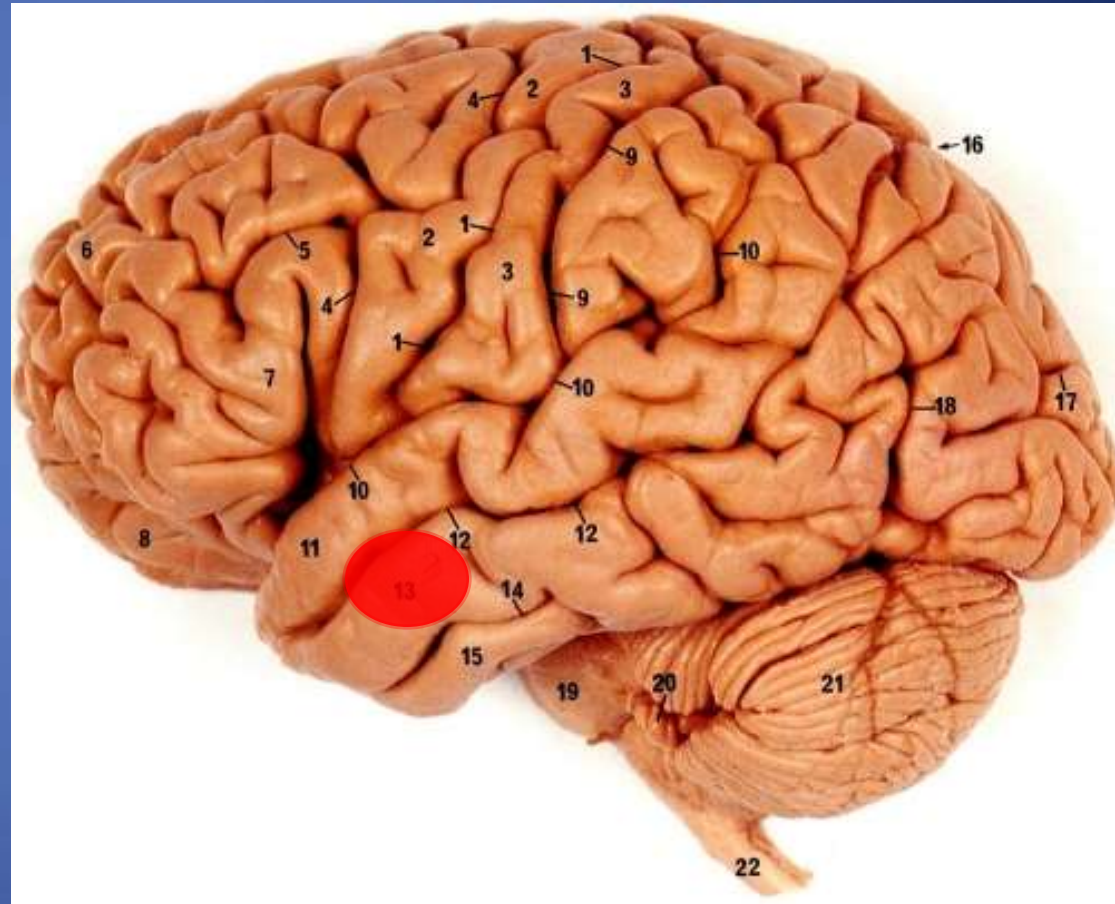
- Simple Partial Seizure
- Complex Partial Seizure
- Secondarily Generalized Seizure

Generalized Seizures originate in Both Cerebral Hemispheres

- Absence
- Atypical Absence
- Atonic
- Tonic
- Clonic
- Tonic-Clonic
- Myoclonic

