Audio version coming early in 2014
Objectives of Module Two:

Upon completion of Module Two—the participant will:

- Recognize generalized and partial types of seizures.
- Demonstrate basic first aid for seizure types.
- Identify when a seizure may become an emergency situation.
In general, there are two types of seizures: partial and generalized. The types of seizures are called simple partial, complex partial and generalized.

Partial (also called focal or localization related) seizures begin in one part of the brain. The electrographic seizure activity can spread to other parts of the same side of the brain from where it started. In some instances, the electrographic activity can spread to the other side of the brain, causing a secondarily generalized seizure.

In a generalized seizure, the electrical activity involves the entire brain from the onset. The specific types are: Absence (previously called petit mal), Myoclonic, Clonic, Tonic, Tonic-Clonic, Atonic (also called drop attacks or astatic)
The International League Against Epilepsy (ILAE) has proposed new terminology and concepts for classifying seizures and the epilepsies. The most noticeable change pertains to definition and types of seizures. Generalized seizures are simplified, while the term partial seizures has been replaced with focal seizures. The terms simple, complex and secondary generalized are not used, rather focal seizures are described by their primary manifestations. For example seizures that involved changes in thought, cognition or awareness are described as dyscognitive focal seizures, while those with motor manifestations, with our without change in awareness, would be called focal motor seizures.

Other changes have been made to better describe important concepts and causes.

Reference:
There are two or three parts to a seizure, depending upon the type.

An aura is actually a simple partial seizure. The symptoms experienced/seen correspond to the area in the brain from where abnormal electrographic activity is emanating. This can occur without progression of the electrographic activity to other parts of the brain. It can also occur at the beginning of a complex partial seizure. In this case, it will progress to other manifestations as the abnormal electrographic activity in the brain spreads beyond the initial starting point.

Ictus includes all of the manifestations and symptoms occurring during the seizure while abnormal electrographic activity occurs.

When we say a patient is post-ictal, we mean the time frame after the seizure where the brain has not returned to normal functioning. Some patients have no post-ictal period, while others can be sleepy, confused, have impaired awareness or other changes in consciousness. Some patients who have seizures involving the motor strip may experience a paralysis of the arm or leg until that part of the brain recovers; This is called a Todd’s paralysis.
During a Simple partial seizure, there is no change in consciousness or awareness in the patient. Some of these are called auras. Auras are not the only type of simple partial seizure. What is seen or felt depends upon which area of the brain is having abnormal electrographic activity.
This slide is a pictorial representation of which parts of the body and brain functions are controlled in various areas of the brain. Where seizures may start from or progress to will depend on what symptoms may be involved in the seizure.
Simple partial seizures can involve the parts of the brain responsible for the sensory, motor, autonomic or psychic function.

Sensory seizures may include smells, sensations (feeling as if something is present which isn’t), visual changes (such as light disturbances) and auditory symptoms.

In an autonomic seizure, what is seen/reported include: pupil dilation, stomach upset, skin flushing or the patient may become pale.

Motor seizures may involve any part of the motor strip. While it may start in one part of the motor strip, it may spread to other areas during the course of the seizure. You may see only unilateral jerking of the face, arm, leg, etc. or it may progress to other parts of the brain as the seizure continues and spreads. If the pharynx, tongue or lips are involved in the seizure, the patient may be conscious but unable to speak.

Psychic events include deja-vu (feeling as if you have been in a new place before), jamais vu (familiar objects seem unfamiliar) and out of body experiences. Feelings such as fear, anxiety, happiness, depression and the like can be experienced.

### Examples of Simple Partial Seizures

- **Sensory**
  - Smells
  - Sensations
  - Visual changes
  - Auditory symptoms

- **Autonomic**
  - Dilated pupils
  - Queasy Stomach
  - Skin flushing
  - Pallor, etc.

