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# FIRST SEIZURE

## *HOW TO MANAGE*

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# INTRODUCTION

- Seizures affect an estimated 8 to 10 percent of the population over a lifetime.
  - Seizures account for 1 to 2 percent of all emergency department visits.
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# CASE 1

- A 66-year-old male
  - hypertension, hypercholesterolemia, diabetes mellitus
  - **whole-body jerking, loss of consciousness, and urinary incontinence. The event lasted minute."**
  - neurological examination is normal.
  - remembers feeling **lightheaded**, clammy, and nauseated, prior to losing consciousness.
  - "confused" during recovery with evidence of **urinary incontinence**.
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## CASE 2

- A 71-year-old right-handed man
  - hypertension, persistent atrial fibrillation, and hypercholesterolemia.
  - suddenly unable to talk and **weakness of his right hand**.
  - a scream followed by a “grand mal” **seizure**.
  - Immediately treated with antiseizure drugs for short time & discharged.
  - Two years later another seizure occurs
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## CASE 3

- An 18-year-old female with a history of migraine
  - first “grand mal” **seizure** last night.
  - further inquiry revealed she felt “**twitchy,**” **several times in the past but had ignored.**
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# EVALUATION STEPS

- Whether the event is actually a seizure rather than a seizure-mimic
  - The seizure is actually the first seizure of the pt
  - Seizure is provoked (acute symptomatic seizure) or unprovoked
  - The chance of recurrence of seizure
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# SEIZURE MIMICS

- Syncope
  - Transient ischemic attack
  - Migraine aura
  - Panic attack
  - Psychogenic nonepileptic seizure
  - Paroxysmal movement disorders
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# ACUTE SYMPTOMATIC SEIZURE

- Refers to a seizure that occurs **at the time of a systemic insult** or in **close temporal association with a documented brain insult**.
  - Acute symptomatic seizures make up 25 to 30 percent of first seizures.
  - May recur during the index illness but generally carry a **low risk for future epilepsy** compared with unprovoked seizures.
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# ACUTE SYMPTOMATIC SEIZURE (CONT)

## Example:

- Within one week of stroke, traumatic brain injury, anoxic encephalopathy, or intracranial intracranial surgery
  - At first identification of subdural hematoma
  - During the active phase of a central nervous system infection
  - Within 24 hours of a severe metabolic derangement
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# UNPROVOKED SEIZURE

- Refers to
    - A seizure of **unknown** etiology or
    - One that occurs in relation to a **preexisting brain lesion** or
    - **Progressive** nervous system disorder.
  - Carry a **higher risk of future epilepsy** compared with acute symptomatic seizures.
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# EPILEPSY - DEFINITION

- At least **two** unprovoked seizures occurring more than 24 hours apart.
  - **One** unprovoked seizure and an increased probability of further seizures
  - Diagnosis of an **epilepsy syndrome**.
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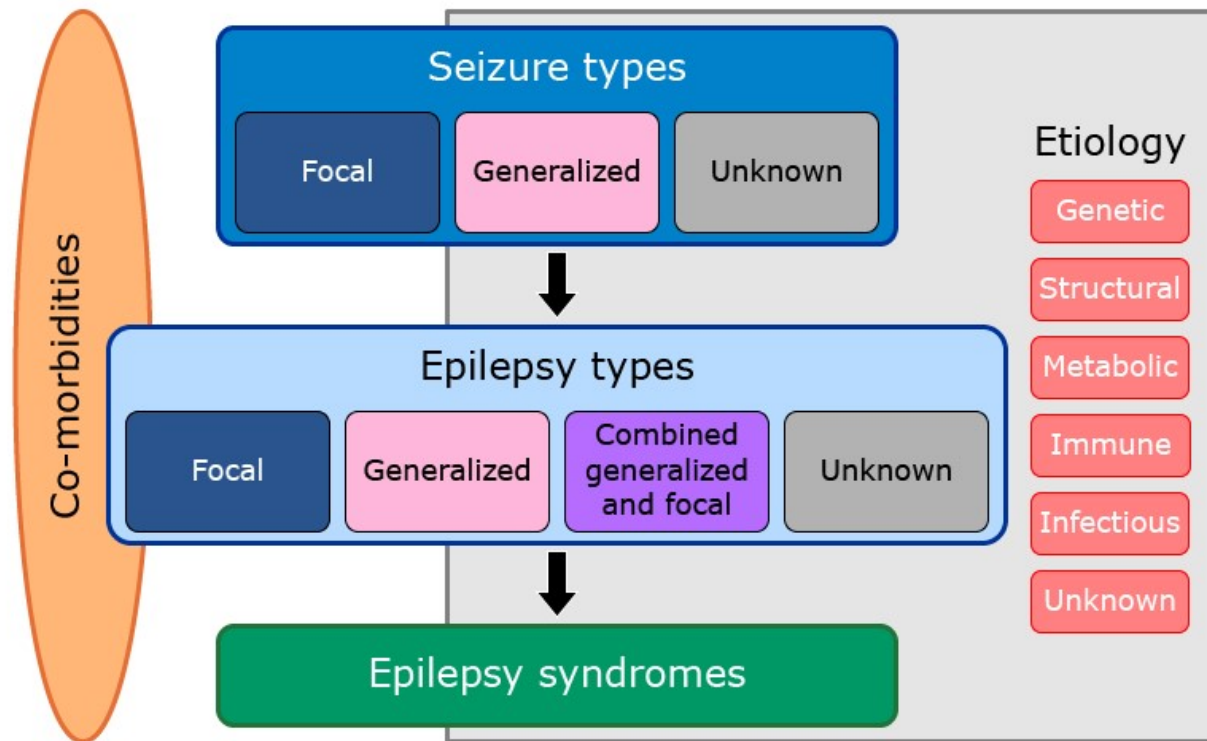
# EPILEPSY – DEFINITION (CONT)

