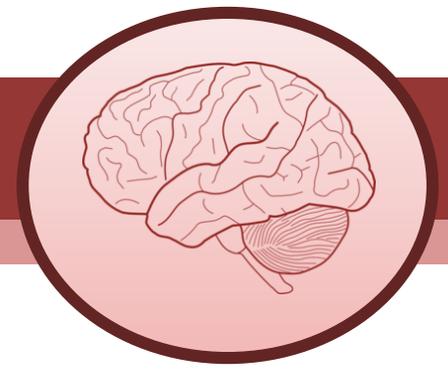


# Seizure Disorders



## What is a Seizure?

Any involuntary behavior that occurs abnormally may represent a seizure. Seizures are classified into several categories.

### **🐾 Generalized (Grand Mal) Seizures**

This is the most common form of seizure in small animals. The entire body is involved in stiffness and possibly stiffness/contraction cycles (tonic/clonic action). The animal loses consciousness and may urinate or defecate.

### **🐾 Partial Seizures**

This form of seizure originates from some specific area in the brain and thus involves the activity of a specific region of the body. Partial seizures may generalize to involve the whole body.

### **🐾 Psychomotor Seizures**

This type of seizure is predominantly behavioral with the animal involuntarily howling, snapping, circling, etc. The abnormal behavior may be followed by a generalized seizure.

Seizures (neurological events) are often difficult to differentiate from fainting spells (cardiovascular events). Classically, true seizures are preceded by an aura, or special feeling associated with a coming seizure. As animals cannot speak, we usually don't notice any changes associated with the aura. The seizure is typically followed by a post-ictal period during which the animal appears disoriented, even blind. This period may last only a few minutes or may last several hours. Fainting animals are usually up and normal within seconds after the spell.

**\*\*\*POST-ICTAL DISORIENTATION IS THE HALLMARK OF THE SEIZURE\*\*\***

## Causes of Seizures and Diagnostics

Seizures may be caused by situations within the brain (such as trauma, tumor, or infection) or by situations centered outside the brain (such as low blood sugar, circulating metabolic toxins, hypothyroidism, or external poisons). The first step is to rule out situations centered outside the brain, accomplished with blood testing. An ophthalmic exam may also be performed as the retina may show signs of a brain infection. If these tests are negative, the next step is determined by the age of the pet.

### **🐾 Animals < 1 year old**

Seizures are usually caused by infections of the brain. Analysis of cerebrospinal fluid, obtained by a tap under anesthesia, would be important.

### **🐾 Animals 1 year old – 5 years old**

In these animals, usually no cause can be found and the term "epilepsy," which simply means "seizure disorder," is applied. Epilepsy is not a unique disease in and of itself. If seizures are occurring frequently enough, medication is used to suppress them. Schnauzers, Basset hounds, Collies, and Cocker spaniels have 2-3 times as much epilepsy as other breeds.

### **🐾 Animals > 5 years old**

In this group, seizures are usually caused by a tumor growing off the skull and pressing on the brain (a "meningioma"). Most such tumors are operable if found early. A CT scan or MRI would be the next step. For patients where surgery is not an option, corticosteroids may be used to reduce swelling in the brain. Treatment to suppress seizures may also be needed.

Seizures resulting from metabolic problems or toxicity (i.e., when the brain itself is normal) are called **REACTIVE SEIZURES**.

Seizures resulting from an identifiable brain abnormality are called **SECONDARY SEIZURES**.

Seizures for which neither of the above problems apply (i.e., when no cause can be found) are called **PRIMARY SEIZURES**.

## Medication to Suppress Seizures

### A. Phenobarbital

Treatment of any seizure disorder is aimed at suppressing the seizure with medication. The drug of choice is still phenobarbital.

#### *When to Begin Treatment:*

- 🐾 When seizures occur in clusters
- 🐾 When isolated seizures occur more than once monthly
- 🐾 The German Shepherd dog, Golden retriever, Irish setter, and Saint Bernard breeds are notorious for difficulty in seizure control. It is best not to wait for frequent seizures in these cases as each seizure makes the next more difficult to control.

#### **What You Should Know about Phenobarbital.**

This medication is a long-acting barbiturate capable of suppressing seizure activity in the brain. It takes 1 to 2 weeks to build up a blood level capable of suppressing seizures. This means that the effectiveness of a given dose cannot be assessed before this period. After this time, a phenobarbital blood level is run to determine the effectiveness of the dose being used. Phenobarbital blood levels, once therapeutic, are checked every 6 months or sooner if breakthrough seizures occur.

Another important part of monitoring regards the toxicity of phenobarbital. This medication can be harmful to the liver, so liver function is periodically checked. A bile acids liver function test and a phenobarbital blood level twice a year are recommended.

Phenobarbital is a medication that cannot be suddenly discontinued; if you are interested in discontinuing seizure medication, be sure to discuss this thoroughly with your veterinarian.

#### **Common Side Effects:**

- 🐾 *Sedation* - animals may become quite stuporous as they get used to this drug. This effect is temporary, lasting until the patient's metabolism adjusts (usually no longer than a few days).
- 🐾 *Excessive Thirst and Appetite* - These side effects are annoying and, unfortunately, permanent if they occur.

### **B. Potassium Bromide**

A liquid anti-seizure medication which can control 85% of phenobarbital failures. Bromides reach therapeutic levels very slowly (months) thus, in most cases, bromides and phenobarbital are used in combination. Side effects of Potassium Bromide include stomach upset (gastritis) and Pancreatitis. Potassium Bromide levels should be monitored every 6 months once therapeutic levels are reached.

### **C. Gabapentin (Neurontin®)**

This medication also requires dosing three to four times daily. Gabapentin has little potential for side effects and reaches a stable blood level within the first week of administration.

### **D. Levetiracetam (Keppra®)**

This drug is popular for refractory epilepsy in dogs because it has been shown to be fairly reliable and has minimal side effects potential. Its disadvantages include expense (though several sizes are now available as generics, which helps tremendously) and the three times daily dosing schedule.

## **Seizures at Home (When is it an Emergency?)**

It is a lucky pet that never has another seizure after beginning medications; but an occasional breakthrough seizure (as disturbing as it may be to watch) is rarely of serious concern. It is important not to put yourself in danger around a seizing pet. You may get bitten during involuntary jaw snapping, and in the period of post ictal disorientation the pet may not recognize you and may snap. There are, however, some emergency situations:

- 🐾 **Seizure activity non-stop for 5 minutes or more** (this is called *status epilepticus*)
- 🐾 **More than three seizures in a 24-hour period**

**NOTE: If a particularly bad seizure occurs at home, or if either of the above emergencies occur, a special first aid technique can be used: Rectal administration of [Valium](#).**