- **Motor**
  - Unilateral jerking of face, arm, and/or leg
  - May spread from one part of body to others
  - May be unable to speak
  - Can involve any part of the body

- **Psychic**
  - Dejà vu, jamais vu, out of body experience
  - Feelings of fear, anxiety, happiness, depression
Promoting safety is the basic first aid for any seizure. Partial simple seizures can, in some cases, progress to complex partial slide or secondarily generalized tonic-clonic seizures.

Stay calm. Observe the patient, while speaking calmly and assessing their awareness.

Always stay with the patient within arm’s reach. Guide the patient to a safe place; Assist to sit or lie down in case the seizure progresses to stiffening or loss of tone

Provide reassurance, time and document the seizure.
Complex partial seizures may last seconds to minutes.
The seizure may start as a simple partial seizure, as previously stated, and then progress to a complex partial seizure. It can start suddenly as a complex partial seizure.
There is always an impairment in awareness involved, although this may be difficult to assess. The patient may have an unresponsive stare, behavioral arrest or nonsensical responses among other things. The patient may or may not be able to hear, understand, see, respond or recall events during a seizure.
Automatisms are unique to this seizure type. Automatisms are unusual and repetitive behaviors. However, they are NOT purposeful, although they may appear to be at first sight. They include lip smacking, swallowing, chewing, hand movements, sucking, wandering, undressing.
Motor manifestations are similar to simple partial seizures, including:

One or both sides of the body may be affected
As per simple partial seizures, unilateral eyelid, face/arm +/- leg jerking might be seen

Movements may include stiffening, jerking, twitching. Absence of movement can also be seen.

Muscles of the jaw and shoulder and those associated with swallowing are sometimes involved.

May involve any part of the body (motor strip) and can spread from one area to others.

The post-ictal period can include fatigue, confusion, sleepiness and/or headache.
Promote safety.

- During automatisms, guide patient away from potential dangers. These may include flames, microwave ovens, pools of water, walking into dangerous situations such as traffic and stairs and dangerous machinery.
- Do not restrain patient unless injury is likely to occur. Patient may become combative if restrained, although this is not purposeful behavior. If safe, let patient wander in an enclosed area.
- Assist to lie down if there is a loss of tone. Place in side-lying position when possible.
- Always stay calm.
- Observe behavior during the seizure and time it.
- Post-ictally, speak softly as the patient may be confused, tired, sleepy and/or frightened. Reorient when the baseline status has returned and provide reassurance.
- Document the seizure occurrence.
Secondarily Generalized Seizures begin as partial seizures. They may begin as a **simple partial seizure** and provide a warning to the patient to allow him to get in a safe position. If the seizure is a **complex partial seizure**, it may start with or without a warning.

When the electrographic activity spreads to the opposite hemisphere, both hemispheres are then involved, becoming a “secondarily” **generalized tonic-clonic seizure**.

The spread to a generalized seizure may evolve slowly or may be rapid, causing patient to fall.

When the seizure has secondarily generalized, both sides of the brain are electrographically involved.
When the electrographic activity spreads to the opposite hemisphere, signs of a generalized tonic-clonic seizure appear. Eyes may roll back upwards. Falling to the ground or leaning over occurs.

The patient becomes tonic (rigid, stiff) and then has clonic (jerking) movements.

Incontinence of bladder and/or bowel may happen.

Also, forced head turn or eye deviation to the side may be seen.

One side of the body may be more involved than the other.

In general, most of these seizures will last 5 minutes or less.
Review of Partial Seizures

- Video introducing partial seizures and what they look like from epilepsy.com
- Understanding Partial Seizures
  (available 1/1/2014)

Reference:
www.epilepsy.com available in January 2014
When a patient has a generalized seizure, both hemispheres of the brain have abnormal electrographic activity simultaneously from the onset.

Types of generalized seizures include:
Absence
Myoclonic
Tonic
Clonic
Tonic-Clonic
Atonic (drop attack/astatic)

The following slides further describe the differences among these seizure types.
Absence seizures are very brief in duration, lasting about 5-30 seconds each.

