Review of Seizure Disorders
Objectives

1. Define Seizures
2. List some of the symptoms, causes, and triggers of seizures.
3. Describe care to be provided to patients during and after a seizure
4. List the categories of seizures
5. Describe medications used for seizures, common side effects, and monitoring
Defining a Seizure

*also known as a convulsion, the disease is called Epilepsy
*a brain disorder in which clusters of nerve cells, or neurons, in the brain sometimes signal abnormally
*the normal pattern of neuronal activity becomes disturbed
General Seizure Information

*The type of seizure and symptoms depend on where the abnormal electrical activity takes place in the brain, what its cause is, and such factors as the patient’s age and general state of health.
*Epilepsy & seizures can develop in any person at any age, but are more common in young children and older people.
*About 1 in 100 people will have a single unprovoked seizure or has been diagnosed with epilepsy.
*1 in 26 people will develop epilepsy (which is the tendency to recurring seizures) in their lifetime.
Symptoms of Seizures

Specific symptoms depend on what part of the brain is involved, but may include the following:

* brief blackout followed by a period of confusion (Short term memory loss)
* changes in behavior such as picking at one’s clothing
* drooling or frothing at the mouth
* eye movements
* grunting and/or snorting
Symptoms continued

*loss of bladder or bowel control
*mood changes such as anger, fear, panic, joy, or laughter.
*shaking of the entire body
*sudden falling
*tasting a bitter or metallic flavor
*teeth clenching
*temporary stop in breathing
*uncontrollable muscle spasms with twitching and jerking of limbs
Symptoms continued

*Symptoms may stop after a few seconds or minutes, or continue up to 15 minutes. They rarely continue longer.
*Person may exhibit warning signs before the attack also, such as:

  * Fear or anxiety
  * Nausea
  * Vertigo
  * Visual symptoms (flashing lights, spots, wavy lines)
Common Reported Triggers

* Specific time of day or night
* Sleep deprivation - overtired, not sleeping well or enough
* When a fever exist
* Flashing bright lights or patterns
* Alcohol or drug use
* Stress
* Associated with menstrual cycle (women) or other hormonal changes
* Not eating well, low blood sugar
* Specific foods, excess caffeine or other products
* Use of certain medications
Statement on Triggers

Seizure triggers do not cause Epilepsy but can provoke first seizures or cause breakthrough seizures in patients who otherwise experience good seizure control with their medications.
Causes of Seizures

Seizures of all types are caused by disorganized and sudden electrical activity in the brain.

Common causes of seizures include:

- Abnormal levels of sodium or glucose in the blood
- Brain infection, including meningitis
- Brain injury that occurs to the baby during labor or childbirth
- Brain problems that occur before birth (congenital brain defects)
- Brain tumor (rare)
- Drug abuse
- Electric shock
- Fever (particularly in young children)
- Head injury
Common causes continued

*Heart disease
*Heat illness (heat intolerance)
*High fever
*Phenylketonuria (PKU) - which causes seizures in infants
*Poisoning
*Street drugs, such as angel dust (PCP), cocaine, amphetamines
*Stroke
*Toxemia of pregnancy
*Toxin buildup in the body due to liver or kidney failure
*Venomous bites and stings (i.e. snake bite)
*Withdrawal from alcohol or certain medicines after using for a long time
Statement on Causes

Sometimes no cause can be found or determined. This is called idiopathic seizures. They are usually seen in children and young adults, but can occur at any age. There may be a family history of epilepsy or seizures.

