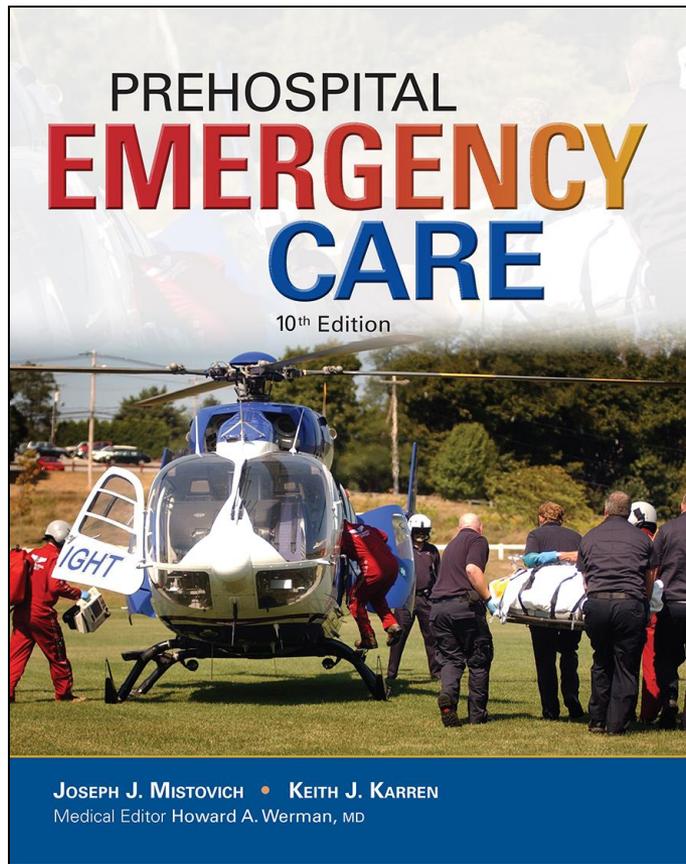


# PREHOSPITAL EMERGENCY CARE

TENTH EDITION



## CHAPTER 19

### Seizures and Syncope

# Learning Readiness

- EMS Education Standards, text p. 546

# Learning Readiness Objectives

- Please refer to page 546 of your text to view the objectives for this chapter.

# Learning Readiness

## Key Terms

- Please refer to page 546 of your text to view the key terms for this chapter.

# Setting the Stage

- Overview of Lesson Topics
  - Seizures
  - Syncope

# Case Study Introduction

EMTs Ana Salinas and Loren Dyer enter a residence for a report of a seizure to find a man in his early 30s who appears unresponsive, and who has increased respirations with copious oral secretions. They can see that the patient was incontinent of urine. The patient's brother reports that the patient was playing a game of cards when he experienced a seizure, falling out of his chair.

# Case Study

- What are the first priorities in the assessment and care of this patient?
- What additional information do the EMTs need about the seizure and the patient's history?
- Does this patient require transport to the hospital?

# Introduction

- EMTs must know the emergency care for patients with seizures and syncope.
- A seizure is a sudden onset of abnormal electrical impulses in the brain.
- Syncope is a temporary loss of responsiveness.

# Seizures

- A seizure is a sudden and temporary alteration in brain function caused by electrical discharges in a group of nerve cells in the brain.
- There typically are changes in mental activity and behavior.

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# Seizures

- A common cause of seizures is epilepsy.
- A seizure in a patient without a history of seizures should be suspected of being caused by trauma or a medical problem.

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# Seizures

- Primary seizures occur from a genetic or unknown cause.
  - Generalized seizures involve both hemispheres of the brain, which results in loss of consciousness.
  - Partial seizures involve one hemisphere.
    - In simple partial seizures, consciousness is retained
    - In complex partial seizures, mental status is altered

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# Seizures

- Secondary seizures occur from an underlying cause.
- There are several causes, and the seizures are usually generalized.

