# SEIZURES & SCHOOL

Seizure disorders are not uncommon in the school setting. Seizures often indicate epilepsy, but can also be a symptom of another condition, which is sometimes confusing. In addition to the broad categories of seizure disorders there are also multiple types of seizures. The contents of this packet seek to provide additional information regarding seizures and provide additional helpful information for the school setting.

**THIS PACKET INCLUDES INFORMATION REGARDING:**



## SEIZURE DISORDERS

Seizure is the physical findings or changes in behavior that occur after an episode of abnormal electrical activity in the brain. The term "seizure" is often used interchangeably with "convulsion." Convulsions occur when a person's body shakes rapidly and uncontrollably. During convulsions, the person's muscles contract and relax repeatedly. There are many different types of seizures. Some have severe shaking and jerking, while some display mild symptoms without shaking.

There are two basic categories of seizures:

- **Epileptic:** These seizures have no apparent cause (or trigger) and occur repeatedly. These seizures are called a seizure disorder or epilepsy.
- **Nonepileptic:** These seizures are triggered (provoked) by a disorder or another condition that irritates the brain. Such as fevers in small children, low blood sugar, electrolyte or chemical imbalances or cardiac issues.

Certain mental disorders can cause symptoms that resemble seizures, called psychogenic nonepileptic seizures.

In about 20% of people who have a seizure disorder, seizures are preceded by unusual sensations (called aura), such as the following:

- Abnormal smells or tastes
- Butterflies in the stomach
- A feeling of déjà vu or the opposite feeling—something seems unfamiliar even though it is familiar in some way (called jamais vu)
- An intense feeling that a seizure is about to begin

Almost all seizures are relatively brief, lasting from a few seconds to a few minutes. Most seizures last 1 to 2 minutes. When a seizure stops, people may have a headache, sore muscles, unusual sensations, confusion, and profound fatigue. These after-effects are called the postictal state. In some people, one side of the body is weak, and the weakness lasts longer than the seizure (a disorder called Todd paralysis). Most people who have a seizure disorder look and behave normally between seizures. Some people bite their tongue and lose control of the bladder and/or bowels during a seizure.

Symptoms vary depending on which area of the brain is affected by the abnormal electrical discharge which can result in things such as visual hallucinations, or sudden inability to speak, for example. Other possible symptoms include numbness or tingling in a specific body part, brief episodes of unresponsiveness, loss of consciousness, confusion, and loss of muscle or bladder control. People may vomit if they lose consciousness.

Symptoms also vary depending on whether the seizure is partial or generalized. About 70% of people have only one type of seizure. The rest have two or more types.

## TYPES OF SEIZURES

### Partial seizures

Only one side of the brain is affected. Partial seizures may be simple or complex.

In **simple partial seizures,** abnormal electrical discharges begin in a small area of the brain and remain confined to that area. Because only a small area of the brain is affected, symptoms are related to the function controlled by that area. For example, if the small area of the brain that controls the right arm's movements (in the left frontal lobe) is affected, the right arm may involuntarily be lifted up and the head may turn toward the lifted arm. People are completely conscious and aware of the surroundings. A simple partial seizure may progress to a complex partial seizure.

**Jacksonian seizures** are a type of simple partial seizures. Symptoms start in one part of the body, and then spread to another. Abnormal movements may occur in the hand or foot, and then move up the limb as the electrical activity spreads in the brain. People are completely aware of what is occurring during the seizure.

In **complex partial seizures,** abnormal electrical discharges begin in a small area of the temporal lobe or frontal lobe and quickly spread to other nearby areas. The seizures usually begin with an aura that lasts 1 to 2 minutes. During the aura, people start to lose touch with the

surroundings. During the seizure, consciousness is impaired but not completely lost. People may do the following:

- Stare
- Chew or smack the lips involuntarily
- Move the hands, arms, and legs in strange, purposeless ways
- Utter meaningless sounds
- Not understand what other people are saying
- Resist help

Some people can converse, but their conversation lacks spontaneity, and the content is somewhat sparse. They may be confused and disoriented. This state may last for several minutes. Most people do not remember what happened during the seizure (a condition called postictal amnesia). Some people then recover fully. In others, the abnormal electrical discharge spreads to adjacent areas and to the other side of the brain, resulting in a generalized seizure. Generalized seizures that result from partial seizures are called secondarily generalized seizures.

**Epilepsia partialis continua** is rare. Seizures occur every few seconds or minutes for days to years at a time. They typically affect an arm, a hand, or one side of the face. These seizures usually result from localized brain damage (such as scarring due to a stroke) in adults or from inflammation of the brain (as occurs in encephalitis and measles) in children.

**Generalized seizures**

Large areas on both sides of the brain are affected. Generalized seizures often cause loss of consciousness and abnormal movements, usually immediately. Loss of consciousness may be brief or last a long time.