If seizures continue repeatedly after the underlying problem is treated, the condition is called epilepsy.
Taking Care of Patient During a Seizure

Most seizures stop by themselves. But a person could get injured. When a seizure occurs, the main goal is to protect the person from injury:

* Prevent a fall, lay person in a safe area, clear area of furniture or other sharps objects.
* Cushion the person’s head
* Loosen tight clothing, especially around the neck
* Turn the person on the side. Especially if vomiting occurs, this helps make sure that the vomit is not inhaled into the lungs.
* Stay with person until he or she recovers, or until professional medical help arrives.
What NOT to do During a Seizure

*Do NOT restrain (try to hold down) the person
*Do NOT place anything between the person’s teeth during a seizure (including your fingers)
*Do NOT move the person unless they are in danger or near something hazardous
*Do NOT try to make person stop convulsing. They have no control over the seizure and are not aware of what is happening at the time.
*Do NOT give the person anything by mouth until the convulsions have stopped and the person is fully awake and alert.
*Do NOT start CPR unless the seizure has clearly stopped and the person is not breathing or has no pulse.
Seizure in Children With High Fever

If a baby or child has a seizure during a high fever, cool the child slowly with lukewarm water.

Do not place the child in a cold bath.

You can give the child Tylenol once he or she is awake, especially if the child has had fever convolution before.
When to Contact a Medical Professional

Call 911 or your local emergency number if:

* This is the 1st time the person has had a seizure
* A seizure lasts more than 2-5 minutes
* The person does not awaken or have normal behavior after the seizure.
* Another seizure starts soon after a seizure ends.
* The person had a seizure in the water.
* The person is pregnant, injured, or has diabetes.
* The person does not have a medical ID bracelet
* There is anything different about this seizure compared to the person’s usual seizures.
What to Expect at Your Doctor’s Visit

*Physician will try to diagnose the type of seizure based on the symptoms.
*Test will be conducted to rule out other medical conditions, that cause seizures or similar symptoms.
*These test could include:
  - Blood test
  - CT Scan of the head or MRI of the head
  - EEG
  - Lumbar puncture (spinal tap)
Different Categories of Seizures

Partial Seizures: also called focal or local

1. **Simple Partial** - during this seizure, level of consciousness is unchanged, may have uncontrolled movement of body parts, hear unusual noises, or see flashing lights.

2. **Complex Partial** - level of consciousness changes, unaware of others presence, may have motor symptoms as in simple partial, may begin as simple partial and become complex partial
Categories of Seizures continued

Generalized Seizures:
1. **Convulsive** - rigid muscles; muscles suddenly become stiff, violent muscle contractions; muscles move quick, random spasms, loss of consciousness, and patient no longer aware of what is happening. “Blackout”
2. **Nonconvulsive** - a seizure where level of consciousness is decreased and may also be some muscle twitching.
3. **Generalized tonic-clonic** - loss of consciousness followed by convulsions, may have incontinence of bowel or bladder.

Unclassified Seizures:
*Usually a wide range of symptoms, can exhibit signs of each category*
Medications Used to Treat Seizures

The following is a list of common medications used to treat/prevent seizures and/or epilepsy:

- Tegretol or Carbatrol (Carbamazepine)
- Trileptal (Oxcarbazepine)
- Depakene, Depakote (Valproate, Valproic Acid)
- Zarontin (Ethosuximide)
- Felbatol (Felbamate)
- Zonegran (Zonisamide)
- Gabitril (Tigabine)
- Fycompa (Perampanel)
- Keppa (Levetiracetam)
- Oxtellar XR (Oxcarbazepine XR)
- Lamictal (Lamotrigine)
- Aptiom (Eslicarbazepine Acetate)
- Lyrica (Pregabalin)
- Vimpat (Lacosamide)
- Neurontin (Gabapentin)
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- Dilantin (Phenytoin)
Tegretol or Carbatrol (Carbamazepine)

*First choice for partial, generalized tonic-clonic and mixed seizures.

*Common adverse effects include fatigue, vision changes, nausea, dizziness
Zarontin  (*Ethosuximide*)

*Used to treat absence seizures*

*Adverse effects include nausea, vomiting, decreased appetite, and weight loss*
Felbatol *(Felbamate)*

*Treats partial and some generalized seizures; is used rarely and only when no other medications have been effective.*

*Side effects include decreased appetite, weight loss, inability to sleep, headache, and depression. Although rare, the drug may cause bone marrow or liver failure.*
**Gabitril (Tiagabine)**

*Used with other Epilepsy drugs to treat partial and some generalized seizures.