In case of **one unprovoked** seizures, the risk of recurrent seizure is increased with **any** of the following factors:

- Epileptiform abnormalities on interictal **EEG**
  - Remote symptomatic cause, as identified by clinical history or **neuroimaging** (eg, brain tumor, brain malformation, prior central nervous system infection)
  - Abnormal neurologic **examination**, including focal findings and intellectual disability
  - A first seizure that occurs during **sleep**
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# CLASSIFICATION- ILAE



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# HISTORY

- **Ictal behaviors:** Useful for localization, as well as to determine whether a seizure was focal or generalized.
  - **Trigger:** Whether a particular environmental or physiologic precipitant or trigger immediately preceded the seizure.
  - **Prior events:** In some cases, prior events are subtle and may only be recognized when patients are directly asked about them.
  - **Medications and substances:** prescribed or over-the-counter medications, alcohol intoxication or withdrawal, substance abuse.
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## HISTORY (CONTINUED)

- **Past medical history:** Head injury, intellectual disability, stroke, Alzheimer disease, history of intracranial infection, alcohol or drug abuse, immunosuppression, history of cancer, rheumatologic disorders such as systemic lupus erythematosus.
  - **Family history:** Absence seizures and myoclonic seizures may be inherited.
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# EXAMINATION

- **Lateralizing** abnormalities, such as weakness, hyperreflexia, or a positive Babinski sign, that may point to a contralateral structural brain lesion.
  - Physical examination is generally unrevealing in patients with epileptic seizures.
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# INVESTIGATIONS

- Blood glucose, electrolytes, calcium, magnesium, complete blood count, renal function tests, liver function tests, urinalysis, and toxicology screens.
  - ECG: To exclude cardiogenic syncope. Specific findings may be present in some poisoning cases.
  - Neuroimaging in all patients and electroencephalogram (EEG) and lumbar puncture in selected patients.
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# NEUROIMAGING

