Epilepsy

By: Adama and Awa Sowe

What is it?

Epilepsy is a neurological disorder marked by sudden recurrent episodes of *sensory disturbance*, *loss of consciousness*, or *convulsions,* associated with **abnormal electrical activity in the brain**.

What Are The Types of Seizures

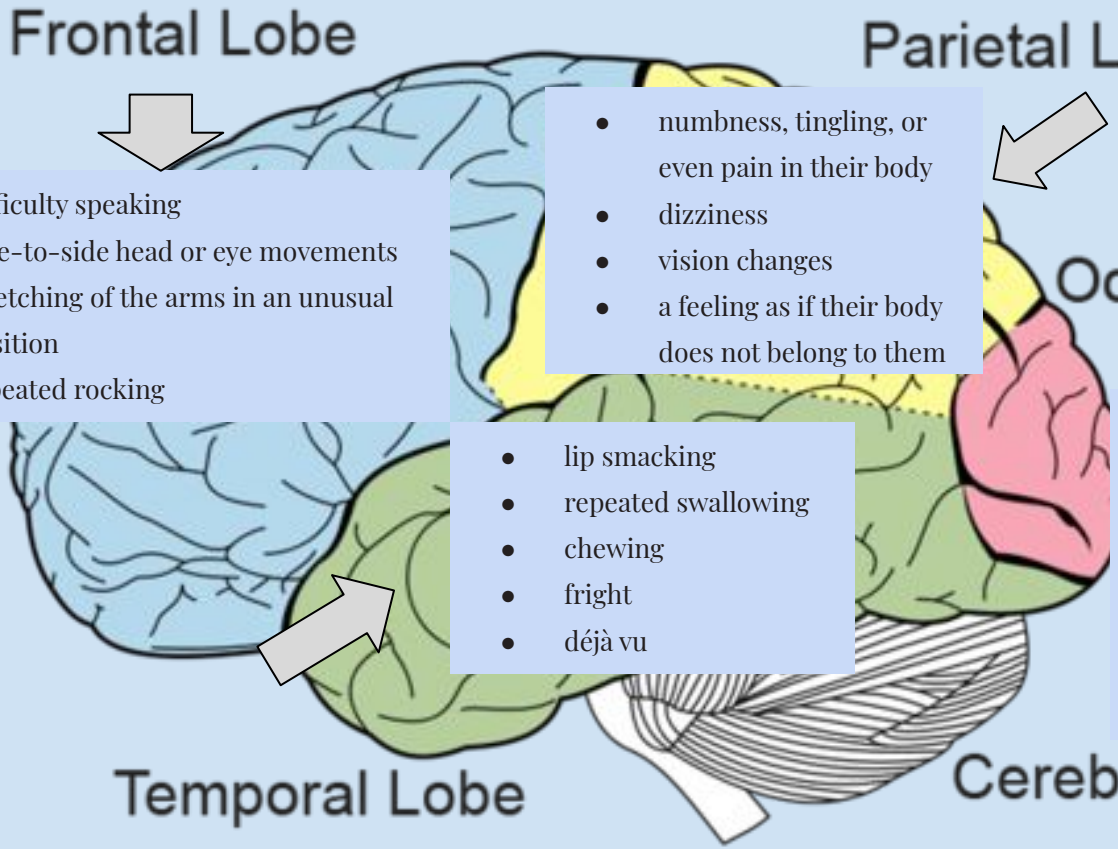
Focal onset seizures: start in one area of the brain

- **Focal onset aware seizures:** Person maintains consciousness but will likely experience changes in movement.
- **Focal onset impaired awareness seizures**: Person either loses consciousness or experiences a change in consciousness.
- **Focal onset seizures that secondarily generalize:** Seizures start in one region of the brain but then spread to other regions of the brain. Person may experience convulsions, muscle spasms, or affected muscle tone.

Generalized seizures: affect all areas of the brain which include:

- **Tonic-clonic**: Muscles stiffen in the tonic phase then limbs jerk and joints bend in the clonic phase.
- **Absence:** The person suddenly stops all activity. It may look like he or she is staring off into space or just has a blank look.
- **Atonic seizures:** Muscles suddenly become limp.

What Does Focal Onset Seizures Look Like According to Each Part of the Brain?