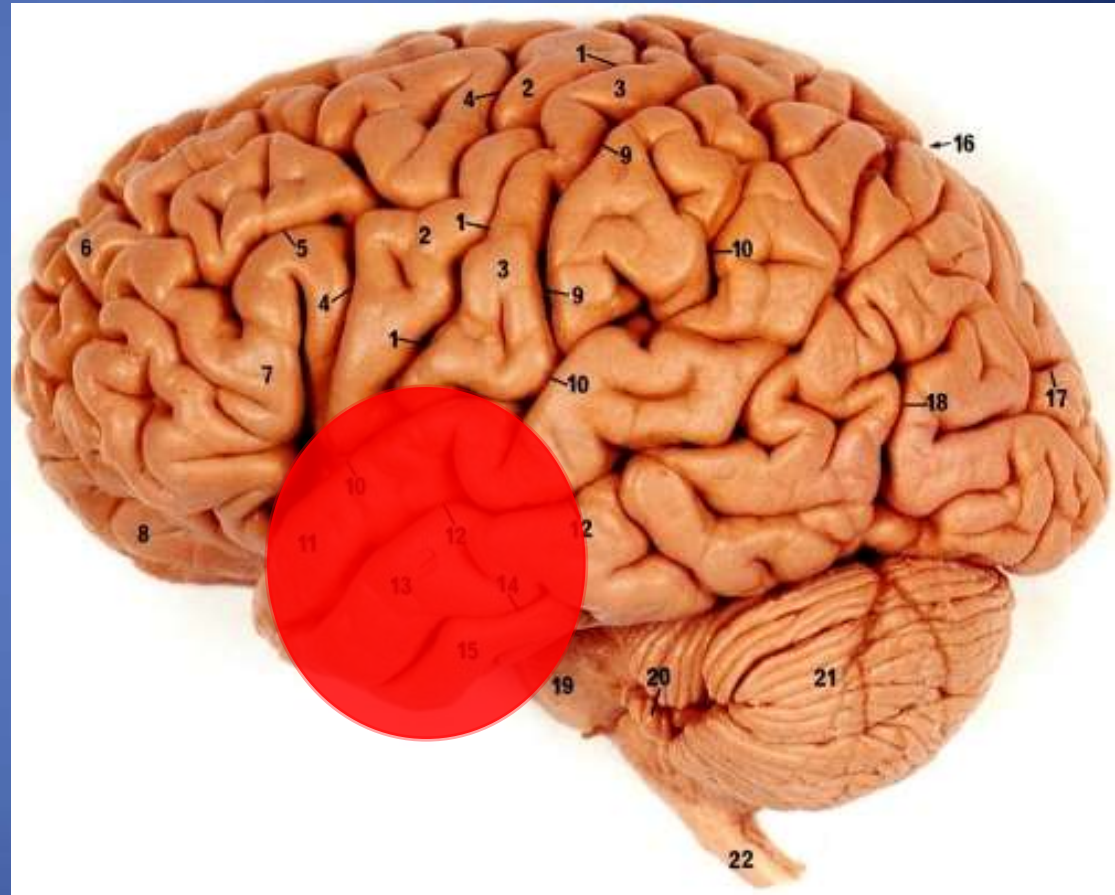
Focal Seizures:

- **Simple Partial Seizure**
 - **No alteration of awareness**
 - **Aura**
 - Abdominal rising sensation
 - Metallic taste
 - Noxious smell
 - Anxiety
 - Depersonalization



Focal Seizures:

- **Complex Partial Seizure**
 - **Alteration of awareness**
 - “Shades of grey”
 - **Automatisms**



Focal Seizures:

- Secondarily generalized tonic-clonic seizure
- “Grand Mal”

