Flea Control Challenges: How Your Clients Can Win the Battle

Understanding and controlling fleas in the "red-line" home

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A number of veterinarians have reported to this author that the modern veterinary recommended flea control products may not be controlling some flea infestations as well as in the past. While resistance is theoretically possibly, there currently is no data substantiating levels of resistance in cat fleas causing product failure and it is far more likely that these "reported failures" are due to other factors. There are a number of other reasons that must be explored such as ecological fluctuations and natural disasters, compliance issues, lack of client education, lack of understanding of product performance attributes, naturally occurring differences in flea susceptibility and changing perceptions since product introductions. But whatever the cause it is apparent that problems are occurring and veterinarians must be able to provide those pets relief from flea infestations.

The first step in battling these harmful blood sucking parasites may be simply setting proper client expectations so that we can meet those expectations. Select the best flea product to meet a client and pet's needs, give advice to pet owners concerning additional control measures, if needed, explain and demonstrate how a product is correctly administered and most critically provide information on what to expect once the pet or pets leave your practice and go back to the flea infested home.

It is important to understand the goals of a flea control program.[1]

- **The first goal is rather obvious, in that we must kill the fleas that are currently biting and feeding on the dog or cat.** Yes, we must relieve the pet of its current discomfort.

- **The second goal is to eliminate the infestation in the premises**. Somewhere in the home or shaded areas of the yard there are immature flea life stages, namely, eggs, larvae, and pupae that are continually developing into new adult fleas that re-infest pets. This is likely the most difficult aspect of flea control.

- **And lastly we must prevent this from happening again**. Yes, prevent future flea infestations.

In order to achieve the first goal of flea control (providing pets relief from the existing fleas), proper administration of a flea product is essential for the rapid and prolonged kill of those fleas. We often do not understand how important it is to properly administer a flea product. The correct technique should be explained and demonstrated to the pet owner. Remember, correct administration varies depending upon the product selected. Next it is important to understand that veterinarian recommended products are going to kill all fleas that are currently on the pet and may take from 4 hours with some products or as long as 36 hours with others before all the existing fleas are dead. Many of these flea products not only kill the fleas that are currently on the dog or cat but also provide for prolonged residual activity, often killing fleas for up to one month. In addition some products can also provide prolonged activity against flea reproduction, either by killing the eggs or preventing eggs from developing or being laid. It is important to understand how these monthly products are going to help us achieve our second goal of flea control, preventing further infestations of immature fleas in the premises while driving the current infestation to extinction.

When talking to the pet owner we must impress upon them that it often takes up to 8 weeks and occasionally longer to completely eliminate a flea infestation. That is because it takes time to eradicate the immature stages living in the carpet or outdoors.[2-4] While clients need to have a basic understanding of the flea-life-cycle, there are a few other very important aspects of flea biology that can have a direct impact on the success or failure in the battle against fleas.

There is one important flea species that infests both dogs and cats, the Cat flea *(Ctenocephalides felis*); make sure the client understands that the flea species that infests cats is the same flea species that infests dogs.[2,3] In multiple pet households every dog and every cat in the home must be treated every month for at least 3 to 4 months if we are going to be successful. The reason every pet must be treated is that once these fleas jump on a dog or cat they will feed, mate and female fleas will begin laying eggs within 24 hours.[5] Then within a few days each female flea will be producing 40 – 50 eggs per day, with hundreds and potentially thousands of eggs being deposited into the home or yard.[5]

Fleas deposit eggs in the hair and then they roll out of the hair and drop off into the carpet or outdoors.[5] Therefore, it is the flea infested pet that distributes the eggs ("living-salt-shaker"). Every place the pet has access white flea eggs are being deposited and places pets spend most of their time is where most eggs are going to be deposited. Not only is the flea infested pet a "living-salt-shaker" but urban wildlife such as opossums, raccoons, foxes, and coyotes commonly carry cat fleas and of course feral dogs and cats.[2,3] As these animals move through the neighborhood and yards flea eggs are dropping off, this is particularly important in shaded protected habitats where the eggs and larvae are likely to survive and develop into adult fleas; such as under bushes, shrubs, porches and crawl spaces.

While fleas can be groomed off pets the vast majority of infestations of our pets are acquired from fleas emerging from cocoons. The fleas on the dog and cat and the fleas that are biting humans in the home came eggs laid by female fleas approximately 3 to 8 weeks ago. By the time the pet owner first noticed fleas on their pet there were already immature stages developing in the home or outdoors for about 1 to 2 months.

Once a flea product has been administered to all dogs and cats in the home, it is vitally important to set proper expectations concerning the elimination of the exisiting infestation. Clients must understand that back in the home or shaded areas of the yard there are immature stages of fleas and these will continue to develop and adult fleas will be emerging continuously to re-infest the pet for several weeks.

Flea products labeled for monthly administration should have sufficient residual activity to provide for continuing kill of most emerging fleas that jump on the treated pet and some products will even kill flea eggs that might be laid. Explain to the client how these products are going to eliminate the infestation. What we are attempting to accomplish is to drive fleas to extinction in the home and surrounding outdoor areas by preventing these fleas from laying eggs. We are attempting to kill fleas before they can lay eggs or kill any eggs they might produce.[4,6]

Proper administration of flea products to all dogs and cats every month means no more fleas reproducing and no more eggs dropping into the environment. Therefore, within 2 to 5 days, eggs that were previously deposited have developed into larvae and since no more flea eggs are falling off treated pets, there are no more eggs. Then within 1 to 2 weeks the larvae that were there have now developed into pupae, and 2 to 6 weeks later those pupae are now adult fleas. As these fleas emerge and jump on treated pets they are being killed by the flea product. Therefore within 3 to 8 weeks or occasionally longer all the fleas will be gone. If fleas cannot reproduce they will go extinct in the home and yard. But if the pet owner misses treating one pet, skips a single monthly treatment or administers the product incorrectly this will allow fleas to survive and lay eggs and the infestation will continue.