Frequency is usually many times per day, even hundreds of times.

With absence seizures, there is sudden onset of behavioral arrest, with or without eyelid fluttering. As soon as the seizure is over, the patient continues doing what he/she was doing before the seizure began, without post-ictal sleepiness. Typically, these seizures may be unnoticed until the child starts failing in school. The teacher may notify the mom that the child is daydreaming a lot.

Anterograde or retrograde amnesia is possible so the patient should be reoriented to the task he/she was doing.

Hyperventilation and/or flashing/flickering lights may precipitate seizures.

The EEG pattern is quite classic.
Once again, basic first aid is to promote safety.

Stay within reach of patient as there is a rare likelihood of falling.

Stay calm. Observe the behavior and time the seizure duration.

Make sure that the patient has returned to baseline after the seizure has stopped. Reorient to whatever was being done before the seizure. This would include repeating information that the patient did not hear during the seizure.

When absence seizures are suspected, an evaluation to determine if the patient is photo sensitive is done through history and strobe photic stimulation during the routine EEG. If a patient is known to be photo-sensitive, teach patient and family to avoid exposure to flashing/flickering lights, especially the one (s) known to precipitate seizures in that patient. This could include strobe lights, camera flashes, flickering indoor lights, flickering sunlight and patterns in walls/ceilings.

As always, document the seizure.
**Tonic-Clonic Seizures**
(Previously called grand mal or major motor)

- Often begins with an ictal cry (loud groan)
- Body may be tonic – posturing or stiffening of all muscles
  - Person may appear as if not breathing as chest muscles are rigid
- Clonic movements – rhythmic jerking of head and extremities
- May have forced eye deviation upward

**Definition of Tonic:** Sustained posturing/stiffening of all extremities

**Definition of Clonic:** Rhythmic jerking of all extremities

There are two phases to a tonic-clonic seizure. The first phase is the tonic phase. It often begins with an ictal cry (loud groan). Initially there is sustained posturing or stiffening of all extremities. The patient is quite rigid and may not appear to be breathing. This is followed by a clonic phase where there is rhythmic jerking of bilateral extremities and head.

Some patients will only have clonic (jerking phase).

Forced eye deviation upwards may be seen.
GTC seizures usually last seconds to up to 1-2 minutes. In addition to the signs in the last slide:

Excessive salivation (drooling or foaming) can occur.

Biting of the tongue is more common in older children and adults.

Incontinence of urine/stool, as result of tonic muscle contraction can be seen.

The patient may turn dusky or cyanotic

Post-ictally, the patient may be confused, have a headache or muscle aches and/or be tired for minutes to hours.
Stay calm and promote safety.
If needed, cushion the fall if possible and support the head.
Loosen restrictive clothing, especially around the neck.

DO NOT attempt to put anything between the teeth during the seizure as broken teeth, aspiration of teeth or injury to the inside of the mouth could occur. The previous belief that someone can swallow his tongue during a seizure is not true. However, at the end of the seizure, placement of the patient in a side-lying, position (see next slide) will allow the tongue to fall forward and prevent airway obstruction as the muscle relaxes as the seizure subsides.

Do not give any food or liquid until the patient is able to swallow

Do not forcefully reposition or restrain the movements except if failure to do so could cause injury
Basic first aid is to promote safety.

Turn the patient to side-lying position as soon as is possible. With teenagers and adults, this may not be possible until the seizure is subsiding. Do not forcefully reposition or restrain movements unless failure to do so could cause injury.

Turn the body to the side as soon as possible to facilitate drainage of saliva from the mouth. You may need to reposition the head to keep the airway clear. In the hospital, suctioning may help maintain airway, especially if the seizure is long.

Observe behavior and time the seizure.

