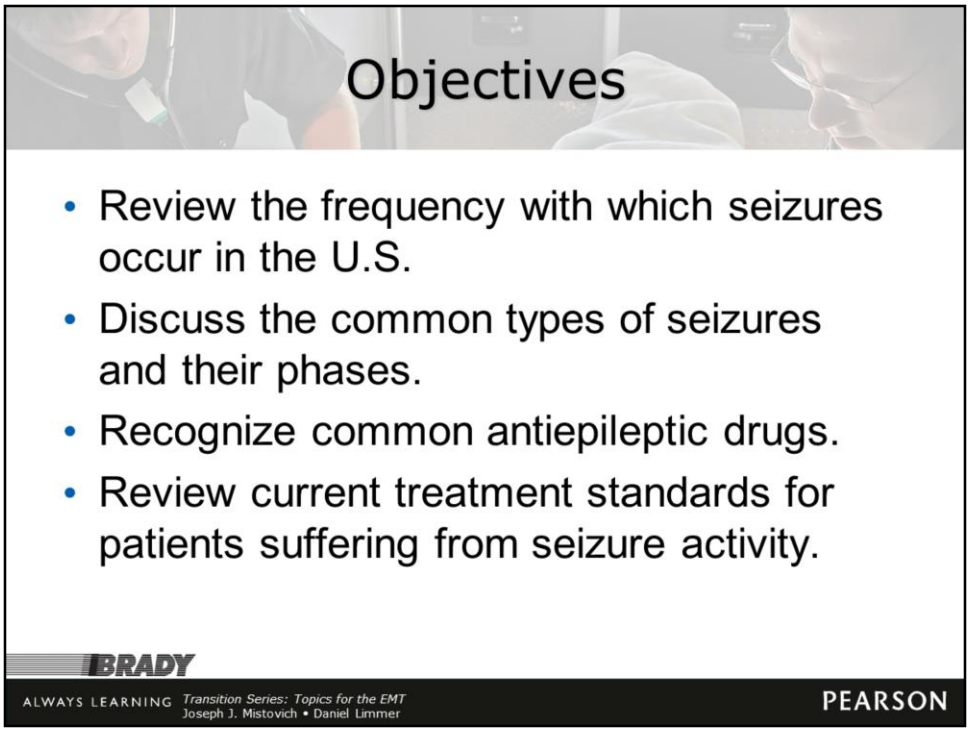
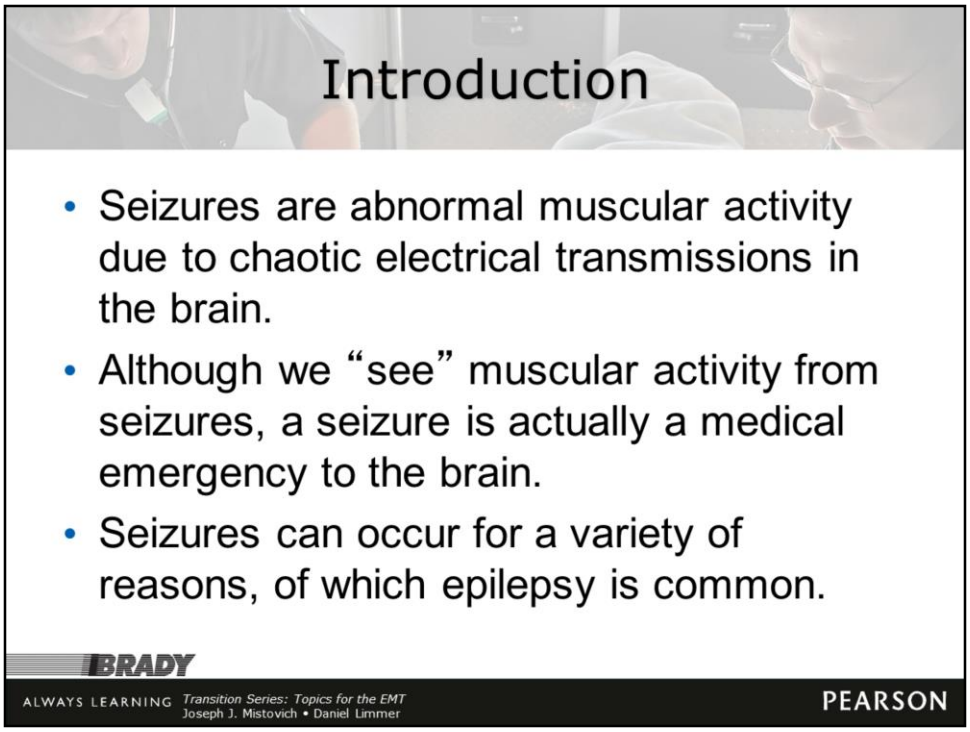

BRADY
TRANSITION SERIES
TOPICS FOR THE EMT
TOPIC 18
Neurology: Seizures
ALWAYS LEARNING
PEARSON



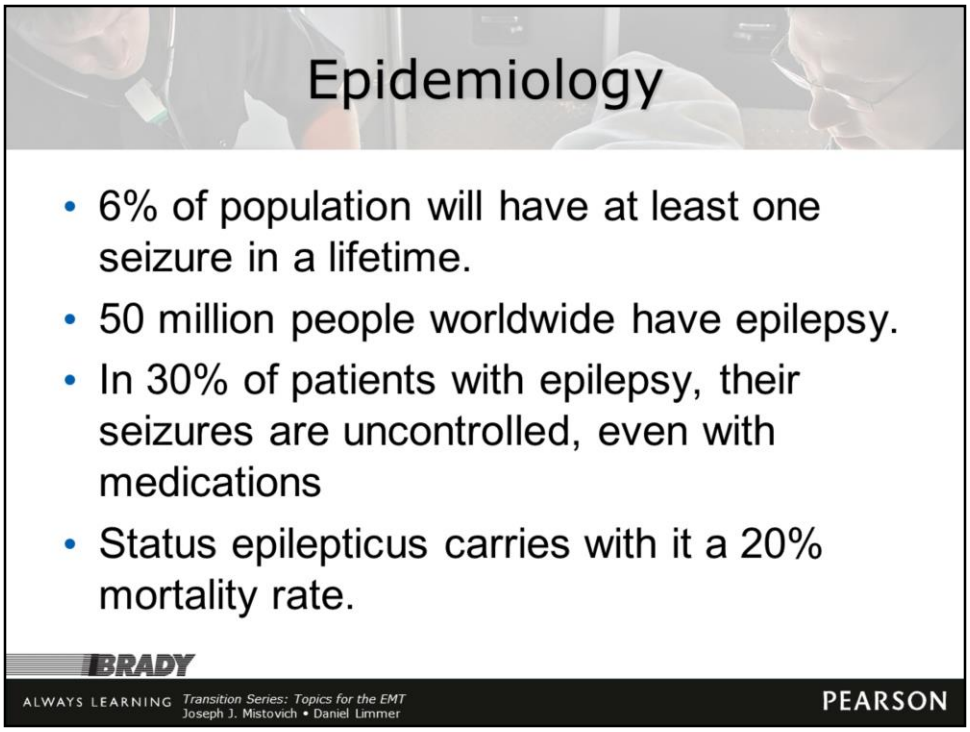
Discuss objectives.