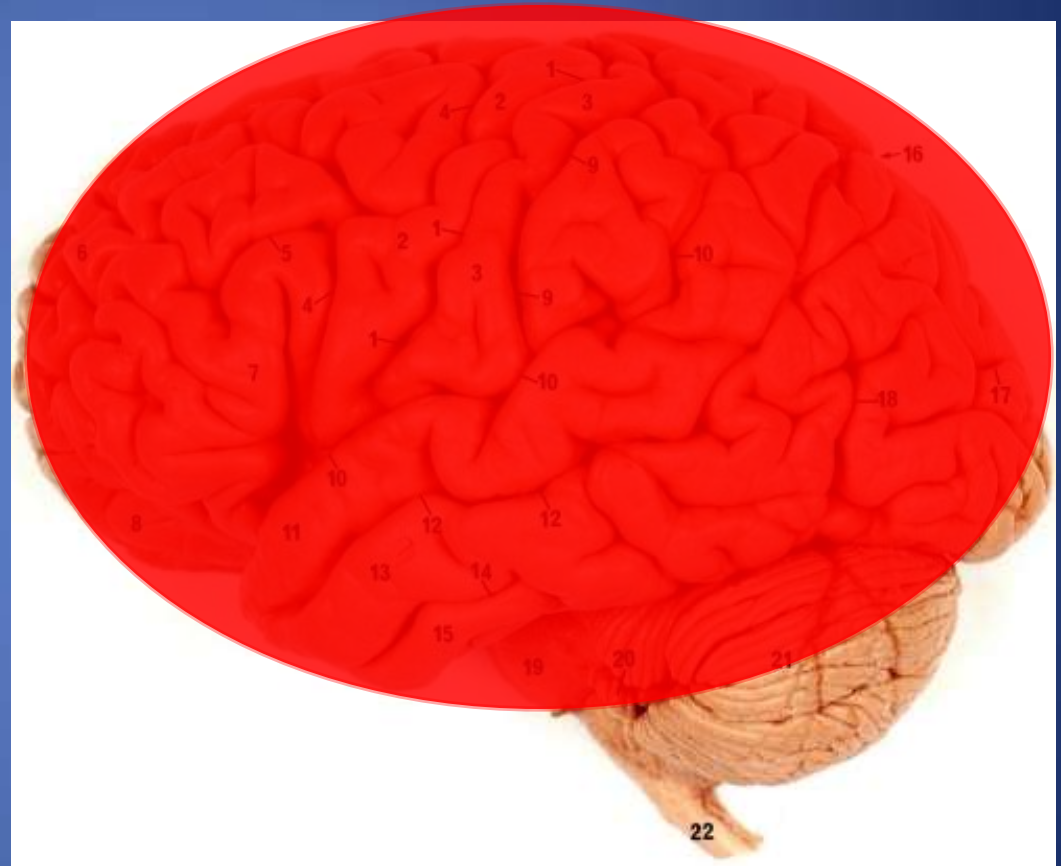


- “He remembered that during his epileptic fits, or rather immediately preceding them, he had always experienced a moment or two when his whole heart, and mind, and body seemed to wake up with vigor and light; when he became filled with joy and hope, and all his anxieties seemed to be swept away for ever; these moments were but presentiments, as it were, of the one final second...in which the fit came upon him. That second, of course, was inexpressible. Next moment something appeared to burst open before him: a wonderful inner light illuminated his soul. This lasted perhaps half a second, yet he distinctly remembered hearing the beginning of a wail, the strange, dreadful wail, which burst from his lips of its own accord, and which no effort of will on his part could suppress. Next moment he was absolutely unconscious; black darkness blotted out everything. He had fallen in an epileptic fit.”

