



BITING BACK

A wide range of preventives and treatments exist to help prevent flea infestation and associated issues.

PESTS AND PARASITES

Educating Clients About Flea Prevention

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With so many choices for flea control on the market, it can be difficult and overwhelming for clients to choose the best product for them. Each product has its own marketing strategy that can further influence clients, possibly leading to a less-than-ideal choice. As veterinary nurses, we can help owners evaluate the products that will work best for their pets and lifestyles by engaging clients and asking questions.



Several factors will influence a product selection:

- The pet's temperament
- The pet's appetite
- The pet's lifestyle
- Children in the household (topicals will stay wet for a period of time, and collars have the potential to be handled by children when interacting with the pet)
- Current flea infestation

See **BOX 1** for questions the veterinary nurse should ask as part of the history.

FLEA-BORNE DISEASES

Whatever protocol is chosen for the pet, the client needs to understand the importance of flea prevention and control. We, as veterinary nurses, can help convey that value by explaining that flea infestations are more than merely a nuisance. They can cause serious health concerns to both pets and owners.

Flea allergy dermatitis is the most common veterinary dermatologic condition: 61% of dogs develop signs by 1 to 3 years of age.¹ Affected animals are hypersensitive to exposure to flea salivary antigens. These animals will be pruritic and exhibit hair loss, typically over the caudal dorsal region. Atopic patients are more at risk

for developing hypersensitivity. It only takes a few fleas to cause problems in pets with sensitivity.^{1,2}

Fleas are vectors of diseases such as *Bartonella henselae* (the agent that causes cat scratch fever) and are the intermediate hosts to *Dipylidium caninum* (tapeworms). Fleas are also vectors of rickettsiosis, plague, and tularemia.³⁻⁵ These diseases are zoonotic and can have serious consequences to owners.

In addition, fleas can cause anemia due to excessive blood loss. Young puppies and kittens are most at risk because they are small, with a limited blood supply.^{4,6}

FLEA LIFE CYCLE

Helping clients understand the flea life cycle is also important—especially when dealing with an active infestation—and can encourage compliance.

There are 4 stages to flea development: egg, larva, pupa, and adult. Adult fleas will generally stay on the host.⁷ As female fleas lay eggs, the eggs drop off in the environment, with the free-living larvae hatching in 1 to 6 days.⁷ The larval stage may last as long as 2 to 3 weeks.⁷ The mature larvae produce a cocoon in which they develop into pupae. The pupae then develop into adult fleas. Adults may hatch within 2 weeks, but hatching can take up to 21 to 35 days depending on heat and humidity.⁷ The adults will seek a host for a blood meal, mating, and egg production.

The flea life cycle may be complete in as little as 12 to 14 days under ideal conditions of heat and humidity (70% humidity/95°F).^{2,7} An active infestation must be treated for a minimum of 3 months to eradicate the current visible fleas as well as newly hatched fleas, ideally preventing further mating and egg laying.³

Clients should be encouraged to keep all pets in the household on routine flea prevention all year long, even in climates that have cold winters. Fleas can survive for 10 days at temperatures as cold as 37.4°F.⁸ In cold climates, adult fleas survive on the warm bodies of dogs, cats, and other mammals, as well as indoors within pupal casings as preemerged adults.⁸

FLEA CONTROL PRODUCTS

Clinics should be able to offer clients a variety of options for flea control, such as oral, topical, and collars, to help meet the individual needs of the owner.

BOX 1

Flea Checklist: Questions to Ask During a History

- Tell me about the pet's personality: How readily does your pet allow handling?
- Tell me about the pet's eating habits: Will your pet eat anything you offer?
- Tell me who lives with the pet: Who is in your household?
- Tell me about the pet's lifestyle:
 - How often does your pet swim?
 - How often does your pet go outdoors?
 - Does your cat ever leave the house?
 - Are there other pets in the house that go outdoors and may have exposure to fleas?
- What evidence of fleas do you see in the house?