Even if every flea infested pet in the house is treated correctly it is important to remember that the premises in the home or shaded protected areas in the yard are still going to be infested for several weeks with immature flea life stages and emerging fleas. These fleas continue to develop and emerge and jump on treated pets. Current flea products do not repel fleas effectively and they do not kill fleas instantly. It often takes several hours, maybe even up to a day or two, after these fleas have jumped on treated pets to be killed by the residual insecticide.[7] Therefore clients should expect to see some fleas on their pets for at least 3 to 8 weeks and occasionally even longer. This period of time following treatment of pets until the infestation is completely eliminated is called the “Development Window”.[4]

Several of these new insecticides and insect growth regulators have even been shown to be effective in eliminating flea infestations in even the most difficult climatic conditions. Field studies conducted between 1996 and 2001 in Tampa, FL (USA) demonstrated that fipronil, imidacloprid, lufenuron (+pyrethrin spray or +nitenpyram tablets) and selamectin were 95 to 100% effective in eliminating established flea populations, without the need for treatment of the premises.[8-11]

As an example in a field study in Tampa Florida conducted during 1997 a single application of imidacloprid was 95.3 and 97.4% effective in reducing flea populations on pets at 7 and 28 days, respectively.[9] A single application of fipronil was 97.5 and 97.0% effective in reducing flea populations on pets at the same time points. Even though fleas continued to emerge the efficacy of the products was sufficient to dramatically reduce flea numbers on pets. Following 3 monthly applications of either imidacloprid or fipronil, flea burdens on pets were reduced by 99.5 and 96.5%, respectively.[9] Such studies indicate that while the products were highly effective, fleas were still present in low numbers on many treated pets for several weeks following product applications.

However, data averaged from several homes and pets using geometric means to evaluate efficacy can occasionally mask potential outliers. This is important because while most of these residual products work very well the majority of the time, problems and perceptions of control failure do occur. A typical scenario might be when a pet or pets were treated appropriately and flea numbers initially decreased but then rebounded 3 to 4 weeks after initial treatment. Data from one home is quite informative when faced with such a problem.

In one home in Tampa Fl a dog was encountered with a severe flea infestation. An area flea counting system was used in that study to evaluate pet flea counts.[12] The initial area flea count on the dog was 125, which was approximately 23.5% of the total flea burden, which means the dog had an estimated 530 fleas. The dog was treated with a residual fipronil-(s) methoprene formulation that initially produced a slight reduction in flea counts but then the pet area flea counts actually increased to 186 (790 total flea estimate) on day 21. In such studies we also employ the use of intermittent-light flea traps[13] to evaluate the level of premise infestation, since these traps collect fleas emerging from the cocoons. It was noted that flea trap counts (counts of emergent fleas) were actually higher on days 7, 14 and 21 after the dog was treated than on day 0 and emergent flea trap counts were still extremely high on day 28. It must be understood that the fleas that were collected in intermittent-light flea traps on days 7, 14, 21 and 28 were produced from flea eggs laid prior to initiating treatment. In some households it is certainly possible that a flea problem may appear to get worse following treatment, such homes are referred to as RED-LINE homes. Following the second application of the product on day 28 there was a dramatic reduction in pet area flea counts by day 42. Again it might be assumed that the second application worked where the first application did not. However, an evaluation of the emergent trap data combined with knowledge of flea biology indicates that the dramatic drop in flea numbers is due more to the application on day 0 than the second on day 28. The quite precipitous drop in emergent flea trap counts after day 28 is directly related to the reproductive suppression of the fipronil (s)-methoprene formulation during the month immediately following the first application.

When faced with such a flea infestation you can re-administer the product to increase the effective dose and speed of kill, or administer a short acting adulticide, such as nitenpyram for 2 to 3 weeks. Switching products should only occur as a last resort and if true product failure can be confirmed. As evidenced by the data from this one home if a product switch

had occurred the second product would have gotten the credit for the dramatic reduction in the flea infestation, when in fact the first product was responsible.

As good as these new veterinary labeled flea products are there may still be a need for direct environment control with some severe flea infestations because the pet owner may not give us 3 to 8 weeks until the problem is resolved. Measures to reduce the premises infestation include washing pet bedding, vacuuming carpets, washing area rugs, use of flea light traps and application of insecticides into the indoor and outdoor areas. This might include the use of pump sprays, directed aerosols, total release aerosols (commonly referred to as Bombs) or the services of a professional Pest Management Specialist.

Now that the infestation is eradicated pet owners should continue to treat their pet. Remind the owner that there are numerous animals that carry these fleas that move through the neighborhood and yards such as feral dogs and cats and wildlife. These flea infested animals are continuously depositing flea eggs in the outdoor environment. This can start the problem all over again. Therefore keep the pet or pets on lifelong flea control either seasonally or year round. Then when fleas that have developed from the eggs deposited off the feral dogs or cats or wildlife jump on the treated pet the fleas will either be killed or their eggs destroyed. This will prevent future flea infestations of beloved members of their family. Effective flea control starts with effective client communication. Clients need to be educated on the objectives of a flea control program, taught how to properly administer a product and a given detailed explanation of what to expect once a flea product is administered and the pet is back in the infested premises. If we set client expectations we can meet client expectations, but if we allow clients to set their own expectations, we will rarely be successful.

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