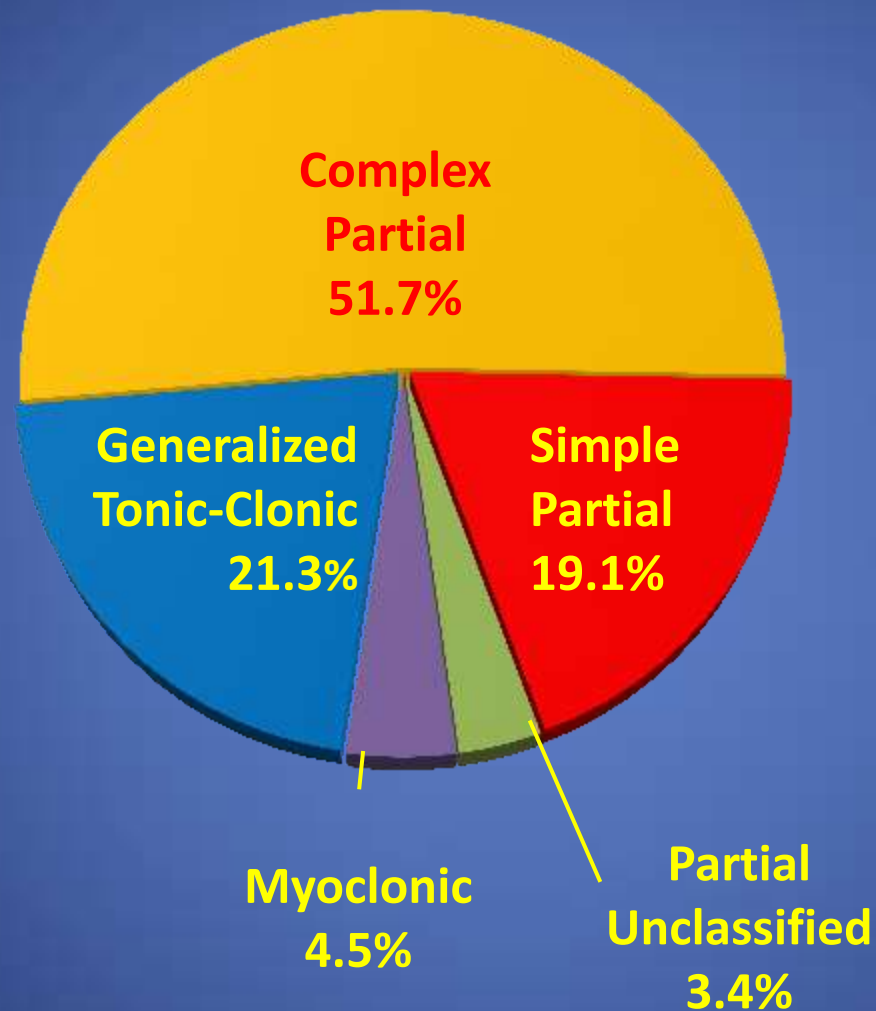
– Dostoyevsky

Generalized Seizures

- NO warning or aura
- Absence (Petit mals)
- Myoclonic
- Atonic
- Tonic
- Clonic
- Tonic-Clonic (Grand mal)