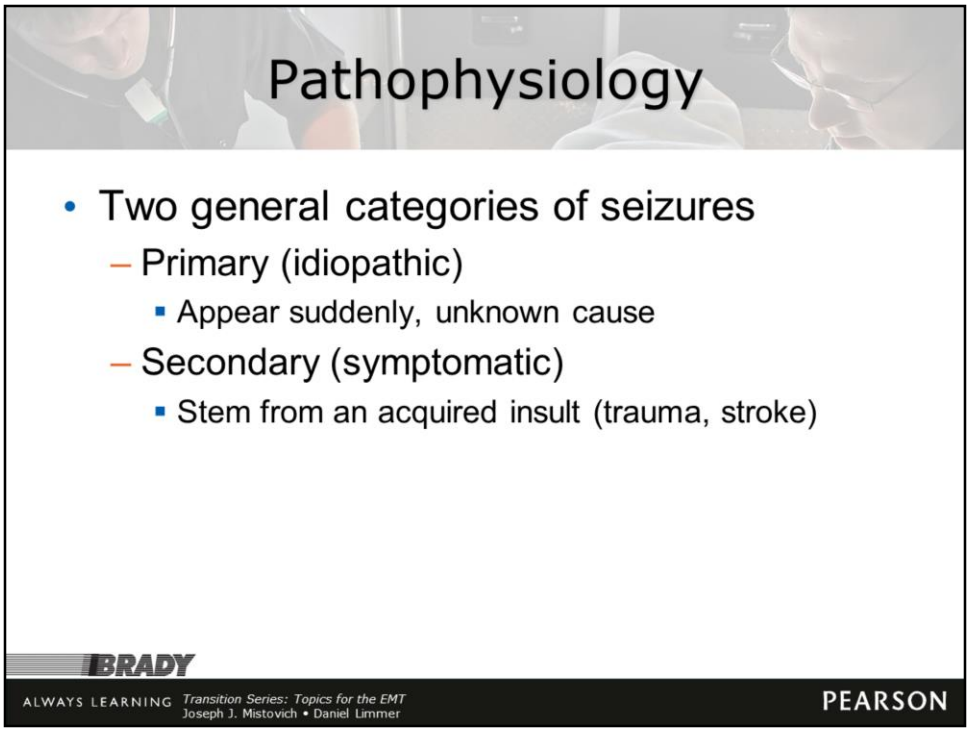
Seizures can be:
•Sudden in onset
•Severe in presentation
•Often scary for both the person experiencing them and the people around them

EMTs need to remember that seizures are in fact life-threatening at times, however with proper recognition, assessment, and management—the detrimental outcomes from seizures can often be averted.

Finally, people commonly associate convulsions with seizures, and although convulsions frequently accompany a seizure, there are those types of seizures that do not have any muscular manifestations.



Discuss the epidemiological findings relating to seizures.



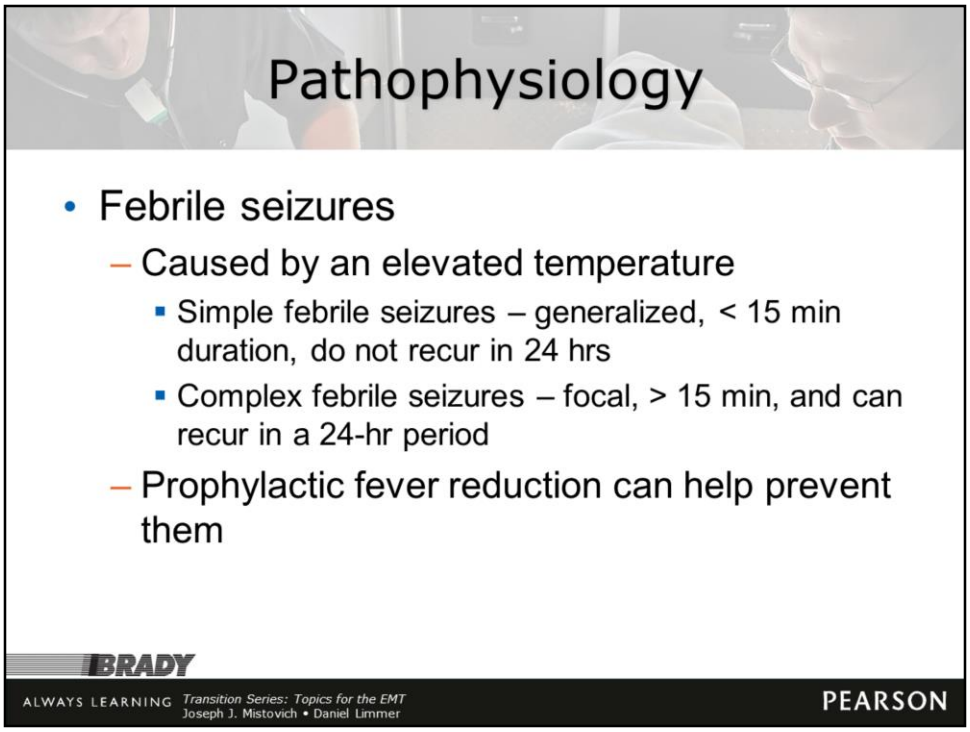
Discuss the two general categories of seizures:

- Primary—unknown causes
- Secondary—can be tied to an insult or medical condition

Either way, the EMT must be able to recognize and symptomatically treat seizures when they occur.

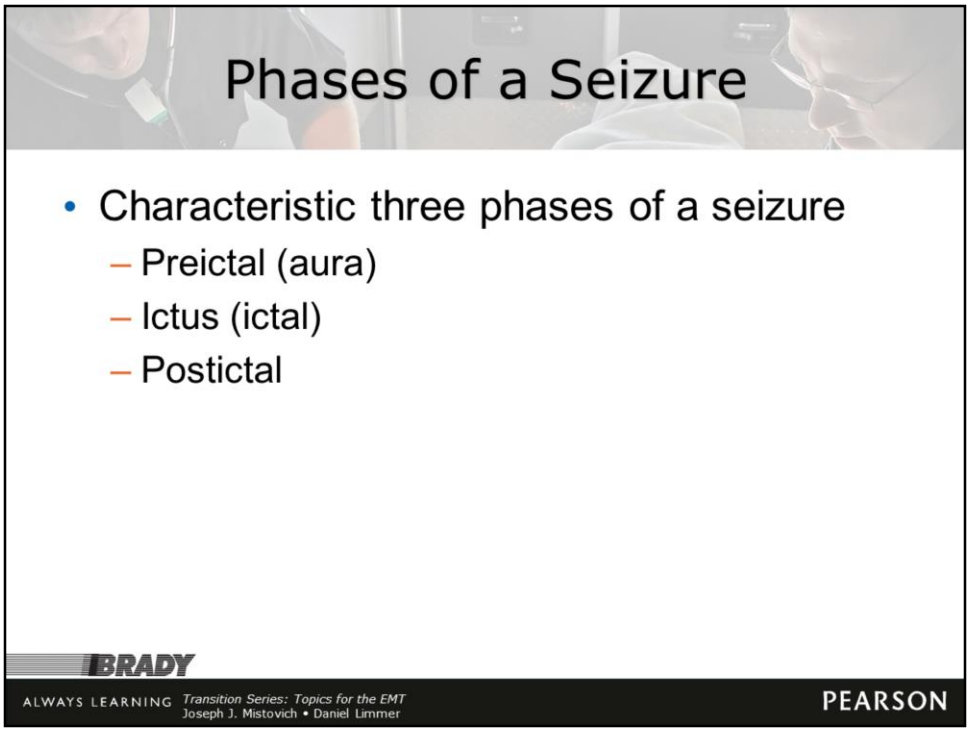
Table 18-1 Common Causes of Seizures.

Brain injuries/diseases	Degenerative tissue disease, cerebrovascular disturbances, stroke, space-occupying lesions, tumors, intracranial hemorrhage
Metabolic causes	Fever, critical variations in blood glucose, electrolytes, or oxygenation levels in the blood, heat stroke
Toxins	Drug abuse, alcohol abuse, poisonous or toxic substance abuse, alcohol withdrawal
Infections	Encephalitis, meningitis, central nervous system infections, infectious brain injury
Posttraumatic head injury	Intracranial hemorrhage, skull fractures, craniotomy, other brain surgeries
Pregnancy	Eclampsia



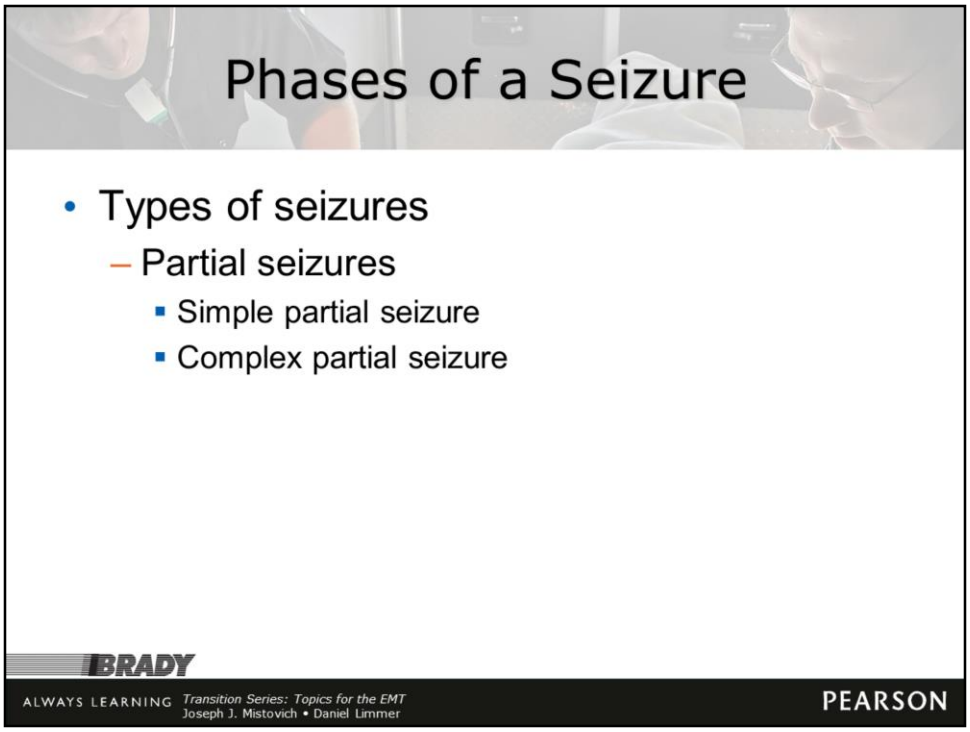
Most common to children six months to five years of age, males more than females.