TABLE 1 Flea Control Products Commonly Available at Veterinary Practices*

| PRODUCT NAME | ACTIVE INGREDIENT(S) | APPLICATION FREQUENCY | SPECIES/AGE |
|---|--|---|--|
| ORAL | | | |
| Bravecto (Merck Animal Health) ^{9,10} | Fluralaner | Every 12 weeks for fleas and ticks** or every 8 weeks for lone star ticks (<i>Amblyomma americanum</i>) | <ul style="list-style-type: none"> • Dogs ≥6 months weighing ≥4.4 lb |
| Bravecto 1-Month Chews (Merck Animal Health) ^{9,10} | Fluralaner | Monthly | <ul style="list-style-type: none"> • Dogs ≥8 weeks weighing ≥4.4 lb |
| Credelio (Elanco) ¹¹ | Lotilaner | Monthly | <ul style="list-style-type: none"> • Dogs ≥8 weeks weighing ≥4.4 lb • Cats ≥8 weeks weighing ≥2 lb |
| NexGard (Boehringer Ingelheim Animal Health) ^{12,13} | Afoxolaner | Monthly | <ul style="list-style-type: none"> • Dogs ≥8 weeks weighing ≥4 lb |
| Simparica (Zoetis) ¹⁴ | Sarolaner | Monthly | <ul style="list-style-type: none"> • Dogs ≥6 months weighing ≥2.8 lb |
| TOPICAL | | | |
| Bravecto (Merck Animal Health) ^{9,10} | Fluralaner | Every 12 weeks for fleas and ticks** or every 8 weeks for lone star ticks (<i>Amblyomma americanum</i>) | <ul style="list-style-type: none"> • Dogs ≥6 months weighing ≥4.4 lb • Cats ≥6 months weighing ≥2.6 lb |
| Provecta II for Cats (CAPInnoVet) ¹⁵ | Imidacloprid, pyriproxyfen | Monthly | <ul style="list-style-type: none"> • Cats ≥8 weeks weighing ≥5 lb |
| Provecta Advanced for Dogs (CAPInnoVet) ¹⁵ | Imidacloprid, permethrin, pyriproxyfen | Monthly | <ul style="list-style-type: none"> • Dogs ≥7 weeks weighing ≥5 lb |
| Revolution (Zoetis) ^{16,17} | Selamectin | Monthly | <ul style="list-style-type: none"> • Dogs ≥6 weeks • Cats ≥8 weeks |
| Vectra for Cats & Kittens (Ceva Animal Health) ^{18,19} | Dinotefuran, pyriproxyfen | Monthly | <ul style="list-style-type: none"> • Cats ≥8 weeks weighing 2–9 lb or ≥9 lb |
| Vectra for Dogs & Puppies (Ceva Animal Health) ^{18,19} | Dinotefuran, pyriproxyfen | Monthly | <ul style="list-style-type: none"> • Dogs ≥8 weeks weighing ≥2.5 lb |
| COLLAR | | | |
| Seresto (Elanco) ^{20,21} | Flumethrin, imidacloprid | Every 8 months | <ul style="list-style-type: none"> • Dogs ≥7 weeks • Cats ≥10 weeks |

*This list is not comprehensive.

**American dog tick (*Dermacentor variabilis*), black-legged tick (*Ixodes scapularis*), and brown dog tick (*Rhipicephalus sanguineus*) in dogs; *I. scapularis* for cats (topical only).



