The Flea life cycle and how Sentinel works.

This handout is intended to be an overview of the flea life cycle and thereby explain our clinic's recommendation for the most effective control. This is not meant to replace proper examinations and conversations with the veterinarian and staff.

Fleas are a common and well- known skin parasite of dogs and cats, as well as many other animals. Considerable research and scientific study has been done to examine the life cycle of the flea in order to understand and combat this important pest. Like many other insects, the flea life cycle has four stages: **1) eggs** that hatch into a small **2) larva/maggot/caterpillar**, which then form a hardy, protected **3) pupae/cocoon,** finally emerging as the **4) adult flea** we are familiar with.

Only 5% of a population of fleas is made up of the adults. Therefore flea control is best achieved by targeting the early stages. The adult flea cannot live more than about 24 hours without a blood meal from a host animal. Typically fleas spend nearly all their time on the host animal feeding and pooping out blood-laden feces. It is rare for an adult flea to leave one host animal for another or to be in places where animals do not commonly bed or nest. The flea eggs and flea poop from the adult flea fall off the host animal and into the environment where the host animal frequently rests. Once the flea egg hatches, the larva/maggot/caterpillar feeds on the flea poop and other organic debris until it eventually forms its protective cocoon.

All insects have a crunchy outer skeleton composed of a certain protein. The drug Lufenuron (sold as Sentinel) interferes with the insect's ability to make this protein. The drug can be given safely to animals with near-zero side effects as mammals do not produce this protein. When the adult flea feeds on the animal with the drug in its system, **these adults do not die themselves**, however two other things happen. First, the eggs the adult lays cannot hatch. The larva/maggot/caterpillar cannot hatch from the eggs as it lacks the ability to make the crunchy protein that forms the pointy egg-tooth (as in baby birds). Without the egg tooth the larva/maggot/caterpillar cannot emerge from the egg and dies. Secondly, when the adult fleas feed on the treated animals, the drug is passed into the flea poop. When the larva/maggot/caterpillar feeds on the drug-laced flea poop (which is the primary food source) they cannot produce the critical protein and die.

The egg and larva/maggot/caterpillar stages of the flea life cycle make up 50% and 35% of a total flea population respectively. If we are able to control these stages, adult fleas will not be hatched and the dog's environment will become inhospitable to future flea generations as the primary food source (flea poop) is now poisonous to the younger stages. It may take two to three months before the number of adult fleas is lowered. Every dog in the household should be on the drug for maximum effectiveness.

Along with the Lufenuron flea control, Sentinel also contains a reliable (greater than 99%) heartworm preventative (Milbemycin Oxime) and provides protection against more kinds of intestinal worms then any other heartworm preventative. Heartworms and intestinal worms can cause serious disease to pets, and in rare cases, to people. Control of these parasites is important to the health of your pet and family but will not be discussed in detail in this handout. If you have questions about heartworms or intestinal parasites please call us. **As Sentinel contains a heartworm preventative, dogs need to test negative for heartworms prior to administration and is required for prescription.**

Ticks are not controlled by this regiment. If your dog is exposed to ticks, please ask us for a recommendation.