Generalized seizures include the following:

- Tonic-clonic seizures
- Absence seizures
- Tonic seizures
- Atonic seizures
- Myoclonic seizures, including juvenile myoclonic epilepsy
- Infantile spasms and febrile seizures

In **generalized tonic-clonic seizures,** muscles contract (the tonic part), then rapidly alternate between contracting and relaxing (the clonic part). These seizures may be primary or secondary.

Primary generalized seizures begin with abnormal discharges in a deep, central part of the brain and spread simultaneously to both sides of the brain. Secondary generalized tonic-clonic (grand mal) seizures usually begin with an abnormal electrical discharge in a small area of one side of the brain, resulting in a simple or complex partial seizure. The discharge then quickly spreads to both sides of the brain, causing the entire brain to malfunction. In both types, consciousness is temporarily lost and a convulsion occurs when the abnormal discharges spread to both sides of the brain.

In primary generalized seizures, there is no aura. During the seizure, people may do the following:

- Have severe muscle spasms and jerking throughout the body
- Fall down
- Clench their teeth
- Bite their tongue (often occurs)
- Drool or froth at the mouth
- Lose bladder control

The seizures usually last 1 to 2 minutes. Afterward, some people have a headache, are temporarily confused, and feel extremely tired. These symptoms may last from minutes to hours. Most people do not remember what happened during the seizure.

**Absence seizures** may be typical (petit mal) or atypical.

Typical absence seizures usually begin in childhood, usually between the ages of 5 and 15 and do not continue into adulthood. However, adults occasionally have typical absence seizures. Unlike tonic-clonic seizures, absence seizures do not cause convulsions or other dramatic symptoms. People do not fall down, collapse, or move jerkily. Instead, they have episodes of staring with fluttering eyelids and sometimes twitching facial muscles. They are completely unaware of their surroundings. These episodes last 10 to 30 seconds. People abruptly stop what they are doing and resume it just as abruptly. They experience no after-effects and do not know that a seizure has occurred. Without treatment, many people have several seizures a day. Seizures often occur when people are sitting quietly. Seizures rarely occur during exercise. Hyperventilation can trigger a seizure.

Atypical absence seizures are less common. They last longer than typical absence seizures, jerking and other movements are more pronounced, and people are more aware of their surroundings. Most people with atypical absence seizures have neurologic abnormalities or developmental delays. Seizures usually continue into adulthood.

**Atonic seizures** occur primarily in children. They are characterized by a brief but complete loss of muscle tone and consciousness. They cause children to fall to the ground, sometimes resulting in injury.

**Tonic seizures** occur commonly during sleep. Muscle tone increases abruptly or gradually, causing muscles to stiffen. The seizures typically last only 10 to 15 seconds but can cause people, if standing, to fall to the ground. Most people do not lose consciousness. If seizures last longer, muscles may jerk a few times as the seizure ends.

Atypical absence seizures, atonic seizures, and tonic seizures usually occur as part of a severe form of epilepsy called Lennox-Gastaut syndrome, which begins before children are 4 years old.

**Myoclonic seizures** are characterized by quick jerks of one or several limbs or the trunk. The seizures are brief and do not cause loss of consciousness, but they may occur repetitively and progress to a tonic-clonic seizure with loss of consciousness.

**Juvenile myoclonic epilepsy** typically begins during adolescence. Typically, seizures begin with quick jerks of both arms. About 90% of these seizures are followed by tonic-clonic seizures. Some people also have absence seizures. The seizures often occur when people awaken in the morning, especially if they are sleep-deprived. Drinking alcohol also makes these seizures more likely.

**Infantile spasms** and **febrile seizures** occur in children and are not necessarily considered seizure disorders.

### Status epilepticus

This disorder is the most serious seizure disorder and is considered a medical emergency because the seizure does not stop. Electrical discharges occur throughout the brain, causing a generalized tonic-clonic seizure.

Status epilepticus is diagnosed when a seizure lasts more than 5 minutes or when people do not completely regain consciousness between two or more seizures. People have convulsions with intense muscle contractions and often cannot breathe adequately. Body temperature increases. Without rapid treatment, the heart and brain can become overtaxed and permanently damaged, sometimes resulting in death.

### Complications

Seizures may have serious consequences. Intense, rapid muscle contractions can cause injuries, including broken bones. Sudden loss of consciousness can cause serious injury due to falls and

accidents. People may have numerous seizures without incurring serious brain damage. However, seizures that recur and cause convulsions may eventually impair intelligence.

If seizures are not well controlled, people may be unable to get a driver's license. They may have difficulty keeping a job or getting insurance. They may be socially stigmatized. As a result, their quality of life may be substantially reduced.

If seizures are not completely controlled, people are twice as likely to die as those who do not have seizures. A few people die suddenly for no apparent reason—a complication called sudden unexplained death in epilepsy.

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**SEIZURE FACTS**

**Teachers sometimes need information to clarify to other students, some common information includes:**

- Seizures are not contagious.
- Seizures are not the child's fault (they cannot control them).
- Many seizures are hidden and do not manifest with convulsive symptoms.
- Seizures are not dangerous to others.
- One seizure does not lead to a seizure diagnosis.
- The type of seizure depends on where in the brain the discharge begins.
- Some children outgrow certain types of seizures.