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**TABLE 19-1****Common Causes of Secondary Seizures**

- High fever
- Infection
- Poisoning
- Hypoglycemia (low blood sugar)
- Hyperglycemia (high blood sugar)
- Head injury
- Shock
- Hypoxia
- Stroke
- Drug or alcohol withdrawal
- Dysrhythmias
- Hypertension (high blood pressure)
- Pregnancy complications (eclampsia)
- Blood electrolyte imbalance (sodium, calcium)
- Hyperthermia
- Idiopathic (unknown cause)

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# Seizures

- Status epilepticus
  - Generalized motor seizures that last more than 5 minutes or seizures that occur consecutively without a period of responsiveness between them
  - Life-threatening emergency

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# Seizures

- Generalized tonic-clonic seizure
  - Involves the cerebral hemispheres and reticular activating system
  - Consist of six stages:

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# Seizures

- Generalized tonic-clonic seizure
  - Aura
  - Loss of consciousness
  - Tonic phase (muscle rigidity)
  - Hypertonic phase
  - Clonic phase (convulsion)
  - Postictal state

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A generalized tonic-clonic, or grand mal, seizure is a sign of abnormal release of electrical impulses in the brain: (a) aura, (b) loss of consciousness followed by tonic phase, (c) clonic phase, (d) postictal phase.



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# Seizures

- Generalized tonic-clonic seizure  
emergency medical care
  - If the seizure has stopped, provide reassurance and conduct an assessment.
  - Follow protocol if the patient refuses treatment.
  - Status epilepticus is a life-threatening emergency.

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# Seizures

- Simple partial seizure
  - Involves abnormal movements of one area of the body
  - The patient is awake and aware.
  - The seizure may spread and generalize.

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# Seizures

- Complex partial seizure
  - The patient remains awake, but is not aware.
  - Starts with a blank stare followed by random movements, such as chewing or lip smacking
  - May repeat words or phrases
  - Does not respond to commands

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# Seizures

- Absence seizure
  - Most common in children
  - Characterized by a blank stare
  - There may be rapid blinking or chewing.
  - Patient quickly returns to awareness.

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# Seizures

- Febrile seizures
  - Caused by fever
  - Most common from ages 6 months to 6 years

Click on the description that best characterizes a simple partial seizure.

A. Jerky muscle movements localized to one extremity

B. Full-body rhythmic muscle contraction and relaxation

C. Staring into space with brief loss of awareness, accompanied by rapid eye-blinking

D. Awake, with loss of awareness and bizarre behavior, such as repetitive movements

# Seizures

- Assessment-based approach
  - Scene size-up
    - Look for evidence of trauma, poisoning, or medical conditions.
    - The patient may be postictal.
    - If the patient is actively seizing, move objects away from him.

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Protect the seizing patient from injury by moving furniture and objects away.



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# Seizures

- Assessment-based approach
  - Primary assessment
    - Assess the airway; unresponsive and seizing patients are at risk for airway compromise.
    - Assess breathing and oxygenation.
    - Assess circulation.

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# Seizures

- Assessment-based approach
  - Primary assessment
    - Be prepared to suction.
    - Avoid an oropharyngeal airway.
    - If the patient is severely cyanotic or the seizure has lasted more than 5 minutes, begin positive pressure ventilation.
    - Begin CPR and apply the AED if the patient is pulseless.

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Clear the airway of secretions, blood, and vomitus.



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# Seizures

- Conditions that indicate high-priority transport
  - The patient remains unresponsive.
  - Airway, breathing, or circulation is inadequate.
  - A second generalized motor seizure occurs without a period of responsiveness between the seizure episodes (status epilepticus).

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# Seizures

- Conditions that indicate high priority transport
  - A generalized motor seizure lasts longer than 5 minutes (status epilepticus).
  - The patient is pregnant, has a history of diabetes, or is injured.
  - The seizure has occurred in water, such as a swimming pool or lake.

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# Seizures

- Conditions that indicate high priority transport
  - There is evidence of head trauma leading to the seizure.
  - There is no history of epilepsy or other seizure disorder.
  - The seizure is the result of drug or alcohol withdrawal.

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# Seizures

- Secondary assessment
  - Assess the head for signs of trauma.
  - There may be weakness or paralysis on one side.
  - Assess the extremities for signs of trauma.

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# Seizures

- Secondary assessment
  - Assess vital signs.
  - Apply oxygen if the SpO<sub>2</sub> is <94%.
  - Assess the blood glucose level.

