



## Seizures

Seizures are a common neurologic condition affecting dogs and cats. Seizures can be classified based upon their clinical appearance, or what they look like, and by cause. Seizures can manifest as **generalized** (whole-body) as well as **partial** (focal, simple, complex). The **seizure locus** (location) will dictate the clinical manifestation or signs of the seizure. *The most common form of seizure in dogs and cats is generalized motor.*

### Definition

A seizure is an uncontrolled, abnormal electrical discharge arising from the thalamus and/or cortex of the brain. A **pre-ictal** or **prodromal** phase characterized by behavioral or mental change (the animal seeking out the owner or appearing to be clingier), followed by the seizure itself (**ictus**) is often noted. The ictus is characterized by stereotypic, involuntary mental, behavioral, sensory and/or motor change or activity with sudden onset and cessation. The post-seizure period (**post-ictal phase**) is characterized by fatigue, rapid breathing, and transient unresponsiveness. This period may last seconds or many minutes. Attempts to stand and walk follow, although coordination and strength may be markedly impaired. Impaired vision, disorientation and the need to move, pace, or circle is often appreciated. During this phase, your pet may not recognize you and can even exhibit aggression. Caution must be exerted so that injury to yourself or your pet does not occur. Most animals will want to eat or drink before laying down and falling asleep.

### Classification

**Generalized motor seizures** are characterized by a loss of consciousness, falling and laying on their side or chest, with involuntary motor activity characterized by stiff extension of the limbs followed by jerking, trembling and running in place. Salivation, an open-mouth posture as if choking, and urination and defecation can be noted. *Contrary to human seizures, animals do not displace or swallow their tongues during a seizure, and we do not encourage owners to attempt to stick their hands in the mouth of an animal that is actually seizing.* The post-ictal or after-seizure phase is characterized by panting, disorientation, and wobbliness and oftentimes hunger and thirst. Visual dysfunction and aggression can be noted following the seizure and are reasons for caution in how you handle your pet during the post-ictal period. **Partial seizures** are characterized by involuntary, uncontrolled, and stereotypic sensory and/or motor dysfunction of a part of the body. Loss of consciousness is not noted. Twitching of one eye, twitching of one leg, salivation with dilation of the pupils and vocalization can be noted with **simple partial seizures**. Behavioral and mental change with focal seizure activity denotes a **complex partial seizure**. *Partial seizures with complex symptomology are more commonly noted in cats.* Companion animals may experience both forms of seizures.

Seizures are not felt to be life threatening unless occurring repetitively (**pairs, clusters**) or for an extended period of time (**status epilepticus**). Recurrent generalized motor seizures have a greater potential for hyperthermia (increased body temperature) and systemic organ failure than partial seizures. Recurrent generalized seizures without a sufficient inter-ictal period or prolonged seizure activity greater than 10 minutes is termed **status epilepticus**. Generalized motor Status epilepticus is a life-threatening syndrome. Immediate therapy utilizing per-rectal Diazepam and/or emergent intravenous anticonvulsant therapy, intravenous colloid fluid support and core temperature reduction (lowering the body temperature) is mandatory to prevent vascular collapse and organ failure.

### Causes

**Epilepsy** and/or **Idiopathic recurrent seizures** occur in both dogs and cats. Much more is known of epilepsy in the canine species with multiple breeds recognized (i.e. Golden Retriever, Labrador Retriever, Dachshund, Beagle, St. Bernard). Epilepsy/Recurrent idiopathic seizures in the feline species is controversial. Onset of seizures in canine epileptics is often noted between 9 months and 5-1/2 years of age. Onset of idiopathic recurrent seizures in the feline species is felt to occur in a slightly older age group, with 4-8 years of age being common. The diagnosis of epilepsy/idiopathic recurrent seizures is a process of exclusion. Serologic or genetic markers have not been developed at this time for use in companion animals. Because of this, definitive diagnosis of the cause of seizures is vital for long-term treatment and prognosis. Diagnosis oftentimes utilizes a combination of the physical and neurologic examination findings, full blood testing results, including, but not limited to liver function and amended glucose-insulin ratio, imaging of the brain utilizing magnetic resonance imaging, and cerebrospinal fluid analysis. Your neurologist will direct you in choosing a diagnostic plan to allow for the diagnosis and management of your pet.

### Treatment

Despite the cause of the seizures, oral anticonvulsant therapy should be instituted in all patients experiencing recurrent seizures more frequently than once every 3-4 weeks and patients experiencing more than one seizure in a 24-hour period. Animals experiencing 2 (pair) or cluster (>3) seizures should receive immediate combination anticonvulsant therapy. Multiple anticonvulsants are available for use in companion animals and show long-term promise in both the canine and feline species. Phenobarbital, Potassium Bromide, Zonisamide, Levetiracetam, Gabapentin, Clonazepam, Clorazepate diPotassium and Felbamate are currently being utilized with great success. The choice of anticonvulsant(s) will be dependent on many factors, including economics, frequency of administration and side effects. *Current management techniques allow for control of 75-85% of all seizure patients. While this number appears to be impressive, it implies that 15-25% of all patients cannot be controlled!*