All predispose to febrile seizures:
•Upper respiratory infections
•Ear infections
•Viral syndromes



Discuss the phases of the seizure and characteristics of each.

Cover how to recognize each phase and provide management as needed:
- Preictal—have patient lay down
- Ictus—protect head, manage airway/breathing
- Postictal—maintain airway, oxygenate



Partial seizures involve only one hemisphere, they may still be conscious and oriented.

Generalized seizures are more involved, and can manifest with convulsion activity as well as alterations in mental status.

Provide more specific descriptions for each type.

Focus is not recognizing the type of seizure so that the treatment can be expected and more readily administered.

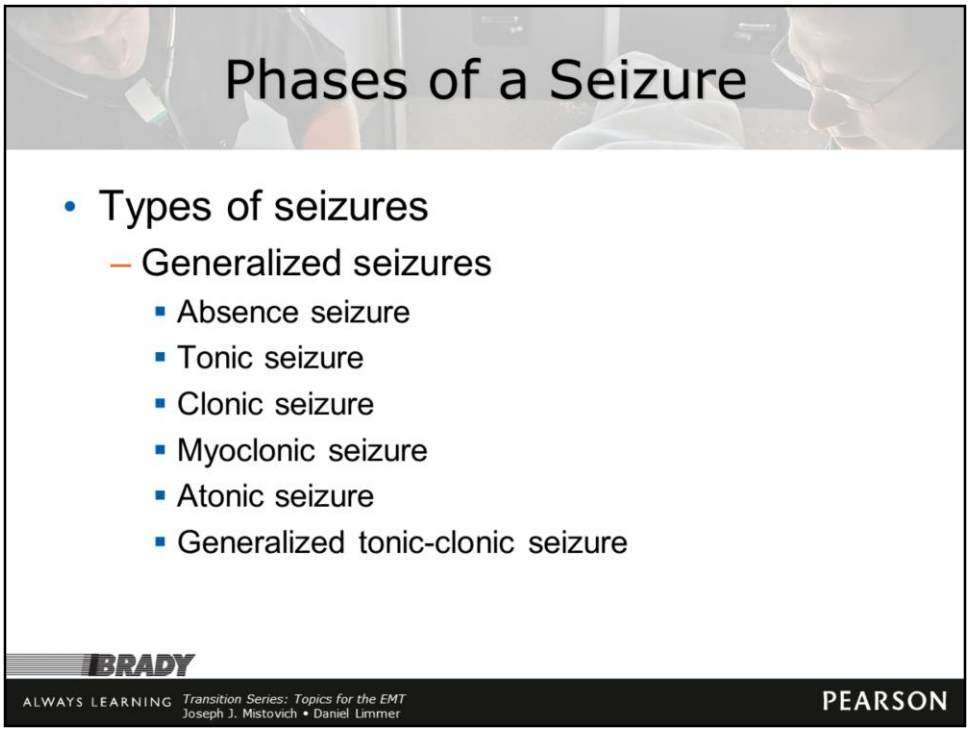


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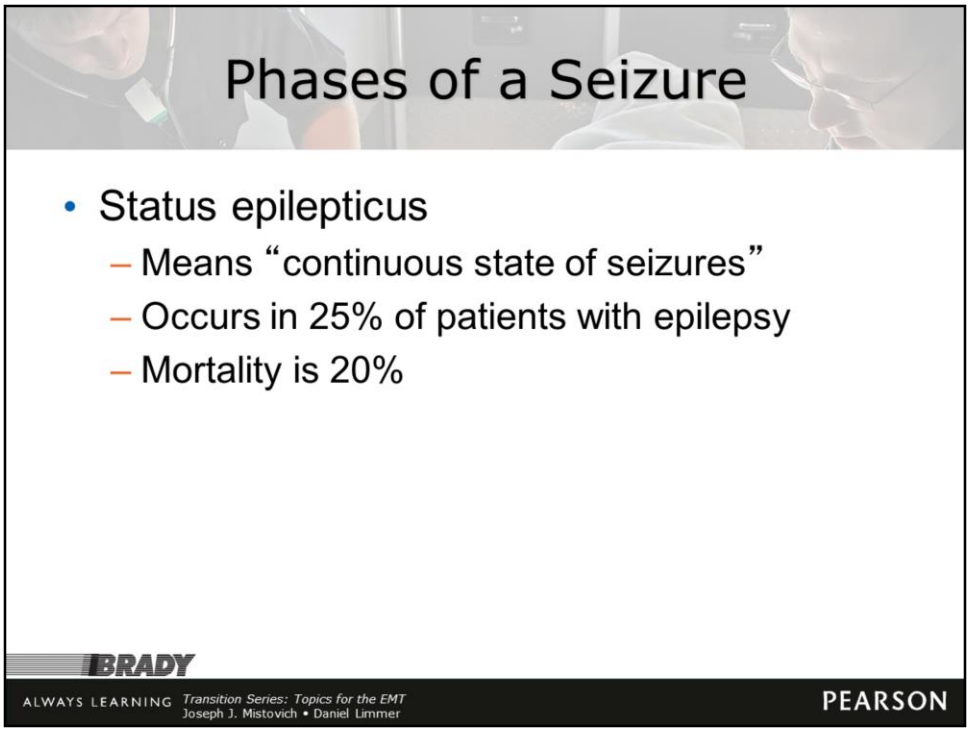
Figure 18-1 A generalized tonic–clonic, or grand mal, seizure is a sign of abnormal release of electrical impulses in the brain: (a) Aura. (b) Loss of consciousness followed by tonic phase. (c) Clonic phase. (d) Postictal phase.



Literally meaning "continuous state of seizure," status epilepticus initiates a catecholamine surge causing significant physiologic changes in the body.

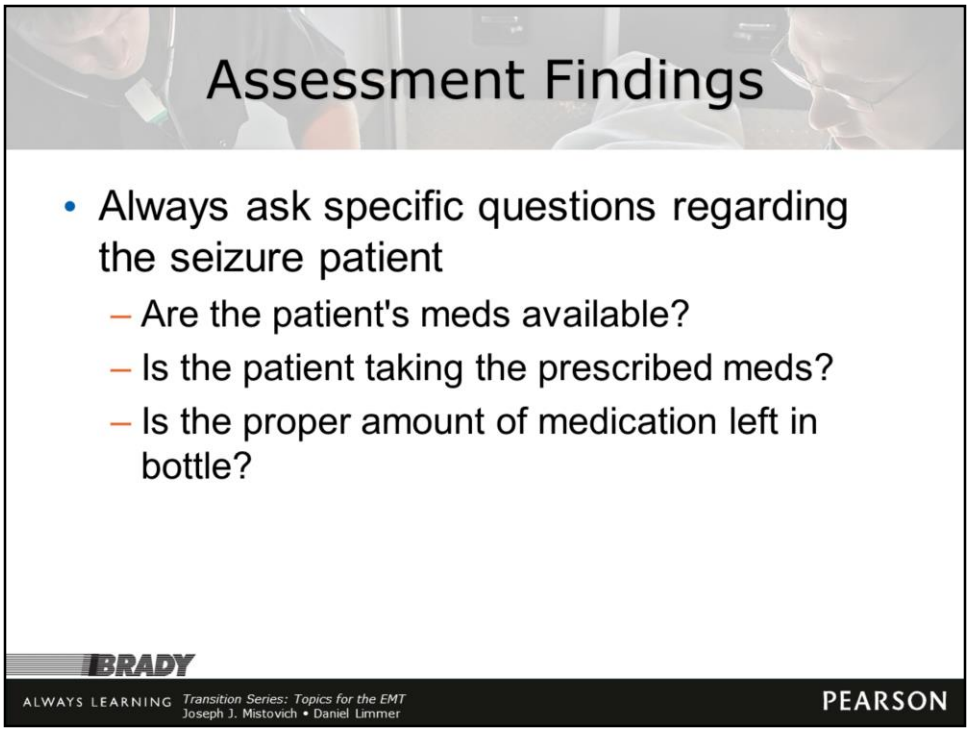
These changes include, but are not limited to, hypertension and tachydysrhythmia (rapid heart rate), as well as increases in temperature, blood glucose levels, and cerebral metabolic demand.

