

# Epilepsy

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## What is epilepsy?

Epilepsy is defined as recurrent seizure activity. Seizures are caused by abnormal electrical firing in the brain.

In some cases, the seizures are caused by an identifiable problem inside the brain (i.e. cancer, infection, inflammation, congenital brain malformation). Animals with a known cause are said to have symptomatic epilepsy. These dogs often have other neurologic signs (i.e. changes in behavior, difficulty walking, circling). In some animals with symptomatic epilepsy, the seizures stop with anti-seizure treatment and/or treatment of the underlying disease process.

In animals with primary or idiopathic epilepsy, there is no identifiable abnormality inside the brain to cause the seizures. This form of epilepsy is believed to be genetic or inherited. Primary epilepsy occurs in approximately 5% of dogs. Common breeds include German Shepherds, German Shorthaired Pointers, Labrador Retrievers, Golden Retrievers, Border Collies, Shetland Sheepdogs, and English Springer Spaniels.

Seizures in dogs with primary epilepsy typically begin at 6 months – 5 years of age. Juvenile or late adult onset epilepsy occurs in some dogs but is very rare.

## How do I know whether my dog is having a seizure?

There are many different types of seizures. The most common is called a generalized or "grand mal" seizure and is characterized by violent movement of all four limbs while lying down. Chomping or tightening of the jaw may occur. Animals are typically unresponsive during a seizure and commonly urinate, defecate, and salivate.

Some animals have partial or focal seizures, which may manifest as twitching of the face, chomping of the jaw, movement of a limb, or moments of unresponsiveness, confusion, or staring into space.

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Many animals with primary epilepsy have a classic pattern to their seizures. They may occur at a certain time interval (i.e. every 3 weeks, every 4 months), a certain time of day (commonly in the early morning) or in association with a particular stressful activity or event (i.e. guests in the home, going to the groomer, owner out of town).

Some dogs have a pattern of “cluster” seizures, characterized by 2 or more seizures within a defined period (i.e. 6 seizures in 48 hours). Dogs with cluster seizures are often more difficult to control with the standard anti-seizure medications.

Many dogs have a period before the seizure (called the pre-ictal period) where they demonstrate particular behavior patterns (i.e. neediness, anxiety, isolation, sedation), which may last hours to days. Similarly, many dogs have a classic period after the seizure (called the post-ictal period) where they exhibit unusual behaviors (i.e. seeming blind, unsteady when walking, excessively hungry or thirsty, excessively sedate), which may also last hours to days.

Some conditions can look similar to seizures including fainting episodes caused by heart or respiratory disease, episodes of loss of balance (called vestibular episodes or events), behavioral conditions (i.e. fly biting, tail chasing), and head bobbing syndromes (occur commonly in English Bulldogs, Doberman Pinschers, and Labrador Retrievers).

### **Are seizures harmful for my pet?**

Although extremely stressful to witness, short seizures (<1 minute-2 minutes) are typically not harmful. Seizure activity becomes dangerous when patients enter a stage called status epilepticus, which is defined as a seizure lasting longer than 5 minutes or having multiple seizures without regaining consciousness in between. Possible consequences of status epilepticus include swelling in the brain, extremely high body temperature, and systemic complications including abnormalities in blood clotting.

### **Why and when is it important to treat epilepsy?**

We recommend treating epilepsy when dogs have frequent seizures (i.e. greater than every 1-2 months) or severe seizures (lasting longer than 3-5 minutes). In untreated animals, seizures may become more severe or more frequent over time.

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## What are the most common anti-seizure medications and their side effects?

The most common anti-seizure medications used in veterinary medicine are Phenobarbital and Potassium Bromide. They have the advantage of being inexpensive.

### *Phenobarbital*

- Dosages: 15 mg, 30 mg, 60 mg; 1/4 grain (16.2 mg), 1/2 grain (32.4 mg), 1 grain (64.8 mg) tablets
- Dosing schedule: Typically twice daily (every 12 hours); important not to miss a dose; stopping suddenly can cause seizures
- Time to take effect: reaches full effect approximately 2 weeks after starting the medication
- Species: Okay for use in dogs and cats
- Common side effects:
  - Sedation, incoordination when walking – common in the first 1-2 weeks after starting Phenobarbital or increasing the dose; may persist in some dogs especially if on high doses or in dogs sensitive to these side effects
  - Increased drinking, urination, and appetite – typically persist while an animal is on the medication
  - Increased liver metabolism resulting in increased liver enzyme values – this is normal and not an indication of liver damage
- Very rare side effects:
  - Reversible liver damage – evidenced by decreased production of proteins by the liver; can be monitored with routine bloodwork every 6-12 months
  - Reversible bone marrow damage; can be monitored with routine bloodwork every 6-12 months
- Behavior changes (i.e. aggression)

### *Potassium bromide*

- Doses: 500 mg, 1000 mg capsules; 200 mg/mL or 250 mg/mL solutions
- Dosing schedule: Once daily but can be given twice daily; missing dose is less hazardous due to long half life in blood stream
- Timing to take effect: Takes 2-3 months to take effect when started on maintenance dose; therefore most dogs are given a loading dose to make it take effect sooner
- Species: Okay for use in dogs only
- Common side effects:
  - Sedation, incoordination when walking – common in the first 1-2 weeks after starting potassium bromide or increasing the dose; may persist in some dogs especially if on high doses or in dogs sensitive to these side effects
- Increased drinking, urination, and appetite – typically



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- persist while a dog is on the medication
- Gastrointestinal upset – common if given without food or if using the capsule rather than the liquid form
- Fatal lung disease in CATS

*Rare side effects:*

- Inflammation of the pancreas – may require hospitalization and warrants discontinuation of the medication in some dogs

Other medications (i.e. Keppra, Zonisamide) are often used in dogs with severe side effects to Phenobarbital and Potassium Bromide or in dogs with a high seizure frequency despite receiving Phenobarbital and Potassium Bromide.

**Is it okay to leave my pet alone? What happens if a seizure occurs when I'm not home?**

Many owners fear leaving their pets at home and feel that they need constant monitoring. Although it is natural to be concerned, in reality we cannot be with our pets 24 hours/day. Most animals with epilepsy have short seizures, and they will recover on their own. Signs that your pet has seized when you are gone include finding urine, feces, or drool in the house or finding our pet seeming dazed or disoriented (in the post-ictal phase) when you come home.

**Will my pet's lifespan be shortened by having epilepsy?**

Animals with well-controlled epilepsy typically lead normal lives. In animals with severe epilepsy requiring several medications at high doses and multiple trips to the emergency room for help controlling seizures, quality of life can be compromised for both the pet and the owner.

**Does epilepsy occur in cats?**

Epilepsy occurs very rarely in cats. Seizures in cats typically stem from some underlying disease. Treatment for cats with epilepsy involves administering Phenobarbital with or without additional anti-seizure medications.



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