Epilepsy in the Elderly: Seizure Type (≥ 60 Years)



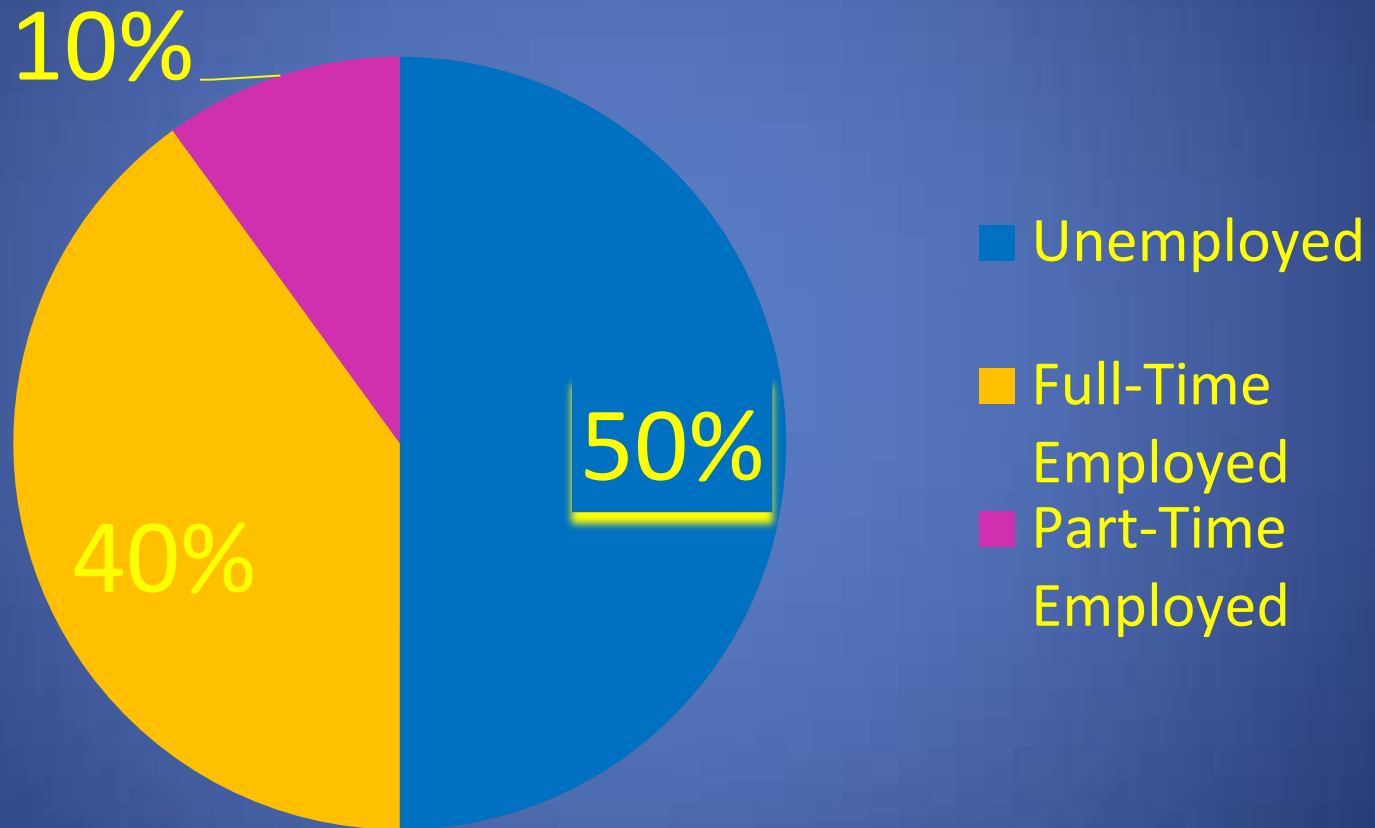
AED Fails to Control Seizures in $\approx 37\%$ of Patients with Newly Diagnosed Epilepsy