It is recommended that status epilepticus be treated after five minutes of continuous seizure activity.

Typically the patient will present with persistent, rhythmic tonic-clonic convulsions with impairment of consciousness. Associated injuries include:
•Head and facial trauma
•Tongue lacerations
•Even shoulder dislocations

Table 18-2 Antiepileptic Drug Therapy.

Broad-Spectrum Antiepileptic Drugs	Narrow-Spectrum Antiepileptic Drugs
Valproic acid (Depakote, Depakene)	Phenytoin (Dilantin)
Lamotrigine (Lamictal)	Phenobarbital
Levetiracetam (Keppra)	Carbamazepine (Tegretol)
Clonazepam (Clonopin)	Oxcarbazepine (Trileptal)
Topiramate (Topamax)	Gabapentin (Neurontin)
Zonisamide (Zonegran)	Pregabalin (Lyrica)
Diazepam rectal gel (Diastat)	Vigabatrin (Sabril)



All of these questions will provide important answers the EMT can use to help differentiate between the types of seizures as well as contribute to proper management.

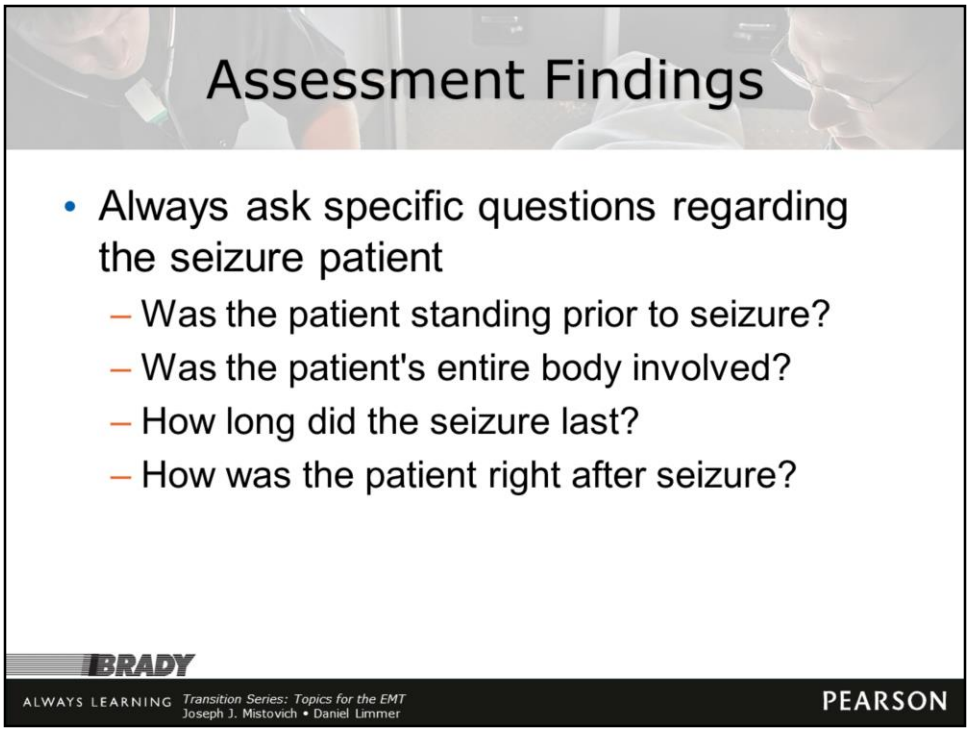


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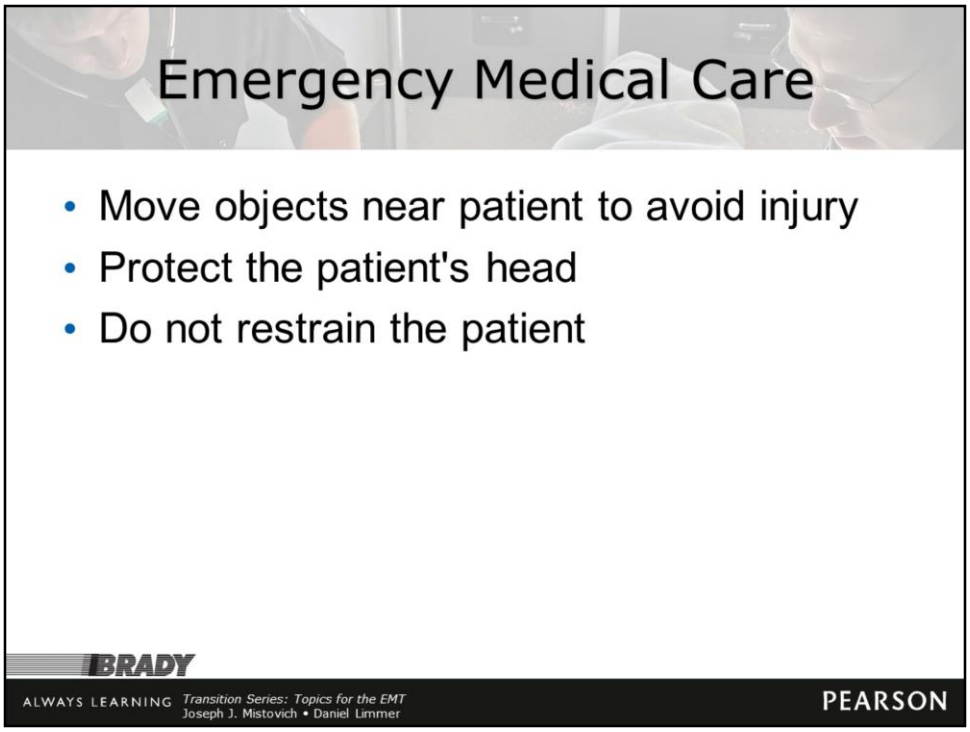
Table 18-3 Seizure Assessment Findings Based on Seizure Type.

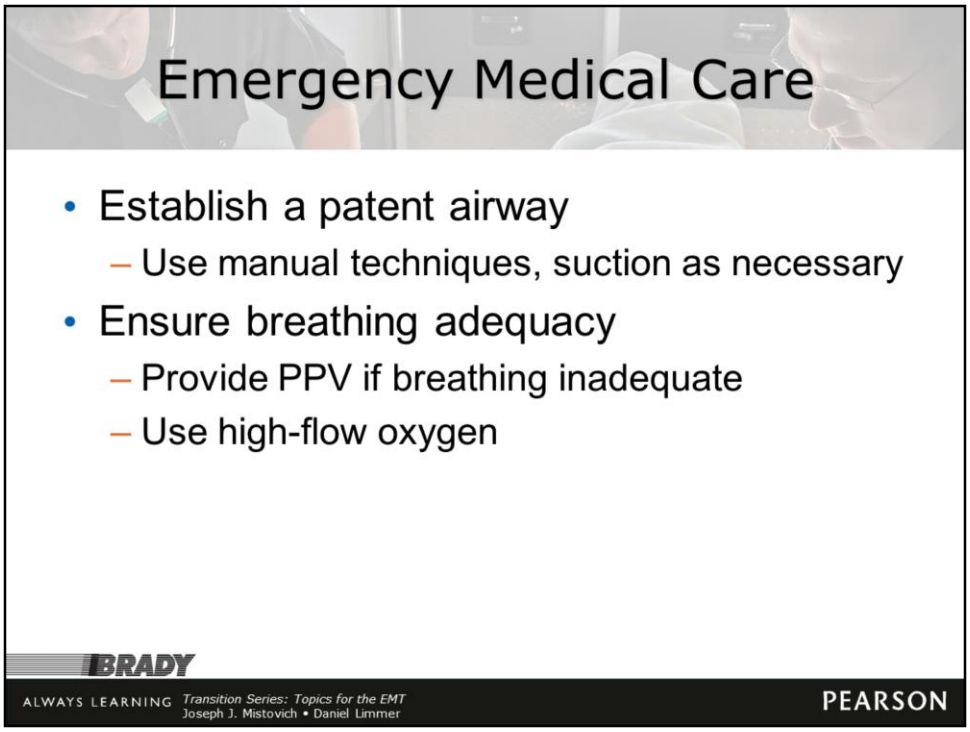
Type of Seizure	Aura	Consciousness	Amnesia	Postictal
Simple partial	Yes	Not affected	No	No
Complex partial	Yes	Impaired	Yes	Yes
Absence/petit mal	No	Impaired	No	No
Tonic	No	Not affected	No	No
Clonic	No	Varies	No	No
Myoclonic	No	Not affected	No	No
Atonic	No	Not affected	No	No
Tonic–clonic	Yes	Impaired	Yes	Yes