Assess for injury after the seizure is over.
After the seizure has stopped, observe the patient carefully until patient returns to their baseline.

The patient may be somnolent, confused, combative, aphasic, or amnestic.

If the patient is somnolent, airway protection is necessary. Place the patient in a side-lying position with proper head/neck support to prevent airway occlusion.

Reassure them and re-orient them to what happened.

If don’t return to baseline orientation, within typical period of time, reason for concern. If confusion persists, person needs to be assessed for continued subclinical seizure activity.

Minor formatting. Delete colons and final periods....not in any previous similar slide  PC

Restraint may cause aggression in a confused patient so do not restrain unless injury could occur if restraint is not used.

Assess for injury. See slide 39.

Duration of post ictal state varies. It may take minutes to hours for the brain to return to its baseline state.

Do not attempt to give a patient anything to eat or drink until he/she is able to swallow.

Document the seizure.
These seizures present with stiffening or posturing. They may be very brief in duration or last for minutes. Bilaterally, the patient is very stiff (rigid) and will fall if standing or sitting.

These seizures are sudden and unpredictable. There is significant risk of injury due to the loss of protective reflexes.

There may be a change in breathing patterns due to tonic muscle contractions and the patient may look as if there is no breathing.

The patient may turn pale or cyanotic.

The patient may have clusters of seizures. They are sometimes seen in combination with other seizure types.
Atonic seizures, also called “drop attacks” involve loss of tone. They are also known as drop seizures.

They may be as subtle as head nodding with slight bending of knees. At other times, the sudden loss of tone causes drop of head, jaw, trunk, or entire body and the patient may fall backwards or forward if sitting or standing.

Impaired awareness may not be discernable, although present.

Usually duration is very brief. These seizures vary in intensity from mild to forceful.

Because of the unpredictability of atonic seizures and loss of protective reflexes to cushion fall, there is significant risk of injury.

Patients often require helmets and safety gear, as they are at high risk for head lacerations, fractures, and other injuries.
In myoclonic seizures, there is very fast muscle contractions of the head, arms, legs, face, trunk and/or body. Individual jerks or clusters can be seen. They can involve one or both sides of the body. Sometimes seizures are isolated to specific muscle groups. Sudden or repetitive jerks may cause loss of balance and falling. The patient may drop or fling objects, which he/she is holding, in the midst of a seizure.

They often occur when drifting to sleep or shortly after awakening. It may not be possible to determine if there is impaired awareness. Clusters of myoclonic seizures may precede a generalized tonic-clonic seizure. Some myoclonus may not be epilepsy-related.
Stay calm.

As with all seizures, basic first aid is to promote safety.

Be sure safety gear is worn, if ordered. Often, patients with tonic and atonic seizures need to wear a protective helmet while awake. Face gear is needed for many patients as well. Cushion the patient’s fall, if possible. Support the head if possible to prevent the patient’s head from hitting hard surfaces.

Clear the area of harmful objects and surfaces. Make sure that the patient’s individual environment has been safety proofed. E.G., pad pointed corners of furniture if rounded corner furniture unavailable, Pad hard surfaces on which patient is working, such as coloring in a coloring book.

DO NOT attempt to put anything between the teeth during the seizure as broken teeth, aspiration of teeth or injury to the inside of the mouth could occur. The previous belief that someone can swallow his tongue during a seizure is not true. However, at the end of the seizure, placement of the patient in a side-lying, position (see next slide) will allow the tongue to fall forward and prevent airway obstruction as the muscle relaxes as the seizure subsides.

Loosen restrictive clothing such as buttoned shirts around the neck.

DO NOT put anything between the teeth

DO NOT give anything to eat or drink until able to swallow.

IF seizure more than brief, turn to side-lying position if possible but do not forcefully reposition. Side-lying for some may not be possible until the seizure subsides. Side-lying will facilitate prevention of choking due to saliva when the seizure is over and the patient starts to adequately breathe again.