Seizure free with
1 Million people continue
to have seizures despite
medications!

Burden of Epilepsy

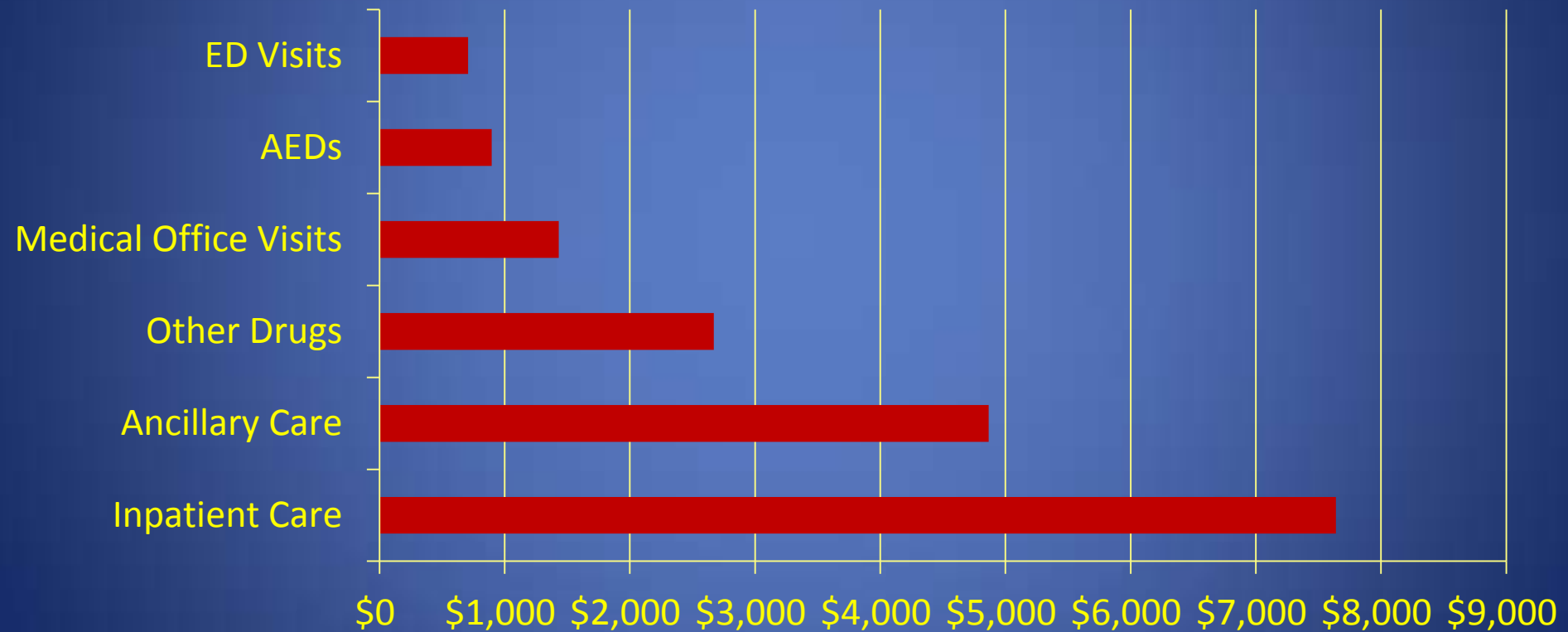
- Impact of seizures
- Impact of chronic medication
- Cognitive problems
- Psychiatric issues
- Women's issues
- Driving / Employment / Education