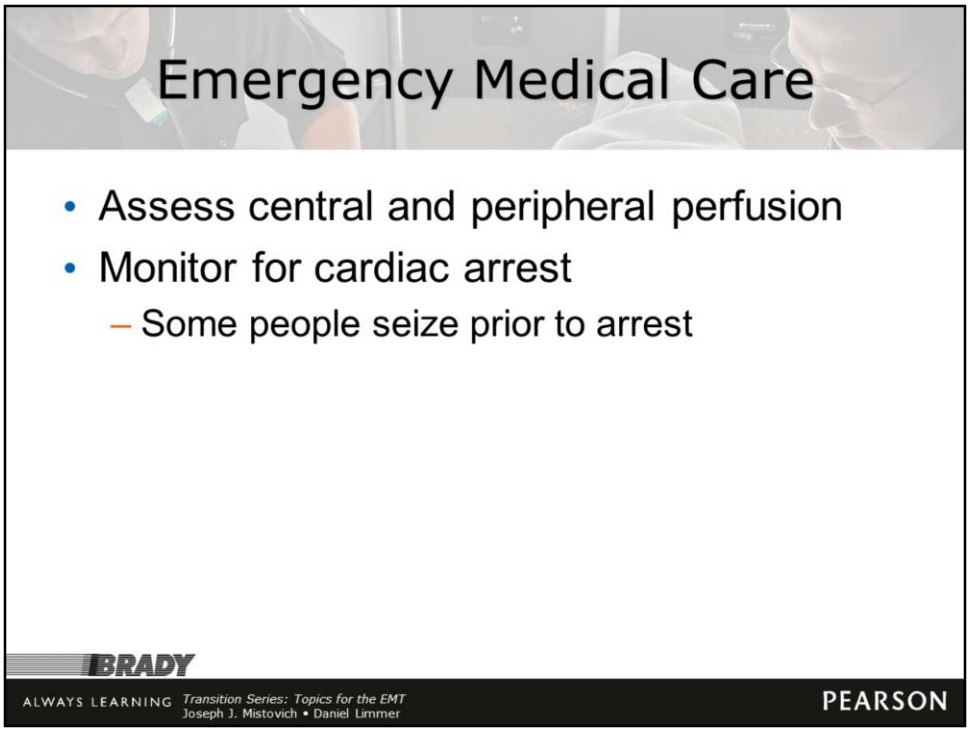
Although the seizure patient will require specific management, if the patient is seizing when you arrive on scene or your with the patient, move all objects away from the patient that may cause injury.

Always protect the head from striking the floor, but don't physically restrain the entire patient (this may cause musculoskeletal trauma).

Figure 18-2 Protect the patient from injury by moving furniture and other objects away from the patient.

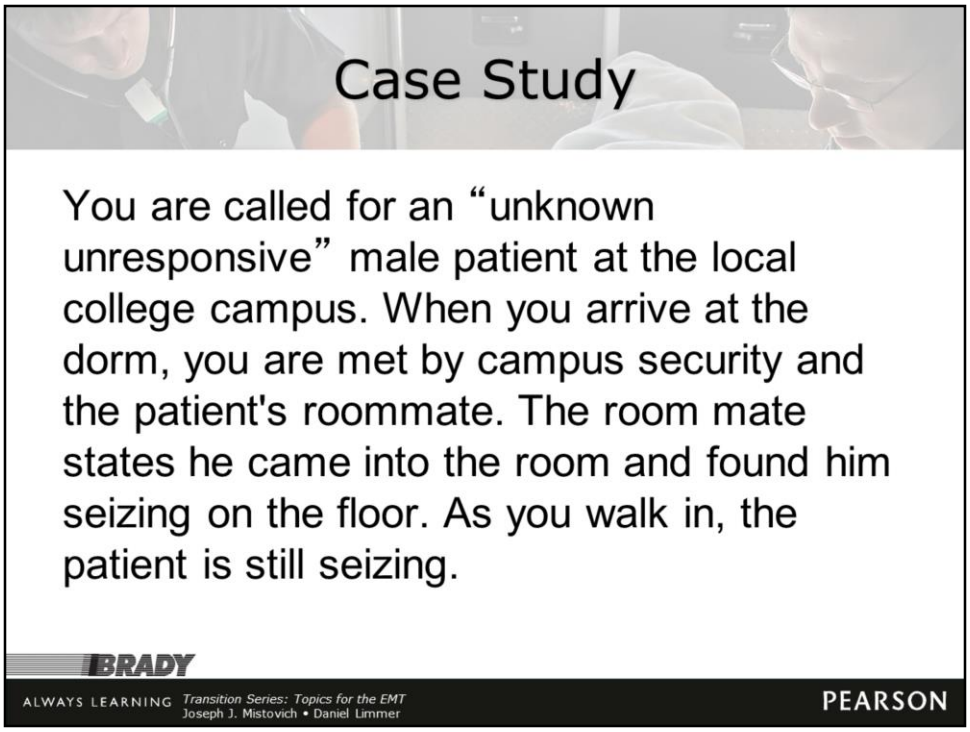


Discuss initial management.

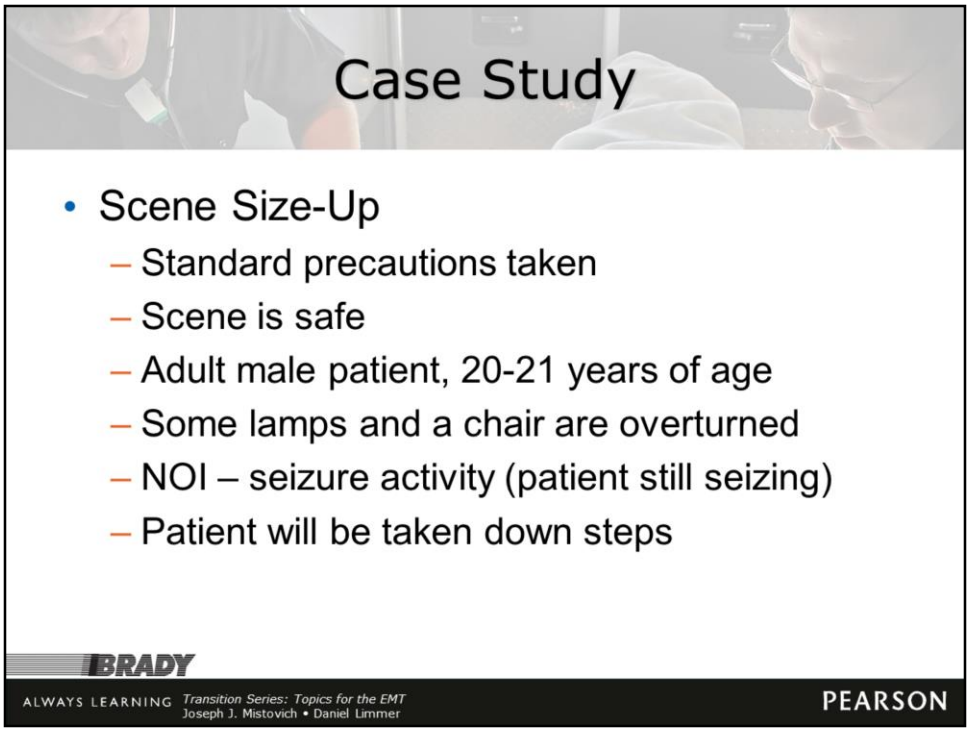


Discuss initial management.

Figure 18-3 Clear the patient's airways of secretions, blood, and vomitus.



Discuss presentation.