**Myths & Common Misconceptions:**

1. Myth: You can swallow your tongue during a seizure-
   Fact: It is physically impossible to swallow your tongue.
2. Myth: You should force something into the mouth of someone having a seizure. Fact: This is never true. That is a good way to chip teeth, puncture gums, or even break someone's jaw. The correct first aid is simple: just gently roll the person onto their side and put something soft under the head to protect from injury.
3. Myth: You should restrain someone having a seizure.
   Fact: Never use restraint, instead allow the seizure will run its course, you cannot stop it.

**Seizure Causes:**

About 75% of the time, the exact cause of a seizure is unknown or "idiopathic". Common causes include:

- Head injury severe head blows from falls, car or bicycle accidents
- Brain Injury caused by tumor, stroke, trauma or infectious diseases – viral encephalitis, meningitis or even measles
- Poisoning due to substance abuse, e.g. drug or alcohol use
- Brain injury can occur in utero, during childbirth or later in infancy/life

- Fevers leading to febrile convulsion in young children.

In most cases, epilepsy is not inherited. Everyone inherits a "seizure threshold" – when brain cells are irritated beyond this point, we will have a seizure. People with a low seizure threshold tend to develop seizures more easily than others.

Not all seizure occurrences are consider epilepsy, while epilepsy is a chronic condition other seizure causes may cause an isolated or series of isolated events, with no long term effects. Seizure disorders are diagnosed after seizure presentation and abnormal EEG (electroencephalogram). Benign seizures are considered resolved when an individual l is two years seizure free without medication.

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**SEIZURE DISORDERS AND LEARNING**

No single factor related to a child's seizure disorder accurately predicts what, if any, impact his/her epilepsy will have on learning. Aspects of the seizure disorder that may come into play in the academic setting include:

- What the cause of the seizure disorder might be
- At what age seizures began
- The seizure type/s and what part of her brain is affected
- How frequently the seizures happen.

Different seizure types can have different impacts on a child's school performance. For example, a child's memory may be adversely affected by a generalized tonic-clonic (grand mal) seizure or a complex partial seizure. Absence seizures, which are characterized by a brief loss of consciousness, may prevent a student from hearing and seeing what is happening in his class when a seizure occurs. This loss of contact with the student's surroundings can therefore impede learning. Children may also fall behind from missing school for doctor's appointments, tests, or while recovering from a major seizure.

School may be difficult for a student with seizure disorders, specifically if there are existing learning problems or developmental delays in addition to epilepsy. In some cases learning problems emerge because of seizures or medications and tasks that were previously routine may become more difficult and the student may see his or her classmates moving ahead at a faster pace, one that he/she cannot maintain.

Some specific learning problems that children with epilepsy can experience are:

- Academic problems: difficulties with reading, writing, and math.
- Language problems: difficulties with comprehension, speech, and communication attention and concentration problems: a child may be inattentive, hyperactive, or both. He/she may only be able to concentrate for short periods of time.
- Slowness: it may take a child longer to process new information or to complete tasks compared to other children
- Memory: a child may study a topic many times, but not remember it the next day.

In addition to ongoing learning disabilities, children with epilepsy may have intermittent disruptions in their learning that specifically relate to their seizures, sleep patterns, and medications. These disruptions in their ability to attend and learn can change from day to day, or even hour to hour.

- Night-time seizures or poor sleep patterns caused by abnormal brain activity can increase fatigue during the school day. As a result the child is less attentive and less available to learn.
- Frequent "invisible" seizure activity in the brain during the school day can result in slower processing, consolidation, and retrieval of information recently learned.
- Children who have seizures, sometimes even a single seizure, during the school day can experience disruptions in their memory that cause them to forget what they have just learned. In some cases they cannot remember much about what happened just before or for some time after the seizure.
- Some anti-epileptic medications(for example, topiramate) can slow down processing of information in some children, while other anti-epileptic medications can induce fatigue that decreases the child's availability to learn.
    - Some commonly prescribed medications have side effects which may include drowsiness, inattention or restlessness, all of which can have an adverse impact on a student's learning potential. If a child is taking multiple medications to control her seizures, or taking medication at a very high dosage level, he/she may experience more learning difficulties than children taking only one drug or taking a lower dose of a medicine.
    - Drug side effects on a student's learning can be difficult to detect, and are often not apparent in a standardized IQ or academic achievement test. Special tests of attention,

Psychosocial factors are another important consideration for students with seizure disorders. Family coping strategies, school and parent expectations, and behavioral or emotional problems can all impact the learning of a student who has epilepsy. These factors can be both a cause and a consequence of academic difficulties. The stigma that still surrounds epilepsy in some communities can lead to stress in a student's life, resulting in poor school performance. A student's self-esteem and confidence can also suffer due to the effects of epilepsy in her life. A continuing downward spiral of decreased school performance and diminished self-esteem can prove to be very problematic for some students living with epilepsy.

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