Individuals with Epilepsy Face Higher Rates of Unemployment



Epilepsy contributes to 15.5 billion in annual costs

Annual Direct Mean Medical Costs per Patient with Epilepsy



Davis, KL, Candrilli SD, Edin HM. Pervallence and cost of non-adherence with antiepileptic drugs in an adult managed care population. *Epilepsia*. 2008; 446-454.

- For best treatment
- For most cost effective treatment
- We need to be able to identify which events are seizures

Identifying Seizure

- Epilepsy monitoring unit
 - Identify that it is a seizure
 - Localize the onset of the seizure

IS IT A SEIZURE?

Temporal Lobe Seizures

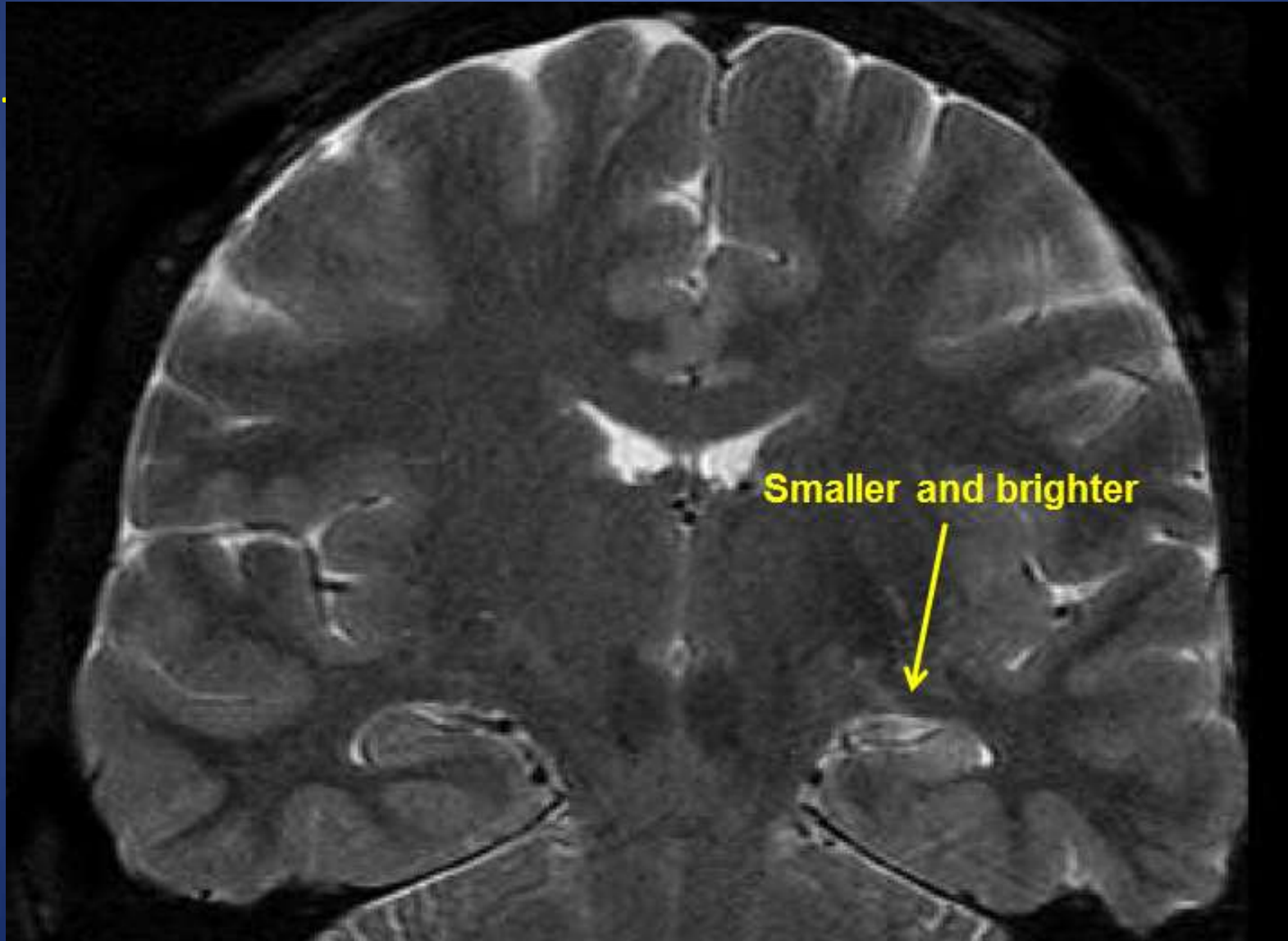
- Most common form of partial or localization related epilepsy.
 - 60% of all epilepsy
- Normal
 - birth, labor, delivery and development
- Usually begins at the end of a first or second decade
- Higher risk for memory and mood difficulties

Temporal Lobe Seizures

- The most common a
 - Déjà-vu experiences
 - Rising epigastric sens
 - Fear
 - Unusual smell, taste
 - Depersonalization
 - Panic



Temporal Lobe Epilepsy



IS IT A SEIZURE?

Psychogenic Non-epileptic seizures (PNES)

- PNES account for 30% of seizures
 - ~25% intractable seizures
 - Frequency similar to TN or MS!
- Etiology
 - Factitious disorder
 - Malingering
 - Somatoform disorder
 - Conversion disorder

CHARACTERIZATION OF PNES

- Gradual onset and cessation
- Inducible by placebo



Diagnosis hinges on video-EEG monitoring to establish no ictal or epileptiform abnormalities