| FLEA SPEED OF KILL/EFFICACY | PARASITES | ADDITIONAL INFORMATION |
|---|--|---|
| <ul style="list-style-type: none"> ● Starts to kill within 2 hr ● >98% efficacy within 12 hr and 100% in 48 hr | <ul style="list-style-type: none"> ● Fleas (adults) and ticks ● Extra-label use for generalized demodicosis and <i>Sarcoptes</i> species (all formulations) | <ul style="list-style-type: none"> ● All formulations are safe for pregnant, breeding, and lactating dogs |
| <ul style="list-style-type: none"> ● Starts to kill within 4 hr ● 100% efficacy in 12 hr | <ul style="list-style-type: none"> ● Fleas (adults) and ticks | |
| <ul style="list-style-type: none"> ● Starts to kill within 4 hr in dogs and 6 hr in cats ● 100% efficacy in 12 hr in dogs and 24 hr in cats | <ul style="list-style-type: none"> ● Fleas (adults) and ticks | <ul style="list-style-type: none"> ● Not evaluated for pregnant, breeding, or lactating dogs |
| <ul style="list-style-type: none"> ● Starts to kill within 8 hr ● 99% efficacy after 8 hr and 100% after 24 hr | <ul style="list-style-type: none"> ● Fleas (adults) and ticks; also indicated for the prevention of Lyme disease infections ● Extra-label use for generalized demodicosis and <i>Sarcoptes</i> species | <ul style="list-style-type: none"> ● Not evaluated for pregnant, breeding, or lactating dogs |
| <ul style="list-style-type: none"> ● Starts to kill within 3 hr ● 100% efficacy in 24 hr | <ul style="list-style-type: none"> ● Fleas (adults) and ticks; also indicated for the prevention of Lyme disease infections | <ul style="list-style-type: none"> ● Not evaluated for pregnant, breeding, or lactating dogs |
| <ul style="list-style-type: none"> ● 100% within 8 hr in cats ● >99% efficacy within 24 hr and 100% within 48 hr in dogs | <ul style="list-style-type: none"> ● Fleas (adults) and ticks | <ul style="list-style-type: none"> ● Safe for pregnant, breeding, and lactating dogs ● Waterproof once dry |
| <ul style="list-style-type: none"> ● Within 12 hr | <ul style="list-style-type: none"> ● Fleas (adults and eggs) | |
| <ul style="list-style-type: none"> ● Within 12 hr | <ul style="list-style-type: none"> ● Fleas (all life stages), ticks, mosquitoes ● Also offers repellency against newly hatched fleas | <ul style="list-style-type: none"> ● Do not use on cats or dogs that live with cats ● Waterproof once dry |
| <ul style="list-style-type: none"> ● Starts to kill within 2 hr in dogs and 6 hr in cats ● 100% efficacy in 24 hr | <ul style="list-style-type: none"> ● Dogs: Fleas (adults and eggs), American dog ticks (<i>Dermacentor variabilis</i>), heartworm disease, ear mites, sarcoptic mange ● Cats: Fleas and flea eggs, roundworms, hookworms, ear mites, heartworm disease ● Extra-label use for nasal mites (<i>Pneumonyssoides caninum</i>), cutaneous myiasis, and cheyletiellosis | <ul style="list-style-type: none"> ● Use with caution in sick, debilitated, or underweight animals ● Safe for pregnant and lactating animals |
| <ul style="list-style-type: none"> ● Reduces active flea feeding within 5 min ● Starts to kill within 2 hr ● 97% efficacy after 2 hr | <ul style="list-style-type: none"> ● Fleas (all life stages) ● Also offers repellency against newly hatched fleas | <ul style="list-style-type: none"> ● Do not use on aged, debilitated, pregnant, or nursing cats |
| <ul style="list-style-type: none"> ● Reduces active flea feeding within 5 min ● Starts to kill within 2 hr ● 96% efficacy after 6 hr | <ul style="list-style-type: none"> ● Fleas (all life stages) ● Also offers repellency against newly hatched fleas | <ul style="list-style-type: none"> ● Do not use on aged, debilitated, pregnant, or nursing dogs ● Do not use on cats or dogs that live with cats ● Waterproof after 2 days postapplication |
| <ul style="list-style-type: none"> ● Kills existing fleas within 24 hr and reinfesting fleas within 2 hr | <ul style="list-style-type: none"> ● Dogs: Fleas, flea larvae, ticks, sarcoptic mange, chewing lice ● Cats: Fleas, flea larvae, ticks ● Also offers repellency against newly hatched fleas | <ul style="list-style-type: none"> ● Collar is water resistant and will continue to provide protection even after swimming or bathing ● Dogs that swim regularly or are bathed more than once a month should have the collars replaced every 5 months |



Being able to send the client home with a product will help increase compliance, as will allowing the client to actively participate in the choice of product.

Recommendations to clients should be based on the products that are chosen to be stocked in the individual clinic. **TABLE 1** includes some examples of common flea control products available at veterinary practices. Products chosen for this table represent some of the products available through veterinarians as an illustration of the options and their differences. For a more extensive list, see the product comparison/selection tool available on the Companion Animal Parasite Council website (capcvet.org/parasite-product-applications). Many of the products mentioned will also offer protection from ticks and other parasites, but for the purpose of this article we have concentrated on flea prevention and treatment.

Oral Chews

One of the most convenient treatment options available to owners—and therefore promoting a high level of compliance—is oral chews. There are several chews that offer high palatability and hypoallergenic flavoring. With all oral products, the fleas must actually take a small blood meal to succumb. Oral products boast a quick kill time, preventing adult fleas from laying eggs.

Oral chews are in the isoxazoline drug class. Side effects may include vomiting, diarrhea, decreased appetite, lethargy, and in rare cases neurologic adverse reactions such as ataxia, tremors, and seizures. Isoxazoline products should be used with caution in dogs with a known seizure history.²²

Topical Products

Topical products offer a level of repellency that chews may not and often do not require fleas to bite the pet to be effective. The topical products should be applied according to the manufacturer's directions and will typically dry within a few hours.