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# Seizures

- Secondary assessment
  - Consider the need for ALS.
  - Obtain a history, including medications.

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# Seizures

- Obtain a description of the seizure activity, including what it looked like and how long it lasted.
- Determine whether the patient fell or hit his head.
- Ask about recent illness or head trauma.

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# Seizures

- If the patient takes medications for seizures, ask if he has been taking it.
- Determine whether there is a history of seizures.

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**TABLE 19-2****Medications Commonly Used in the Treatment of Epilepsy**

Phenytoin (Dilantin)

Phenobarbital

Ethosuximide (Zarontin)

Carbamazepine (Tegretol)

Valproic acid or divalproex sodium (Depakene or Depakote)

Primidone (Mysoline)

Clonazepam (Klonopin)

Clorazepate (Tranxene)

Felbamate (Felbatol)

Tiagabine (Gabitril)

Lamotrigine (Lamictal)

Oxcarbazepine (Trileptal)

Gabapentin (Neurontin)

Topiramate (Topamax)

Vigabatrin (Sabril, Keppra)

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# Seizures

- Signs and symptoms may include:
  - Convulsions
  - Rigid muscle contractions or spasms
  - Biting the tongue
  - Excessive saliva

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# Seizures

- Signs and symptoms may include:
  - Urinary or bowel incontinence
  - Repetitive activity
  - Localized muscle twitching
  - Visual or olfactory hallucinations

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# Seizures

- Emergency medical care
  - Position the patient.
    - Lateral recumbent for postictal patients
    - Consider the need for spinal stabilization.
  - Maintain a patient airway.
    - A nasopharyngeal airway, if needed, is preferred.
    - Do not force anything between the teeth.

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# Seizures

- Emergency medical care
  - Use suction as needed.
  - Begin positive pressure ventilation, if needed.
  - Protect the patient from injury.

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# Seizures

- Emergency medical care
  - Maintain adequate oxygenation.
  - Transport
  - Reassess

# Syncope

- Sudden, temporary loss of consciousness
- Occurs from interruption of cerebral perfusion
- A common cause is increased parasympathetic influence.
- Bystanders may mistake syncope for a seizure.

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**TABLE 19-3** Differentiation Between Seizures and Syncope

<b>Syncope</b>	<b>Seizure</b>
Usually begins in standing or upright position	May begin in any position
May complain of being light-headed, dizzy, or weak prior to the episode	May have an aura or begin without warning
Sudden loss of consciousness that immediately returns when supine or prone	Sudden loss of consciousness that persists, then has a gradual return to consciousness
May have some muscle twitching	Convulsive muscle activity or repetitive movements during unconsciousness
Skin is usually cool, moist, and pale	Skin may be warm and sweaty

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# Syncope

- Conduct primary and secondary assessments.
- Keep the patient supine.
- Consider serious underlying causes and encourage transport.

Assess the head for any sign of trauma.



# Case Study Conclusion

Ana and Loren turn the patient, Dan, onto his left side and Ana suctions his airway. Dan is responsive to painful stimuli, and has adequate breathing. His skin is warm and moist, and there is no cyanosis. His SpO<sub>2</sub> is 99%.

The seizure lasted about two minutes. Its description is consistent with a tonic-clonic seizure, and looked like other seizures Dan has had.

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# Case Study Conclusion

There is no evidence of injury to the head, trunk, or extremities, though it does appear that Dan may have bitten his tongue.

Dan has a history of seizures, for which he takes the medication carbamazepine.

A quick check of the prescription bottle shows that Dan may have missed several doses since the prescription was filled two weeks ago.

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# Case Study Conclusion

Dan has become responsive to verbal stimuli, but because his mental status remains altered and he has not been compliant with his medications, Ana and Loren recognize that he should be transported.

En route to the hospital, Dan becomes more responsive, but remains sleepy. The EMTs turn his care over to the ED staff with a complete report.

# Lesson Summary

- Seizures result from abnormal electrical impulses in the brain, which can manifest in a variety of ways.
- Seizures may be generalized or partial.
- Status epilepticus is a life-threatening emergency.

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# Lesson Summary

- Syncope results from a temporary interruption in brain perfusion.
- Syncope may be benign, but can have serious underlying causes.