- A neuroimaging study should be performed in **all adults with a first seizure** to evaluate for a culprit structural brain abnormality.
  - In the absence of contraindications (eg, pacemaker, severe claustrophobia), magnetic resonance imaging (**MRI**) **is preferred** over computed tomography (CT) because it has superior sensitivity.
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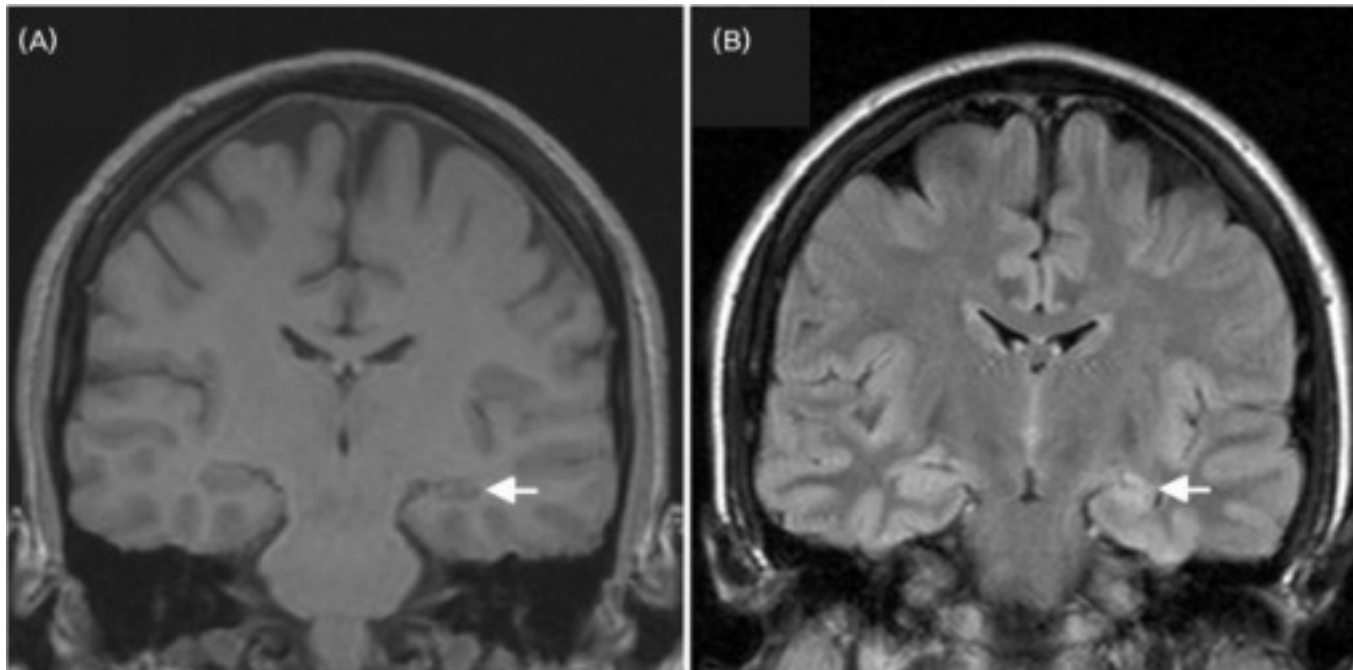
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# NEUROIMAGING (CONTINUED)

- In young to middle-aged adults, common MRI findings are **mesial temporal sclerosis**, sequelae of head injury, **congenital anomalies**, brain tumors, cysticercosis, and vascular lesions.
  - In older adults, MRIs often reveal **strokes**, cerebral degeneration, or **neoplasms**.
  - Over 50 percent of patients with epilepsy, regardless of age, have normal neuroimaging studies.
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# NEUROIMAGING (CONT)



