

Dalmatian Club of America

Anti-Epileptic Drugs

Phenobarbital (PB)

Clinical reports indicate that 60 to 80% of epileptic dogs can be controlled effectively with only PB. It is relatively inexpensive, fairly easy to maintain PB serum levels with 2 or 3 times a day daily dosing and has few side effects. You may be afraid to use PB because of liver damage however in the beginning it is very important to get the seizures under control. When PB is used properly, PB serum levels monitored as well as testing liver functions, the risk of liver disease is very low. Each dog is different, so is their ability to metabolize medications.

The only way to determine if your dog is getting the proper dosage is to monitor the PB serum concentrations (levels). This is done with a blood test. The first level is usually taken 2 weeks after initially starting PB therapy.

Based on the level results and also on how well the seizures are controlled, the dosage can be adjusted. If the PB blood serum level results come back and are not what you expected and there is no known reason for them to be 'off', ask to have the test re-run. Levels should be taken at least **twice** a year, it is very important to ask the vet to run a full panel of Liver Function tests to see if the liver is becoming compromised by the PB using the following tests **ALT (SGPT), AST (SGOT), GGT, and Alkaline Phosphatase**. If there are signs of early liver damage, Milk Thistle can often help slow down or reverse the problem. Give no more than a 1/4 of the adult human dose listed on the bottle daily and **only** if liver damage has occurred.

When the lab sends your veterinarian the results from a PB serum level test, they will note the range that the lab uses. One suggested range is 20-35 ug/ml (86-150umol/l in countries that use micromoles), another is 15-45 ug/ml and yet another is 15-40 ug/ml. In general, the low level of the therapeutic range means that 50% of the dogs at the low level will exhibit some benefit (i.e.: seizure control) from the PB. Likewise, 50% of the dogs that are at the upper limit will NOT show signs of PB toxicity. As you can see, these lower and

upper therapeutic ranges are a little vague. Therefore, it is just as important to take into consideration your dog's seizure control and side effects rather than just relying on the numbers.

In the beginning it is important to test the trough level. A trough level represents the PB serum concentration when it is at its lowest in the dog's system. If this level is too low, your dog could have a seizure. Therefore, it is important in the beginning that this level is within therapeutic range. Some suggest that a minimum trough level is 20.

After your dog has been on PB and steady-state levels have been reached, a PB peak level can be taken. While the trough level is taken just before the next dosage is due, the peak level is taken anywhere from 4-6 hours (some say 4-8 hours) after PB dosage. Also, if your dog has been given food, the food can delay the 'peak' period by several hours. So, as you can see, determining the 'peak' time is not exactly precise. The peak level represents the maximum amount of PB in the system and is important for determining whether your dog might be reaching toxic levels. There are other signs of toxicity too – ataxia (muscle weakness in the hindquarters) and the beginning of liver disease are two of them.

If you notice that your dog is exhibiting a behavior that results in a seizure, you can increase the PB dosage for a short period of time until you are sure that the potential for having a seizure is over. Then you can return to the normal dosage. If you think a seizure might be brought on by stress (like company, visiting the vet or dog groomer), you could try using Bach's Flower Essence Rescue Remedy. Rescue Remedy is also very useful for helping with the post ictal (after effects) of a seizure. In many cases it cuts down the wandering and pacing which so often causes more distress for the owner than the seizure itself, RR can be bought in any health food store. Put a dropper full in the dog's mouth between the cheek and the gum. Be careful however not to let the dog bite down on the dropper as it is made of glass.

Also, valuable to reduce the post ictal phase are small amounts of **Breyers Natural Vanilla Ice Cream and a full meal.**

Potassium & Sodium Bromide (KBr & NBr)

Bromide therapy should be considered for dogs whose seizures are considered refractory (not controlled by another AED (anti epilepsy drug)). For those dogs, using KBr & PB concomitantly (together) has produced some very promising results. One study reported that dogs that were refractory to PB, 86% of them had improved seizure control and 26% of the 86% became totally seizure free when adding Potassium Bromide (KBr)

Two very important reasons for considering bromide therapy are: it is effective in controlling cluster seizures, and it is not processed by the liver

Bromide should be given with food and not on an empty stomach. It can simply be squirted on your dog's food or on a small piece of bread and given to your dog.

IMPORTANT

The chloride content of your dog's food can affect the absorption of bromide. Chloride affects the elimination of bromide; thus, increases in dietary chloride will decrease bromide levels. In one study, increasing the chloride content from that of most commercial foods (0.4% chloride on dry matter basis) to that of a high chloride diet (1.3%, comparable to some prescription diets), a three-fold increase, increased the necessary dose of bromide by almost 100%. The food's chloride content is normally not listed on the food label. Therefore, it might be necessary to contact the dog food manufacturer to obtain this information. Once bromide therapy has been started, it is suggested that the dog's diet not be changed. But if you must, you need to take into consideration the difference in the chloride content between the two foods and discuss this with your veterinarian.

