



*How Animal Shelters Can Treat and Prevent
Heartworm in Dogs*
Live Webcast Audience Q&A
By Dr. Brian DiGangi
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- 1) **Q: What is the best heartworm prevention for the collie breeds that have reactions to ivermectin based prevention? Is there any known sensitivity to melarsomine?**

A: All heartworm preventives are safe to administer to any breed of dog (including those that are sensitive to ivermectins) if given according to labeled doses. There are no specific breeds that are known to be particularly sensitive to melarsomine.

- 2) **Q: What type of bi-annual injectable preventive are available, pros and cons of its use?**

A: A bi-annual injectable heartworm preventive containing moxidectin (ProHeart[®] 6, Zoetis) that is labeled for the prevention of heartworm disease (and the treatment of hookworm infections) in dogs 6 months of age or older is currently available for use. Administration requires a specific injection technique and is not recommended to be administered to dogs with existing heartworm infections. The cost effectiveness of this product for animal shelters should be evaluated prior to use, particularly considering that most dogs will not likely remain in the shelter's care for ≥ 6 months.

- 3) **Q: Since it takes approximately 180 days for heartworm to mature, what do you think about giving preventative every 3-4 months?**

A: This is an ineffective strategy. Most heartworm preventives are only effective against the L1 (microfilariae), L3, and L4 stages of infection. Administering preventives intermittently will allow some heartworm stages to mature into adult heartworms which will not be affected by the preventive and will require adulticidal therapy (i.e., melarsomine). Additionally, the untreated immature stages will cause damage to the cardiopulmonary system as they mature. Finally, this strategy also leaves dogs vulnerable to infection with zoonotic intestinal parasites which are easily prevented by monthly administration of most heartworm preventives.

- 4) **Q: I have had to have two adopted shelter dogs treated for heartworm. They were treated by two separate veterinarians. Both recommended aspirin protocol and doxycycline but not steroids, is that new?**

A: The use of aspirin is no longer recommended as part of an adulticidal treatment protocol. There is little evidence that it has any positive effects and some evidence that it may be detrimental.

- 5) **Q: Do you have to worry about overdosing preventive? Like if a dog had it less than a month ago, there was no information on when it was last given, and you gave it again?**

A: Most heartworm preventives are very safe to administer and severe side effects from an accidental over dosage are not likely. The risk of an adverse reaction would be higher if the dog is a breed that is known to have sensitivity to ivermectin-based products. However, sensitive breeds would have to receive approximately 4 times the preventive dose to exhibit signs of toxicity.

- 6) **Q: With the slow kill method of treatment, is there a recommended protocol other than the monthly preventive?**

A: “Slow kill,” meaning the administration of ivermectin products alone to kill adult heartworms is not recommended. It will take many months to a few years before adult heartworms are killed; all the while they continue to damage the heart and lungs of the infected dog. Although still not ideal, alternative protocols, such as those that use combinations of doxycycline and ivermectin-based products are a safer option when adulticidal therapy with melarsomine is not possible.

- 7) **Q: Can a dog be cured after the first treatment with melarsomine and monthly Heartgard? How would you know this without testing before the 2 and 3rd injections?**

A: It is unlikely that this protocol will clear a dog of adult heartworms. A single melarsomine injection only kills about 50% of the adult worms that are present at the time of injection. Treatment of the remaining worms with a monthly preventive is equivalent to a “slow kill” protocol (see comments above regarding “slow kill” in question 6).

- 8) **Q: Our vet recommends treating with ivermectin as she states this was the course of treatment prior to immeticide and is a safer route for dogs. Why would you not recommend this?**

A: Safer, more effective and cost effective treatment options are now available. See comments regarding “slow kill” treatment protocols above.

- 9) **Q: Has the shortage of melarsomine been resolved?**

A: There is currently no shortage of melarsomine.