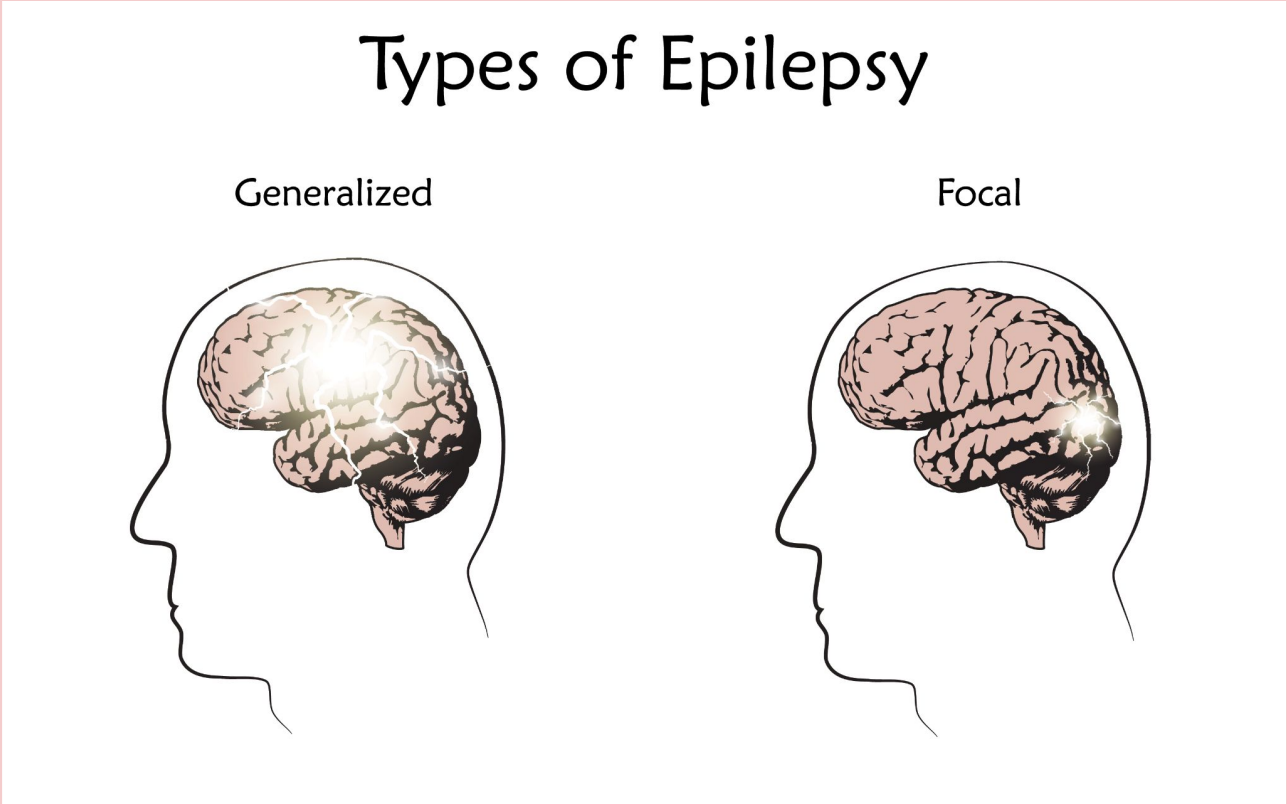
- difficulty speaking
- side-to-side head or eye movements
- stretching of the arms in an unusual position
- repeated rocking

- numbness, tingling, or even pain in their body
- dizziness
- vision changes
- a feeling as if their body does not belong to them

- visual changes with eye pain
- a feeling as if the eyes are rapidly moving
- seeing things that aren't there
- fluttering eyelids

- lip smacking
- repeated swallowing
- chewing
- fright
- déjà vu

Imagine It!



What Triggers Seizures?

Even though triggers are different for everyone some very common triggers are:

- lack of sleep
- illness or fever
- stress
- bright lights, flashing lights, or patterns
- caffeine, alcohol, medicines, or drugs
- skipping meals, overeating, or specific food ingredients

A single incident doesn't always mean something is a trigger. It's often a combination of factors that trigger a seizure.

What Causes Epilepsy?

The seizures in epilepsy may be related to a brain injury or a family tendency, but often the cause is completely unknown. However possible causes include:

- Scarring on the brain after brain injury
- Illness or high fever
- Stroke
- Certain vascular diseases
- Lack of oxygen to the brain
- Brain tumors
- Drug use
- genetic or developmental disorders or neurological diseases

“WHO” Does It Affect?

As determined by the World Health Organization (WHO) in 2019,

- Epilepsy affects people of all ages.
- 50 Million people worldwide have Epilepsy, on of the most common neurological disease
- 80% of people people with Epilepsy live in low and middle income countries
- 70% of people living with epilepsy could live seizure-free if properly diagnosed and treated.
- The risk of premature death in people is up to three times higher than for the general population
- 75% of people with epilepsy in low-income countries do not get the treatment they need.

What is the Neuroscience behind Epilepsy?

- Neurons use electrical signals to send messages through the brain at synapses by chemical messengers called neurotransmitters.
- Glutamate is the main neurotransmitter that tell neurons to send an action potential, sending the signal further.
- GABA is the main neurotransmitter that binds to a neuron and blocks that cell from sending an action potential
- Seizures are caused by an imbalance in the excitatory(Glutamate) and inhibitory (GABA) signalling in the brain, which creates increases in electrical activity.
- Different groups of neurons are all firing at different times. During a seizure, the rate of this activity increases, and different groups of neurons are all firing at the same time.

Thank You!

Adama Sowe: adama.sowe.2468@gmail.com
Awa Sowe: awasowe576@gmail.com