Bromide is generally well tolerated in dogs. However, some of the side effects are the same as with PB. That is sedation, ataxia, increased hunger, and the 3 -P's: polydipsia (excessive thirst), polyphagia (excessive hunger) & polyuria (excessive urination). In some cases, dogs can develop a skin rash or itchy skin. As with other AEDs, these side effects can diminish with time. If using a loading dose, these side effects will be more noticeable. In many cases, reducing the PB or bromide can reduce or eliminate these symptoms. If

a dog does show signs of toxicity, many times lowering the dosage and then gradually increasing it back up over time solves the problem. Again, be sure to discuss this with your veterinarian.

Potassium bromide is preferable in dogs that need to have their sodium restricted (e.g. dogs with certain heart diseases, high blood pressure). **Sodium bromide** seems to be less irritating to the stomach and is often used in dogs that suffer from nausea/vomiting with the potassium salt. **Sodium bromide** is also preferable in dogs with certain diseases (e.g. primary hypoadrenocorticism) that cannot tolerate excess potassium. Also, some dogs object less to the taste of sodium bromide. Except for the gastrointestinal side effects (which are due to the potassium) the side effects and the effectiveness of these two preparations are identical.

Bromide is a salt and is available in capsule or liquid form. A bromide solution is prepared by dissolving bromide in double-distilled water. A compounding pharmacy can prepare liquid bromide in any convenient concentration (strength) you need. This could be 100 mg/ml, 200 mg/ml, 250 mg/ml, 300 mg/ml or higher. The higher the concentration, the saltier the taste. You usually don't want to go much higher than 500 mg/ml. Many people have found that the solution works better as it is easy to adjust the dose if side effects appear.

When starting bromide at the maintenance dose, it takes a couple of months or so to obtain therapeutic blood levels. A much higher, initial "loading" dose is sometimes used to immediately raise the blood level into the therapeutic range. This may be preferable when:

- The dog is suffering frequent seizures, which need to be controlled quickly, or
- When another anti-seizure drug, such as Phenobarbital, must be stopped quickly (for example, due to the development of liver disease).

Each dog is different, so is their ability to metabolize medications. The only way to determine if your dog is receiving the proper dosage is to monitor the bromide serum concentrations (levels). This is done with a blood test.

The target range for dogs taking bromide and Phenobarbital is usually around 100-200 mg/dl. This is equivalent to 1-2 mg/ml or 1000-2000 ug/ml. Dogs taking bromide alone may require levels as high as 300 mg/dl. A few dogs can tolerate blood levels over 400 mg/dl with no side effects, but most dogs show some signs of toxicity at levels above 300 mg/dl.

As you can see, the effects of bromide blood levels vary quite a bit in different dogs. In general, the low level of the therapeutic range means that 50% of the dogs at the low level will exhibit some benefit (i.e.: seizure control) from the bromide. Likewise, 50% of the dogs that are at the upper limit will NOT show signs of bromide toxicity. As you can see, these lower and upper therapeutic ranges are a little vague. Therefore, it is just as important to take into consideration your dog's seizure control and side effects rather than just relying on the numbers.

Finally, please be aware that bromide therapy is no longer thought of as a last-ditch effort for seizure control. As an add on AED or used alone KBr could just save your dog's life.

Gabapentin

Gabapentin is one of the newer AEDs (anti epilepsy drugs) that has become available for humans and canines within the last few years, after some 15 years of research. It offers some exciting potential for use in dogs. It is most often used as a secondary (or add-on) drug to help treat seizures that cannot be controlled by other AEDs alone. Also, it is recommended that if a dog is on Phenobarbital and potassium or sodium bromide, blood serum values be within therapeutic range before starting on Gabapentin therapy. Gabapentin has been recommended by board certified neurologists for seizure control.

A major advantage to this drug is that it is only partially metabolized by the liver in dogs unlike some of the other AEDs. It also can be used in combination with liver-metabolized anticonvulsants (i.e. Phenobarbital).

Gabapentin really seems to work as an add on AED. Dogs that were given Gabapentin were not totally seizure-free, but improved significantly.

Gabapentin must also be given at least three times a day to have effective serum drug concentrations.

However, Gabapentin is rather expensive. The dosage for Gabapentin is 7 to 15mg/kg every 8hrs. It would cost \$75 a month for a 60lb dog starting at 7mg/kg. The basis for this cost is 42 cents per 100mg of Gabapentin. By comparison, it would cost \$87 a month for a 90lb dog starting at 7mg/kg. The basis for this cost is 97 cents per 300mg of Gabapentin. Gabapentin comes in 100mg, 300mg & 400mg capsules. A good source to obtain this drug can be found on the Compounding Pharmacy page of the Epil-K9 Website <http://www.canine-epilepsy.com>

Please Note:

The opinion(s) expressed above is/are for informational purposes only.

Suggestions and advice offered, are not be misconstrued as an alternative to personal and professional veterinary care. Please contact your veterinarian to discuss any changes in your dog's medication or care.

Please submit your comments, requests and suggestions to
[The Dalmatian Club of America](#)

Copyright © 1999
The Dalmatian Club of America, Inc.
All Rights Reserved

Page last modified on Nov. 23, 1999