*Common side effects include dizziness, fatigue, weakness, irritability, anxiety, and confusion.*
Keppra *(Levetiracetam)*

*Primary therapy for generalized seizures; it is combined with other epilepsy drugs to treat partial seizures.*

*Side Effects include tiredness, weakness, and behavioral changes.*
Lamictal *(Lamotrigine)*

*Treats partial and some generalized seizures*

*Has few side effects, but rarely people report dizziness, insomnia, and rash.*
Lyrica (Pregabalin)

*Used to treat partial seizures, but is used more often to treat neuropathic pain.

*Side effects include dizziness, sleepiness (somnolence), dry mouth, peripheral edema, blurred vision, weight gain, and difficulty concentration/attention.
Neurontin  (*Gabapentin*)

*Used with other epilepsy drugs to treat partial and some generalized seizures

*Few lasting side effects; during the first weeks of treatment, you may experience tiredness and dizziness*
Dilantin *(Phenytoin)*

*Controls partial seizures and generalized tonic-clonic seizures; also can be given by vein (intravenously) in the hospital to rapidly control active seizures (known as Cerebyx *(Fosphenytoin)*).

*Side effects include dizziness, fatigue, slurred speech, acne, rash, and increased hair (hirsutism). Long term can cause bone thinning.*
Topamax (Toprimate)

*Used with other drugs to treat partial or generalized tonic-clonic seizures.

*Side effects include sleepiness, dizziness, speech problems, nervousness, memory problems, vision problems, weight loss
Trileptal *(Oxcarbazepine)*

*Treats partial seizures*

*Most common side effects are tiredness, dizziness, headache, blurred vision, or double vision*
Depakene, Depakote  *(Valproate, Valproic Acid)*

*Used to treat partial, absence, and generalized tonic-clonic seizures.*

*Common side effects: dizziness, nausea, vomiting, tremor, hair loss, weight gain, depression in adults, irritability in children, reduced attention, a decrease in thinking speed.*

*Long term side effects: bone thinning, swelling of ankles, irregular menstrual periods.*

*Rare/Dangerous side effects: hearing loss, liver damage, decreased platelets, pancreas problems.*
Zonegran (Zonisamide)

*Used with other drugs to treat partial seizures.

*Adverse effects include drowsiness, dizziness, unsteady gait, kidney stones, abdominal discomfort, headache, and rash.
Valium (Diazepam), Ativan (Lorazepam), Klonopin (Clonazepam)

*Effective in short-term treatment of seizures; used often in emergency room to stop a seizure, particularly status epilepticus.
*Tolerance develops in most within a few weeks, so the same dose has less effect over time.
*Valium can also be given as rectal suppository.
*Side effects include: tiredness, unsteady walking, nausea, depression, and loss of appetite.
*In children, can cause drooling and hyperactivity
Fycompa  (*Perampanel*)

*This drug is approved to treat partial onset seizures in those age 12 and older.*

*The label carries a warning of potential serious events including irritability, aggression, anger, anxiety, paranoia, euphoric mood, agitation, and changes in mental status.*
Oxtellar XR *(Oxcarbazepine)*

*This drug is approved to treat partial seizures in those aged 6 and older.*

*It is a once-daily medicine used with other medications to control seizures.*

*Common side effects include dizziness, sleepiness, headache, vomiting, double vision, and balance problems.*
Aptiom  (*Eslicarbazepine Acetate*)

*Used as adjunctive (with other medications) to treat partial-onset seizures.*

*The most common side effects include: dizziness, nausea, vertigo, ataxia, blurred vision, and tremor.*
VIMPAT *(Lacosamide)*

*Used to treat partial-onset seizures in adults with epilepsy.*
*Can be used alone or with other drugs.*
*Is available as tablets, oral solution, or injection.*
*Side effects include: dizziness, headache, nausea*
Treatment Summary

*Initial therapy may take several months to determine best drug & dosage
*Frequent blood tests may be needed to measure response to the medications.
*Monitor and document side effects, since there are multiple options available for treatment.