- Weeping
- Eye closure

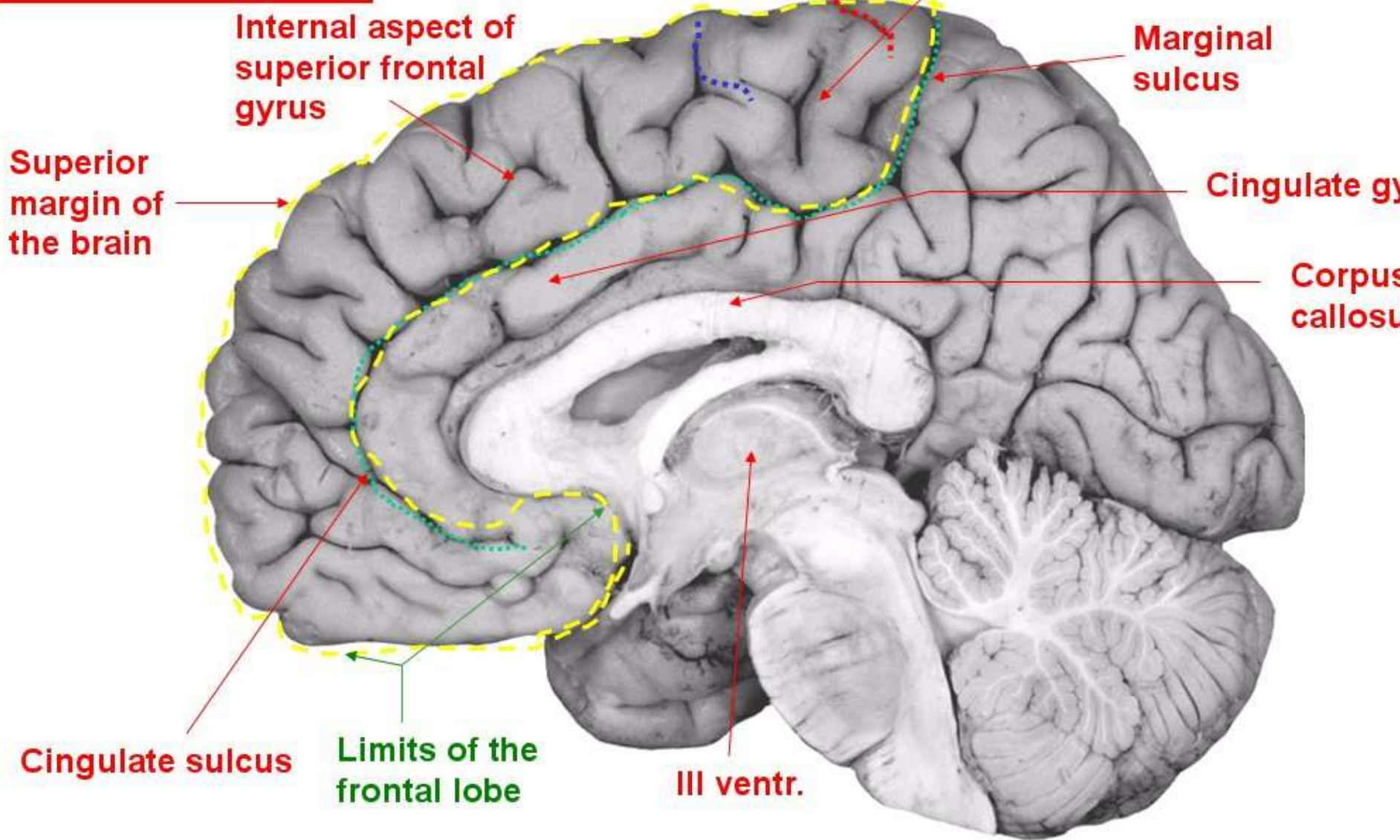


TREATMENT OF PNES

- Psychiatric evaluation
 - Clarify what psychiatric issues exist
- Psychotherapy most beneficial
 - Variant of behavioral therapy
- Treatment can be difficult
 - Other issues pop up
 - Dealing with psychiatric etiology
 - How the diagnosis is given

IS IT A SEIZURE?

Frontal Lobe



Frontal Lobe Seizures

- Typically brief seizures often out of sleep
- Semiology is unusual/bizarre:
 - Hypermotor
 - Startling
 - Twisting/Turning
 - Maintained consciousness
 - Screaming/grimacing
- These seizures may occur in clusters

IS IT A SEIZURE?

Occipital Lobe Seizures

- Partial seizures can come from anywhere

IS IT A SEIZURE?

GENERALIZED SEIZURES

- **Tonic-Clonic (Clonic-Tonic-Clonic)**
- **Absence**
- **Myoclonic**
- **Atonic**
- **Tonic**
- **Clonic**

Generalized Seizures

- Relatively small proportion of seizures in adults
- Not candidate for resective surgery
- Certain medications can exacerbate
 - Gabapentin
 - Pregabalin
 - Carbamazepine
 - Phenytoin

Is it a Seizure?

- Psychogenic seizures are common
 - Diagnosis fundamental step in getting right treatment
- Focal seizures with many different manifestations
 - Depend on where they originate
 - Treatment can be defined on where seizure originates
- Generalized epilepsy
 - Less common in adults
 - Specific medications may exacerbate