?? This better: IF seizure more than brief, turn to side-lying position if possible but do not forcefully reposition. Side-lying for some may not be possible until the seizure subsides. Side-lying will facilitate prevention of choking due to saliva when the seizure is over and the patient starts to adequately breathe again. This may more likely be needed for patient having a tonic seizure.
Observe the behavior during the seizure. Time the seizure/seizure cluster.

Post-ictal care includes the following:

Observe the behavior until awareness has returned.

Reorient and reassure the patient.

Assess the patient for injury, especially if fall involved. Refer to M.D. if injury requiring medical treatment needed

Do not give anything to eat or drink until patient able to swallow.

Assess patient until returns to baseline state.

Document the seizure/seizure cluster
Per the National Institutes of Health Consensus Statement 1980 a febrile seizure is an event in infancy or childhood, usually occurring between 3 months and 5 years of age, associated with fever but without evidence of infection or defined cause. Seizures with fever in children who have suffered a previous non-febrile seizure are excluded from the definition. Fever may occur at anytime during the 24 hours surrounding the seizure.

References:
AAP Practice Guidelines, 2008
Febrile Seizures

- Simple febrile seizure
  - Generally lasts a few minutes and does not require treatment
  - Occurs within 24 hours of fever onset
  - Usually generalized tonic clonic seizure
  - No localizing deficits afterwards
  - No prior history of non-febrile seizures
  - No current intracranial infection
  - No other neurological/developmental abnormalities
  - No family history of non-febrile seizure

- Complex febrile seizure
  - Last > 15 minutes
  - Have focal features or
  - Recur within 24 hours

References:


This slide summarizes the basic first aid for anyone who has a seizure.

Stay calm and speak quietly to the person during and after the seizure.

Always use a second hand on a watch or clock to time the duration of the seizure.

Promote safety. This may mean helping the person to a safe place, guiding them to the floor, cushioning a fall, head support and the like. Remove harmful objects from the path of a person having a seizure so that they won’t grasp them or hit them during seizure movements. Make area as comfortable as possible.

Maintain an open airway by positioning, as needed. For some patients and seizure types, this may be more easily done as the seizure is subsiding.

Do not put anything between the patient’s teeth during the seizure.

Provide privacy by keeping onlookers restricted from the area where the patient is seizing.

Do not leave the person until the seizure AND post-ictal period is over and the person is back to baseline. Assess frequently.

Be sensitive and supportive, reorienting the patient to what happened as needed, telling him that he is okay and letting him know that he had a seizure.

Allow patient to rest or sleep, as needed.

Do not give the patient anything to eat or drink until the person is able to swallow.

Assess for injury.
Review of Generalized Seizures

- Video introducing generalized seizures and what they look like from www.epilepsy.com

Understanding Generalized Seizures
(available January 2014)

Please click link to see video

Reference:
www.epilepsy.com available January 2014
This slide gives you a summary of what to observe surrounding a seizure and what is included in documentation.

You can download “Tips for Seizure Observation and Recording”. Just clink the link. Available January 2014
Documentation of the seizure includes observations of the patient before the seizure began. It is important to determine from your own observation, or questioning others who have been with the patient during or before the seizure, the sequence of events leading up to seizure.

Assess for possible triggers or precipitants
Document the time, length and date of the seizure.

**Tips for Seizure Observation**

**Before the Seizure**

- What was person doing at time of event
- Change in mood or behavior hours or days before
- ‘Warning’ or ‘aura’ shortly before event
- Possible triggers or precipitants
- When seizures occurs – date, time, duration
This slide is intended to help you know what to look for while you assess the patient during the seizure. Part(s) of the body involved and spread to other parts of the body are clues to help the health care professional determine what type of seizure the patient is having.
Promoting safety for the patient includes the post-ictal assessment and provision of care until the patient returns to his/her baseline.

Documentation includes what happened before, during and after the seizure, length and post-ictal phase.

