



# Seizure

## Who can be affected?

*Seizures can happen to any pet, including cats. A genetic basis for seizure has been proven in certain breeds of dogs: Beagle, German Shepherd, Irish Setter, Poodle, Saint Bernard, Springer Spaniel, Malamute, Siberian Husky, Cocker Spaniel, Collie, Dachshund, Labrador Retriever, and Golden Retriever. Seizures can often be well controlled with medication, but it can also be a frustrating and complicated problem for owners.*

A seizure event can be divided into 3 stages:

### 1 Pre-Ictus:

Abnormal behavior prior to the seizure lasting just a few minutes

- Acting clingy
- Staring off into space
- Hiding or acting anxious/scared
- Vomiting

### 2 Ictus:

Seizure, most likely to occur during sleep, lasting 30-120 seconds

- Jaw chomping and increased salivating
- Dilated pupils
- Stiff in all four limbs with head arched back
- Rhythmic movement or paddling of limbs
- Non responsive
- Urination and defecation

### 3 Post-Ictus:

After seizure, lasting 5 minutes to several hours

- Becoming aware and responding to noise
- Trying to get up and walk
- Pacing and bumping into things
- Increase hunger or thirst

## Cause

If a patient is 1-5 years old and completely normal, with the exception of recurrent seizure, they likely have a condition called idiopathic or primary epilepsy. This implies that the patient was born with a genetic make-up where the ion pumps in the brain do not always work properly, resulting in seizure.

If a patient is younger than 1 or older than 5 (or is a cat), idiopathic epilepsy is much less likely. In younger dogs, metabolic, infectious or inflammatory disease and malformation are the more common causes of the seizures. These patients often have some behavioral abnormality (eliminating in the house, withdrawn, stumbling or bumping into things, circling, etc.) and/or an abnormal neurologic examination.

## Diagnostics

Diagnosis starts with a thorough history and neurologic examination. First we need to determine if the events are actually seizures. The following conditions can look similar to seizure:

- Vestibular episode
- Metabolic disease
- Neuromuscular disease
- REM behavior disorder
- Spike of high intracranial pressure
- Neck pain
- Syncopy
- Cataplexy
- Panic attacks
- Myoclonus

An electroencephalogram (EEG) is very useful in distinguishing seizure from the seizure-like episodes. At BVNS we use this test on hospitalized patients to guide the administering of anti-seizure medication.

If a patient is having seizures, some combination of blood testing, MRI and the analysis of spinal fluid will be recommended to determine the underlying cause. In all cases, the identification of an underlying cause will lead to better seizure control and quality of life.

BVNS has onsite MRI and the ability to perform spinal tap and analysis of cerebrospinal fluid at all locations. We also offer a CT scanner at our Leesburg and Springfield locations.

## Progression

Every seizure a patient has can make it easier for another to occur. During a seizure, the brain connections and brain chemistry change permitting or offering less resistance to future seizures. If a patient is having recurring seizures, treatment is usually recommended.

## Treatment

Treatment is recommended in the following situations:

- Seizures occurring more than every 6 weeks
- Ictal periods lasting at least 3 minutes
- Clusters of more than 3 seizures
- Long or severe post-ictal periods
- Known progressive cause such as a brain tumor or infection

A side effect of a medication is an unintended result of the medication whereas toxicity refers to damage or failure of an organ system from a medication. Two of the older and more common seizure medications called phenobarbital and potassium bromide have some side-effects that include increased drinking, urination, panting, eating, weight gain, looking drunk when walking, sedation and less commonly, restlessness. Although not common, phenobarbital can be toxic to the liver and bone marrow and as a consequence, routine blood tests are recommended.

At BVNS we have found newer medications called zonisamide, levetiracetam, and gabapentin to be effective, have few transient side-effects and no organ toxicity. These medications are now generic, affordable and our first choice for seizure therapy in most situations.

## Monitoring

Sampling the blood to determine the serum concentration of seizure medication may be needed:

- To determine whether the current dose is providing a protective level
- To assess the effects of a change in dosing regimen
- When seizures are more frequent than expected
- When the side-effects become a problem

Generally a serum concentration is recommended within 1 to 3 weeks of starting a seizure medication and then yearly. A serum biochemistry and CBC should be done every 6 to 12 months depending on the seizure medication.

## During a Seizure

During a seizure event, your pet is not aware of what is happening. Make sure to keep other pets and children away until your pet has become normal because they may be confused and become aggressive during the event. Dogs will not swallow their tongue during a seizure.

## Record Keeping

As a service to our clients, we will advise on adjusting seizure medication dosing. It is important to keep a record of the following information:

- Date of seizure event and severity
- Adjustments made to the seizure medication
- Serum concentrations in the blood
- Side effects of anti-seizure medications

This information is required for us to properly advise you about changes in medication doses. Many owners find it easiest to keep a seizure calendar or journal.



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