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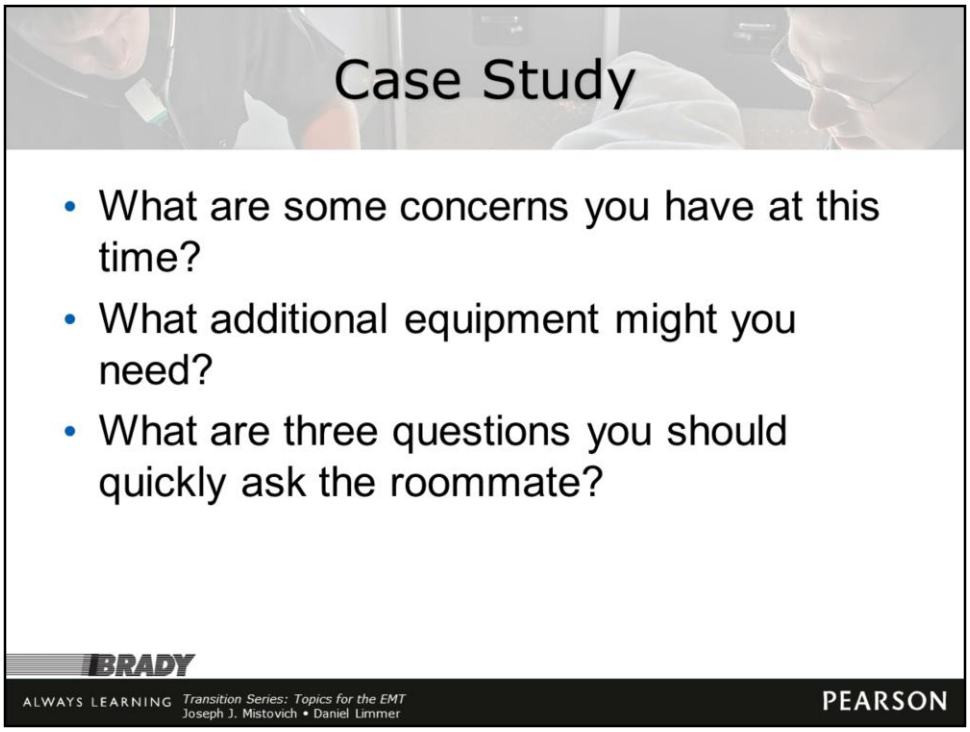
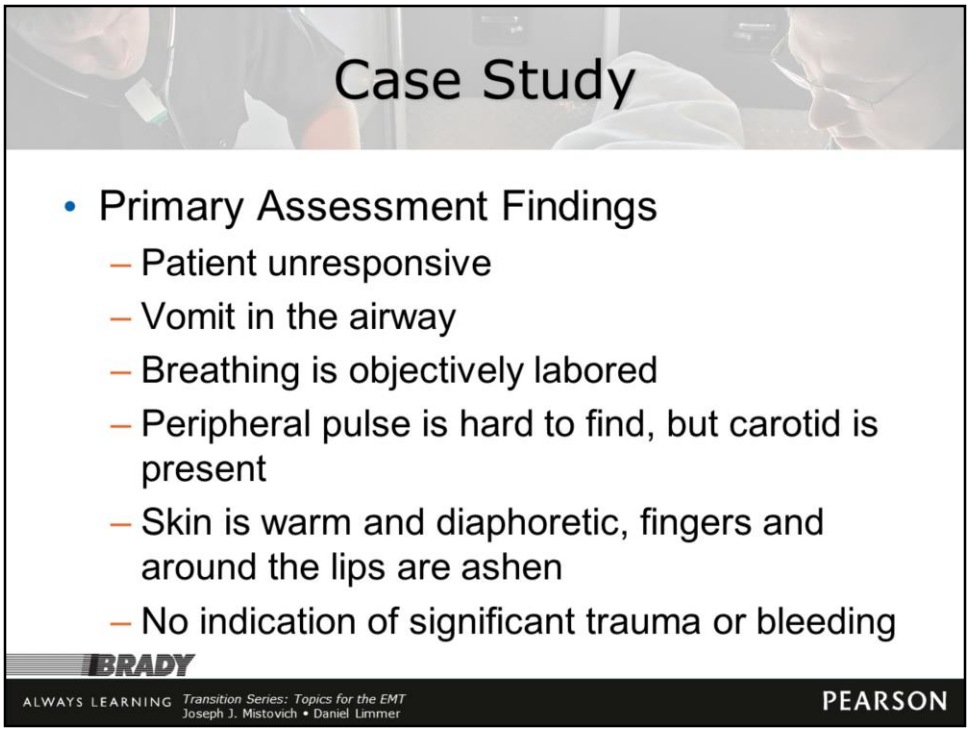


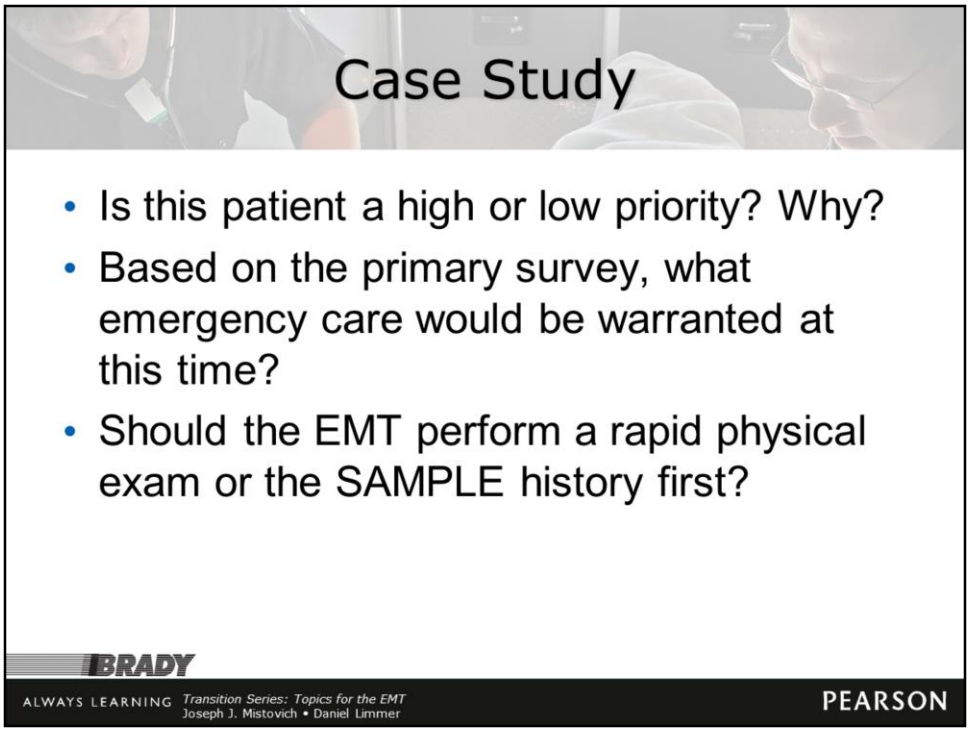
Concerns include the still seizing patient and determining what caused the seizure so that future ones may be prevented.

If not with you, you will need the suction unit, and additional help carrying the patient down stairs. The patient may not be that large, but if you have a critical patient it is best to have additional help available during the movement of the patient.

When was the last time you saw the patient?
How long ago did you arrive back at the dorm?
Do you know if the patient takes any meds?
Do you know where the roommate keeps his meds, if any?
Has the roommate been complaining of anything?