It is extremely important that clients understand that topical products are not interchangeable between dogs and cats. Many products for dogs contain permethrin, which can have very serious side effects in cats.^{23,24}

Side effects of species-specific topical products for both dogs and cats may include hair loss and pruritus at the application site. Topical products for cats should be

applied on the skin at the base of the skull to prevent the cat from licking off the product while grooming. Cats that do manage to groom the topical product may experience excessive salivation, vomiting, and diarrhea.

Collars

Collars are a convenient treatment option for owners. Once the collar is placed and properly fitted on the pet, there is little for the owner to do other than replace it at the proper interval.

The active ingredient in the collar spreads over the skin surface and is a nonsystemic form of protection. Side effects may include red skin, hair loss, and dermatitis.²⁵

Seresto (flumethrin, imidacloprid; elanco.com) is available for both dogs and cats. The collar will begin to kill fleas in 2 hours in dogs and in 24 hours in cats. The collar is water resistant and will continue to provide protection even after the pet swims or bathes.²⁰

The Seresto collar is considered safe when handled by people who may touch the pet that is wearing the collar; however, the small, reflective tokens on the collar can become dislodged and pose a choking hazard for young children.²⁶

Media reports have linked Seresto to adverse events, including seizures and death, so clients may have questions. The manufacturer, Elanco, stands by the safety of the product and states that the rate of adverse events is 0.3%, with most being minor.²⁷

PRODUCT SAFETY

Clients should be made aware of the potential for counterfeit products that may be available for sale from some retail and online sources.^{27,28} Many over-the-counter products have been susceptible to counterfeiting. Counterfeit products have the potential at the very least to not be effective at treating and preventing fleas and, in some cases, may actually pose a health danger to pets. Some products may be packaged incorrectly, with canine and feline products misplaced.

Clients should also be made aware that purchasing products through the veterinary office will provide them with support in case the pet does have an adverse event. Most manufacturers will provide monetary compensation if the pet experiences an adverse event requiring medical care, as long as the product was



purchased through a veterinary clinic. Purchasing products through the veterinary clinic will also ensure that pets are getting safe products. Many “store brand” products may be at the very least ineffective and can very well be toxic to pets, especially if used improperly.

TREATMENT OF FLEA INFESTATIONS

It is important to treat all pets in a multipet household, not just those that go outdoors. Fleas will spread from one pet to another when the eggs dropped in the indoor environment hatch and the newly emerged fleas begin to seek a host.

When treating an active infestation, the client should be advised that in addition to ongoing treatment of all pets in the household, the environment will need to be addressed. All bedding that the pet(s) may have come into contact with should be washed in the hottest water setting suitable for that fabric. The house, including the furniture, should be vacuumed regularly and thoroughly. The debris should be taken immediately to the outside trash. Flea bombs and foggers are generally not used today as they were in years past to eradicate fleas from the indoor environment.⁴ After a flea infestation is eliminated, continued and regular treatment of the pet, along with regular routine household cleaning, is often sufficient.

The grounds around the home can be made less appealing to fleas by removing any leaf debris, especially under decks where the environment tends to be warm and moist, which is ideal for fleas. Keeping lawns mowed and cleared will also help.⁴

There are various yard sprays available; however, the author does not advocate them because many contain permethrin, which is toxic to cats, bees, and fish (if any runoff gets into water sources where fish live).²⁴

CLIENT EDUCATION

Once an active flea infestation is under control, it is important that clients understand the necessity of maintaining a good flea prevention protocol for all pets in the household. If a pet has had the opportunity to pick up fleas once, the chance of reinfestation is very high unless steps are taken to ensure this doesn't happen. Regular prevention is a much easier alternative than waiting for fleas to become a problem.



The grounds around the home can be made less appealing to fleas by removing any leaf debris, especially under decks where the environment tends to be warm and moist, which is ideal for fleas.

Time spent educating clients during the routine exam visit on the importance of proper flea prevention will be time well spent to help prevent a potential health risk to both the pet and the owner. Flea prevention not only is a crucial component of a good healthcare plan but also plays an essential role in protecting the human-animal bond. A pet that is infested with fleas is less likely to be seen as a desirable companion than one that is fully protected from parasites. **TVN**

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