**Tips for Seizure Observation**

**What Happens After Event**

- Response to voice or touch
- Awareness of name, place, time
- Memory for events
- Ability to talk or communicate
- Weakness or numbness
- Changes in mood or how person acts
- Fatigue, sedation
Tips for Seizure Observation

How Long It Lasted

- Duration of aura, seizure, after-effects or postictal phase
- How long before person returns to normal activity

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Adapted with permission from the Comprehensive Epilepsy Center, Beth Israel Deaconess Medical Center, Boston, Massachusetts, 2000.
Monitor the patient until he/she returns to his/her baseline

Assess post-ictal cognitive state. The patient may have altered level of consciousness, such as be confusion, extreme sleepiness, disorientation, etc. Children may not be able to verbalize so may exhibit crying, sleepiness, fear and the like.

Speak calmly and quietly. Reorient the patient to time, place, what happened. Reassure the patient that he/she is okay. Comfort small children by holding, soft speech, singing and/or any other known comfort measure for that child

Allow the patient to sleep if needed.

As previously stated, do not restrain the patient in the post-ictal period, unless injury could result if you do not, as restraint may cause aggression in some people.

Assess for injury. Assess for post-ictal paralysis (Todd's). Todd's paralysis is a period of paralysis of a limb for a period of time after a partial seizure. It occurs in some patients. Prolonged paralysis requires evaluation. Mood or behavior changes may be seen.

Document all aspects of the seizure/seizure cluster.

Contact treating provider if patient is not returning to baseline level of functioning or question of continuing seizures.
The majority of seizures subside within 5 minutes. Therefore, emergency treatment should be sought when a single seizure or a series of seizures approaches 5 minutes. Patients with epilepsy may have an individualized first aid plan prescribed by their neurologist which would be implemented. In general though, for all patients, dialing the paramedics, going to the nearest ER which has a physician present 24 hours per day, or calling one’s neurologist if instructed to do so, is necessary.

Conditions for which medical evaluation is required include first seizure, history of rare seizures, new seizure type, pregnancy, diabetes, injury, water immersion. In these cases, other specialists may need to be involved, as in the case of the pregnant or diabetic patient or when the patient has experienced water immersion or near drowning.
In addition, paramedics should be called or the patient should be taken to the nearest emergency room where a physician is present 24 hours per day when:

1. seizures don’t stop, one seizure occurs after another or for seizures that last longer than typical events
2. The patient doesn’t return to baseline in usual period of time, has a first seizure or has suspected injury
3. The observer is unsure or uncomfortable. Promoting safety is the highest priority
Children who have a seizure are at risk for injury. The most common injuries are abrasions, contusions, fractures, falling from heights with resultant injuries. Less commonly, children can drown in any body of water, such as bathtub, pail of water, swimming pool or get involved in a pedestrian vs motor vehicle accident if a seizure occurs while bicycling and the child falls or bicycles into oncoming traffic.

Teenagers and adults are more prone to burns, shoulder dislocations, spine injury, head trauma and fractures.

However, please be aware that children, teenagers and adults can have any of the injuries cited in the slide, including those listed as more common for specific age groups.

Delayed injuries and other medical problems can be identified after the seizure activity has ceased. They are directly the result of injury during the seizure or the seizure itself and may take time to develop. These include: fever, aspiration pneumonia, fractures or subdural hematomas. Change in seizures or seizure emergencies can also follow the initial seizure or seizure cluster.
This seizure assessment algorithm was developed by an expert panel of nurses from the American Association of Neuroscience Nurses. This shows the flow of care for a person during a seizure—what to assess and steps to take depending on the patient’s status or response to that step. This is a very helpful tool for nurses working in all settings who may care for people with seizures.

References:
Seizure Assessment Algorithm, American Association of Neuroscience Nurses.

Additional Information on seizure first aid:
www.epilepsy.com