- 10) **Q: You recommend doing two snap tests and the test for microfilaria always? Is there a high percentage of the first snap test being wrong? And how do you know which is correct?**

A: The American Heartworm Society recommends testing for adult heartworm antigen (e.g., SNAP test) along with microfilarial testing. Some veterinarians choose to perform a second antigen test to confirm the results obtained on the first test. If different results are obtained further testing is indicated to determine the true infection status.

11) Q: If you are using large animal ivermectin off-label, what is the most accurate dose?

A: The dose of ivermectin for heartworm prevention remains the same regardless of the formulation of product that you are using (0.006-0.024 mg/kg once monthly). Careful attention must be paid to calculation of the *volume* of drug to administer when using large animal formulations as a small change in volume may equate to a large change in the actual dose of drug administered.

12) Q: Is it true that heartworm proteins can circulate in the blood 6 months post treatment causing an erroneous positive test?

A: Yes. This is why a positive antigen test result that was obtained within 6 months of completing adulticidal treatment is not reliable. (A negative test, however, is likely to be accurate.)

13) Q: False negatives in antigen testing - what are common causes of false negatives due to "poor technique"?

A: False negative antigen test results are most often caused by inappropriate handling of test kits, failure to follow manufacturer's directions for test kit storage, and errors in processing or running the tests themselves.

14) Q: Our shelter received a dog previously treated with a 2 dose protocol after testing positive. Six months later she was negative, but at one year she tested positive again although she was on year round preventive. At this point would it be best to continue "slow kill", what are the risks?

A: See discussion of "slow kill" (question 6) above.

15) Q: Would a younger dog about 6-9 months old, who tests positive for HW, need a 3 dose treatment?

A: The age of the dog when a positive test result is obtained has no bearing on the severity of infection; therefore, this cannot be used as a determinant of treatment protocol.

16) Q: What dose and frequency do you recommend for doxycycline use?

A: A variety of doxycycline treatment protocols have been recommended and have been demonstrated to be an effective component of a heartworm treatment protocol. The American Heartworm Society recommends a dose of 10mg/kg twice daily for 4 weeks.

17) Q: What is the efficacy of minocycline vs. doxycycline in heartworm treatment?

A: Minocycline has not been studied in this manner; however, it is the same class of antibiotic as doxycycline and there is not currently any reason to suspect it will be any less efficacious.

18) Q: You mentioned weekly ivermectin, is that off label use or on label?

A: As discussed in the webcast, weekly ivermectin was used off-label in an experimental study.

19) Q: Can any of the other preventives (Advantage Multi, Revolution) be used as a microfilaricide?

A: Advantage Multi[®] (Bayer) is labeled for the treatment of circulating microfilariae while Revolution[®] (Zoetis) is labeled for the prevention of heartworm disease.

20) Q: Can you comment on injectable ivermectin (given via injection) for heartworm prevention as opposed to giving injectable ivermectin orally?

A: Injectable ivermectin can be administered either orally or via a subcutaneous injection.

21) Q: If two or three months are missed why test then before restarting since it will take nearly 6 months for adults to present?

A: Testing immediately after a missed dose of preventive establishes that the dog is heartworm negative at that time; should a subsequent test become positive 6 months later, it will be possible to determine that the time of infection coincided with the lapse in preventive administration. Without the initial test, the dog may have been infected prior to the lapse in preventive.

22) Q: I have seen several HW-positive dogs that test negative on the same antigen test after just one month of doxycycline and one dose of ivermectin. Is this common?

A: This observation is commonly reported and demonstrates the effectiveness of using doxycycline and ivermectin in tandem. It is important to remember that this does not necessarily mean that the dog is cleared of all heartworms, simply that the combination therapy has weakened them to the point of not being detectable on an antigen test.

23) Q: Do you have a preference of heartworm preventives? What is your opinion of injectable Moxidectin?

A: See comments on ProHeart6 (question 2) above.

24) Q: Do you recommend starting heartworm preventive on every dog that comes into the shelter even before testing for heartworm?

A: Yes. One dose of heartworm preventive will not be harmful to dogs, even if they are heartworm positive.