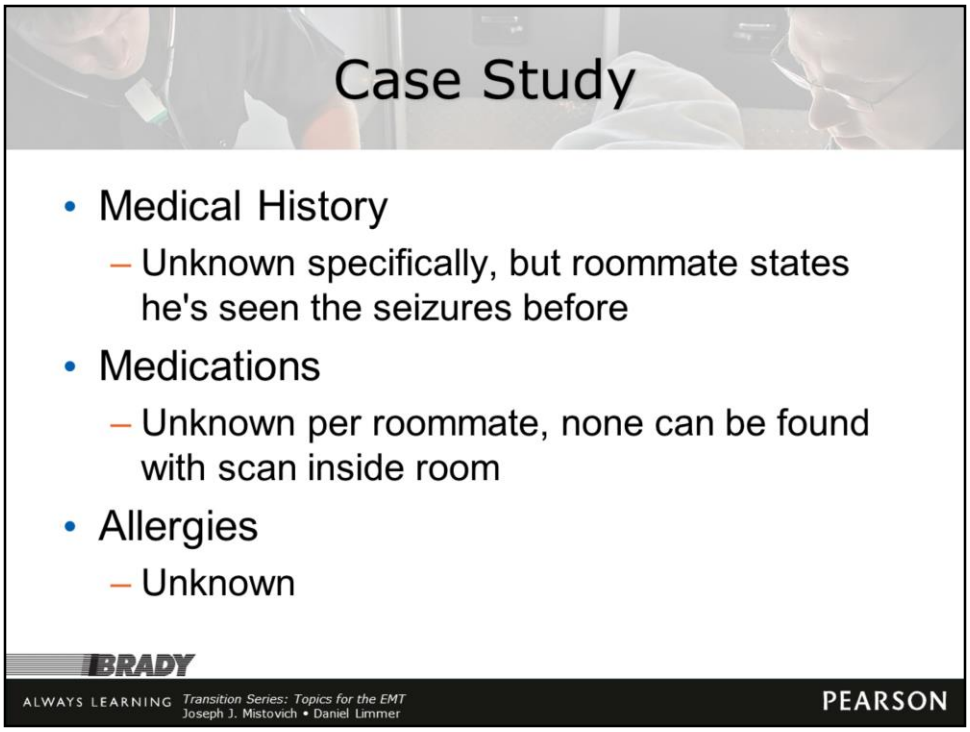
Discuss as needed.



This patient is a high priority due to the active seizure—plus it is currently unknown how long the seizure has been going on prior to arrival of the room mate.
The patient presently has:
•Airway concerns
•Breathing concerns
•An altered mental status

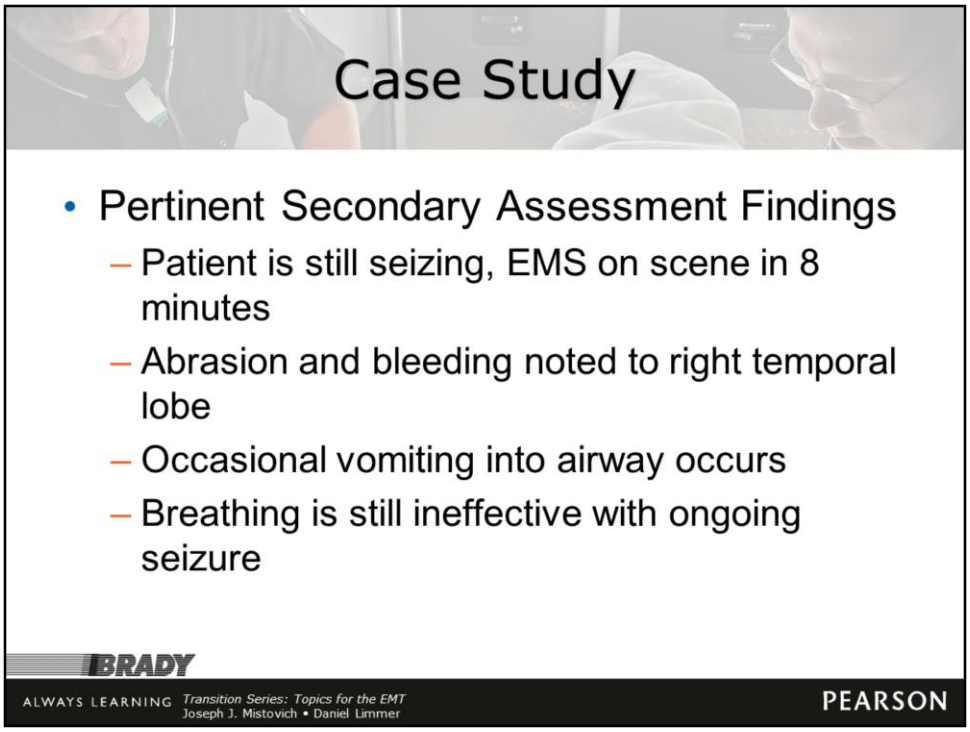
The patient needs their head protected during the seizure. If possible the EMTs may try to suction the vomit out of the airway via nasopharyngeal suctioning if the mouth in clenched. EMTs can also attempt PPV during the seizure to help with ventilation and oxygenation.

At this time, the patient needs managed first. If at all possible the EMTs should attempt some information from the room mate while moving the patient to the ambulance.

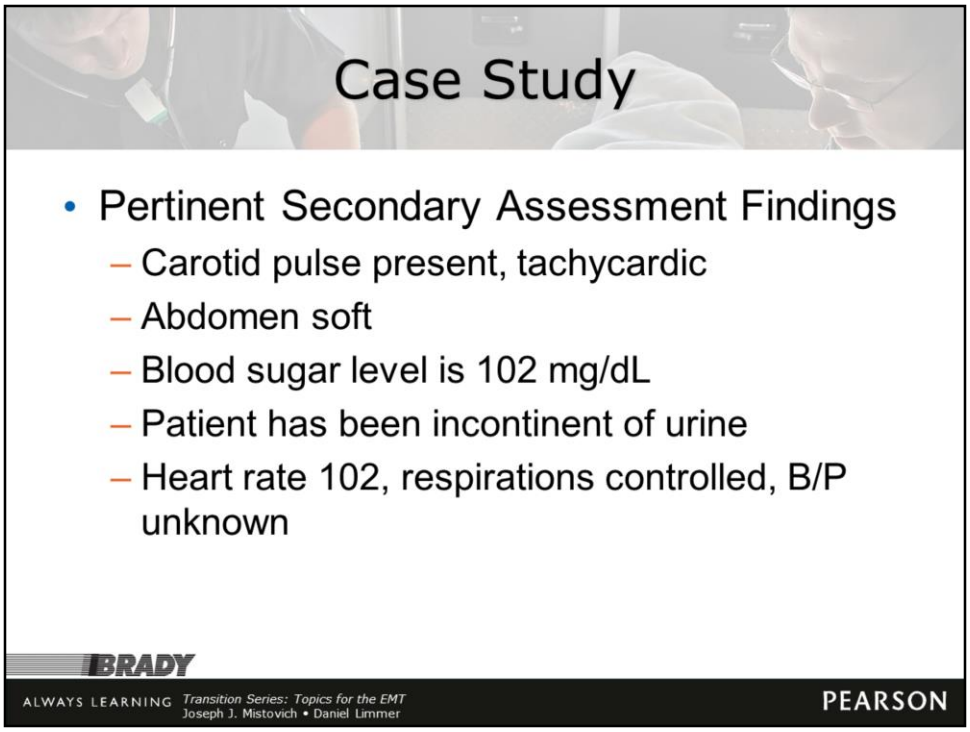


If the room mate states that the patient has seen seizures before, then the patient likely has a history of them.

Without any medications found on scene or family immediately available, then an absolute determination cannot be made.



Discuss case progression.



