

What's the best first line anticonvulsant?

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Recurring seizure activity is a relatively common problem in canine patients. Nowadays, there are several good options for medical treatment, which makes the choice of which drug to use a little more complicated. All anticonvulsant drugs have advantages and disadvantages, so the selection of a first-line drug should be tailored for the individual patient and client.

Phenobarbital: This has been the standard first choice drug for decades. The nice thing about Phenobarbital is that it works fairly well, controlling seizures in about 70% of dogs with epilepsy. Also, it is inexpensive and readily available. The biggest down-sides are its induction of hepatic metabolism and the need for frequent upward dose adjustments, as well as its potential to cause hepatotoxicity. The potential for liver disease increases with time, so a 2 year old dog placed on this medication is more likely to develop hepatotoxicity in his life-time than a 10 year old dog. Phenobarbital can also cause sedation and ataxia. While this is usually mild/transient, it can be a real problem in dogs with other pre-existing signs of intracranial disease. Polyuria, polydipsia and polyphagia are other common side effects. These signs vary widely in severity between patients.

Pros: cheap, available at any corner pharmacy, works well

Cons: higher doses required with time, possible serious liver side-effects

Good first-line choice for middle-aged to older dogs without any pre-existing liver issues

Poor choice for dogs with liver disease, dogs with other intracranial signs

Questionable choice for young epileptic dogs

Potassium/sodium bromide: This was the most commonly-used add on anticonvulsant drug for a long time. Since its efficacy is nearly as good as Phenobarbital's, it is now often used as a first choice. The best thing about bromide is its safety and the fact that it can be administered once daily. However, its pharmacokinetics make it a little more complicated to use, and some dogs have intolerable side-effects, including GI signs or inappropriate behavior (digging, barking, chewing, etc.). Polyuria, polydipsia and polyphagia can also occur with this drug.

Pros: cheap, generally safe, works well

Cons: loading doses are necessary, potential for GI upset or obnoxious behavior

Good first-line choice for young dogs

Poor choice for dogs with pre-existing GI problems, hyperactive/destructive dogs

Levetiracetam (Keppra): This is a newer anticonvulsant which has shown a lot of promise for dogs with seizures. The benefits are that it is safe for the liver and kidneys, and is less likely to cause sedation and weakness than Phenobarbital and bromide. The down-sides are that it is more expensive and generally has to be given 3 times daily. The other theoretical concern is that this is still a relatively new drug for animals, so there may be the potential for some side effect that has not yet been recognized. Levetiracetam's price has come down substantially, now that it is available as a generic drug, but it is still more expensive than Phenobarbital and bromide. The effect of the price can be ameliorated somewhat by using the larger pill sizes (eg. Give ½ of a 1000 mg. tablet TID instead of one 500 mg. tablet TID)

Pros: less short-term and long-term side effects, seems to work fairly well

Cons: more expensive, requires TID dosing, no good data yet on efficacy and therapeutic blood levels

Good choice for dogs with multiple medical conditions and those with other intracranial signs

Poor choice for dogs whose owners cannot administer medications TID or who have substantial cost concerns

Zonisamide (Zonegran): This is another newer anticonvulsant. Like levetiracetam, it is less likely to cause sedation and weakness than Phenobarbital/bromide. Its half-life is longer than levetiracetam, which makes BID dosing feasible. This drug does undergo hepatic metabolism. Furthermore, since it is a sulfonamide, there is a broader array of side-effects possible. Like levetiracetam, there is currently no good data on its efficacy or therapeutic blood levels.

Pros: not likely to cause sedation or PU/PD/PP, effective when given BID, seems to work fairly well

Cons: no good data yet on efficacy and therapeutic blood levels; some potential for hepatotoxicity and sulfonamide-associated side-effects

Good choice for dogs with other intracranial signs or pre-existing PU/PD, especially when TID dosing is not feasible

Poor choice for dogs sensitive to sulfonamides or dogs with pre-existing hepatic disease