Hippocampal sclerosis is an important cause of epilepsy

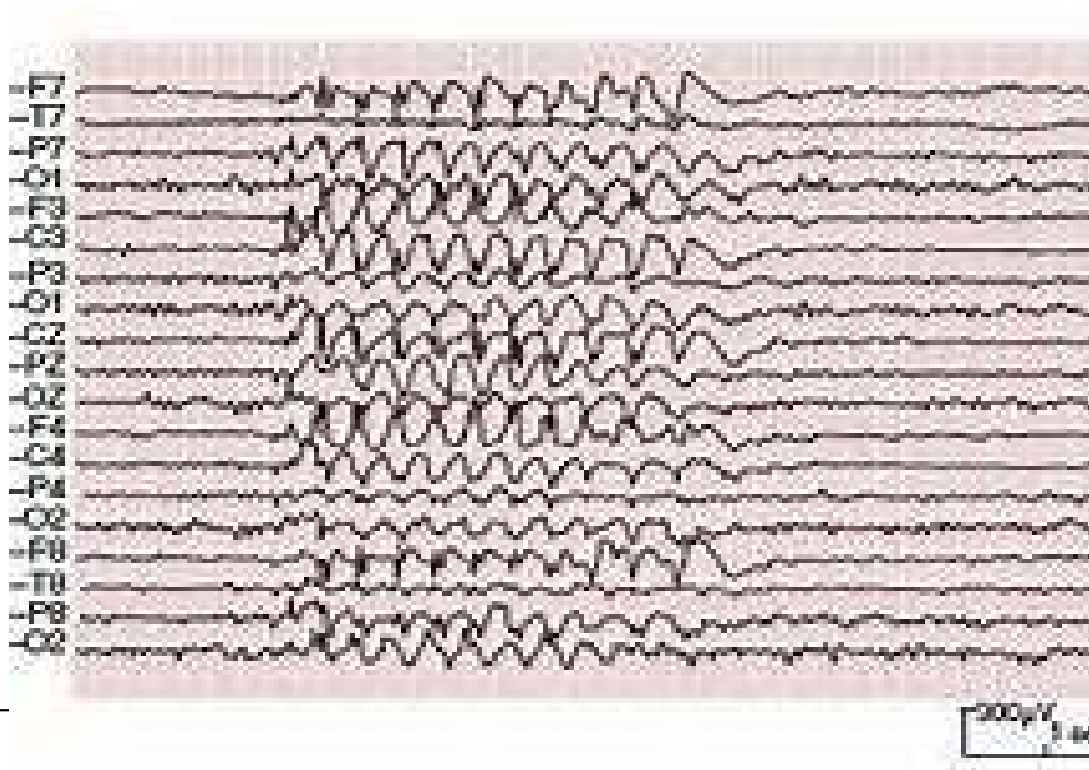
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# ELECTROENCEPHALOGRAM

- Among adults presenting with a first seizure, routine EEG demonstrates epileptiform abnormalities in approximately 25 percent of patients.
  - This finding substantially **increases the likelihood** that the patient will experience a second seizure over the next two years.
  - May also suggest whether a patient has **generalized or focal** seizures.
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## EEG (CONT)



Epileptiform discharges in EEG indicates an increased chance of future seizures

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# LUMBAR PUNCTURE

Should be performed if

- the clinical presentation is suggestive of an **acute infectious** process that involves the central nervous system or
  - if neuroimaging studies raise concern for an alternative meningeal process such as **leptomeningeal cancer or chronic meningitis.**
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# MANAGEMENT

- Most seizures **remit spontaneously** within five minutes and rapid administration of a benzodiazepine or antiseizure medication is not required.
  - For patients with acute symptomatic seizures, any **underlying metabolic disturbances** or infectious etiologies should be quickly identified and treated.
  - If seizure lasts longer than 5 to 10 minutes or serial clinical seizures without an interictal return to baseline consciousness, management of **status epilepticus** is started.
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# PATIENT EDUCATION

- **Psychosocial issues:** loss of independence, employment and self-esteem.
  - **Precipitating factors:** sleep deprivation, alcohol, certain medications, and infection or systemic illness.
  - **Avoid unsupervised activities:** bathing in bathtub, swimming alone, working at heights, and operating heavy machinery.
  - **Increased risk** for personal injury, accidental death, drowning, psychiatric comorbidity, suicidal deaths, and sudden unexpected death in epilepsy.
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# CASE 1: DISCUSSION

- Intense emotional stimulation may produce brief loss of consciousness and convulsive movements which may mistakenly be interpreted as a seizure (**convulsive syncope**).
  - **Incontinence is not specific for an epileptic seizure** and may occur with syncope.
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## CASE 2: DISCUSSION

- **Acute symptomatic seizures** occur simultaneous or within days of a sudden brain insult like cerebral ischemia, as in this patient.
  - **Irreversible structural alteration** of the cortical anatomy (such as a stroke), results in a future risk of late seizure recurrence (**remote symptomatic seizure**).
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## CASE 3: DISCUSSION

- Myoclonic and GTC seizures are consistent with juvenile myoclonic epilepsy (JME).
  - Many such patients identify convulsive seizures but neglect identifying nonconvulsive seizures, such as the “twitching” in this young lady.
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# SUMMARY

- Seizure-mimics may be confused as seizure.
  - Subtle seizure events may not be noticed by the pt.
  - Acute symptomatic seizures have less chance of recurrent seizures and may need short-term antiseizure medications.
  - More than one unprovoked seizures (epilepsy) need antiseizure medications.
  - In case of single unprovoked seizures, certain findings suggest high probability of recurrent seizure (epilepsy) and antiseizure medications are therefore warranted.
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*THANK YOU*

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