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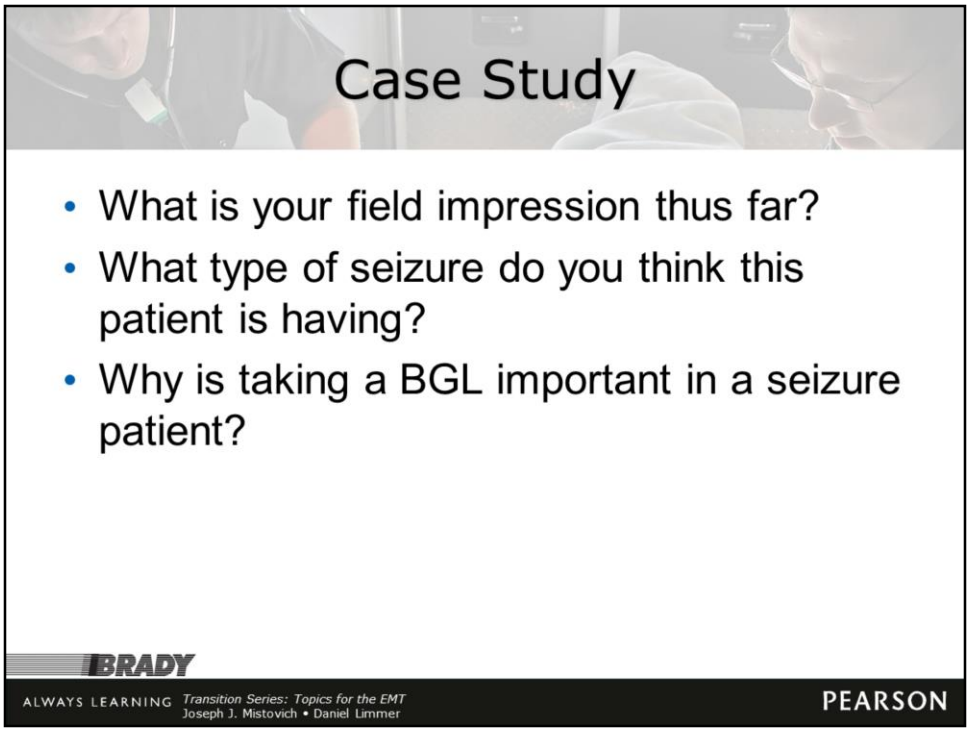
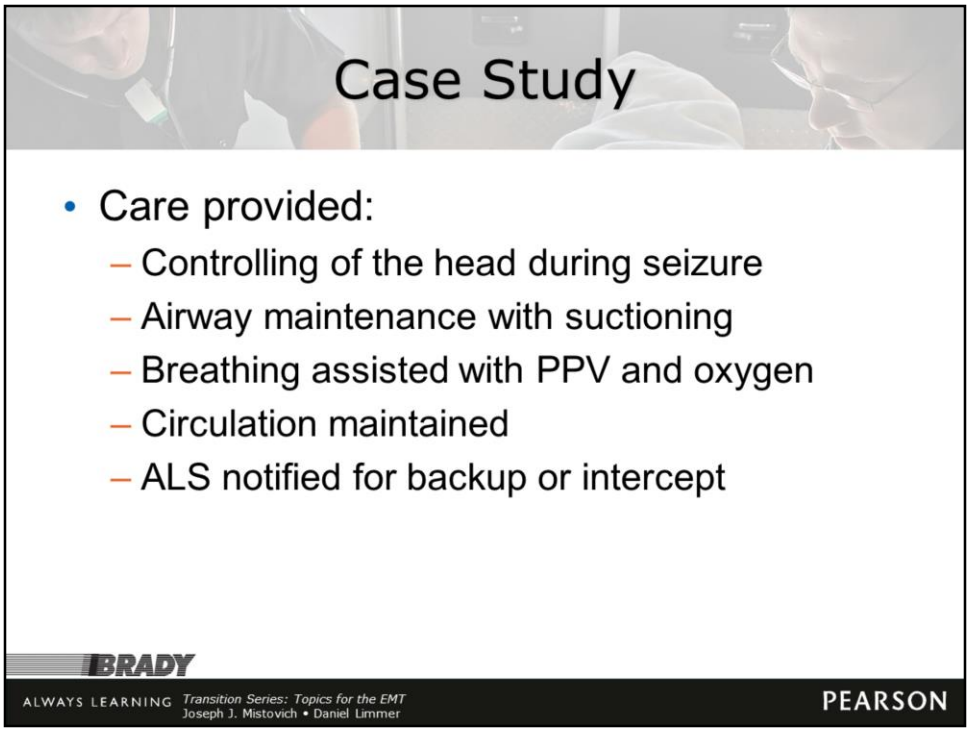


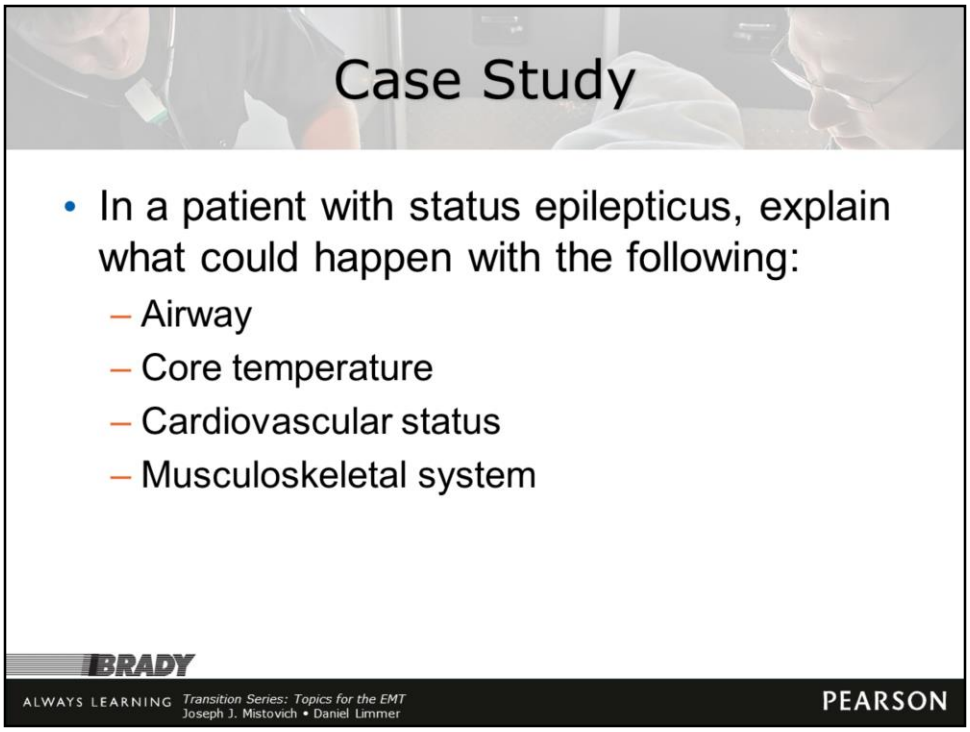
Field impression thus far is status epilepticus—probably secondary to an epileptic patient not being compliant with their medications.

The type of seizure the patient is having is "tonic-clonic".

Taking the BGL is important because sometimes low blood sugar can precipitate seizures.



Discuss as needed.



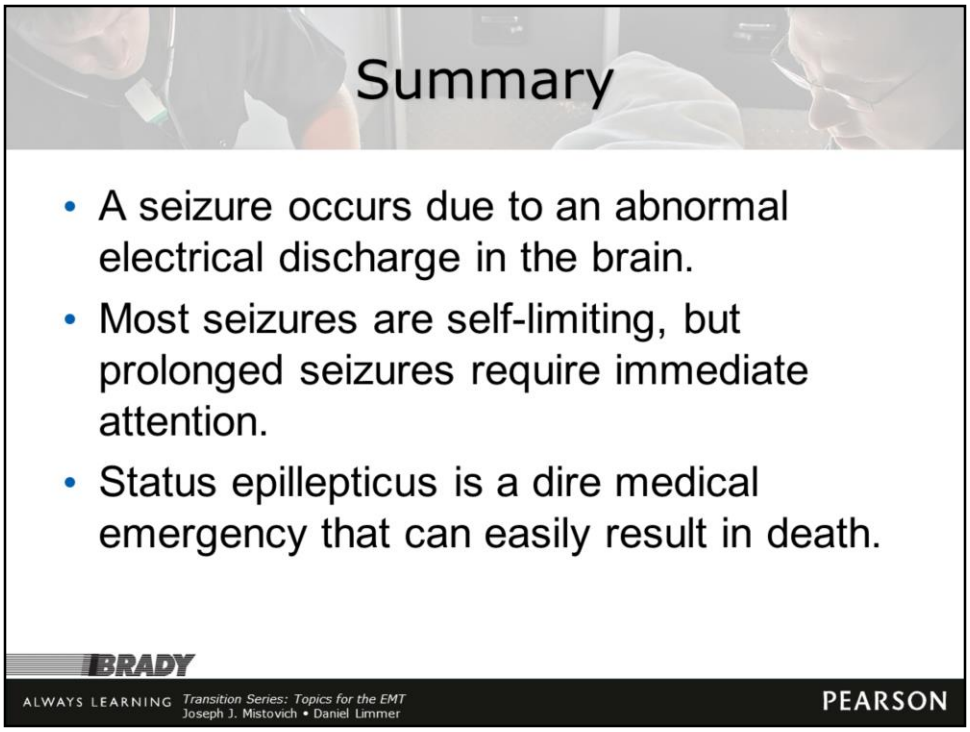
The airway will continue to be an issue, especially if the mouth is clenched. Suctioning may only be possible through the nasal cavity with a flexible catheter.

The core temperature will continue to rise due to the muscular contraction.

The heart will have to work harder as will the rest of the cardiovascular system, with probably less oxygenation and waste removal during the seizure.

If/when the cardiovascular status starts to fail due to hypoxia and acidosis, cardiac arrest will follow shortly.

With prolonged seizures, the contraction of opposing extensor and flexor muscles have been violent enough to cause long bone fractures, vertebral fractures, and other musculoskeletal trauma.



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