

UNDERSTANDING FLEA CONTROL

Understanding the flea life cycle and how flea control products work is required to ensure you are providing your dog or cat with the best possible flea control program.

The complex flea life cycle

The flea life cycle is comprised of four developmental stages: the egg, the larva, the pupa and the adult flea. The time it takes for a flea egg to develop into an adult flea can vary from as little as 12 days to as long as 325 days.¹

FLEA EGGS. Up to 40-50 white, small (0.5mm) flea eggs per day may be laid by an adult female flea on your pet.¹ These flea eggs fall off the pet's coat into the environment within eight hours of being laid.

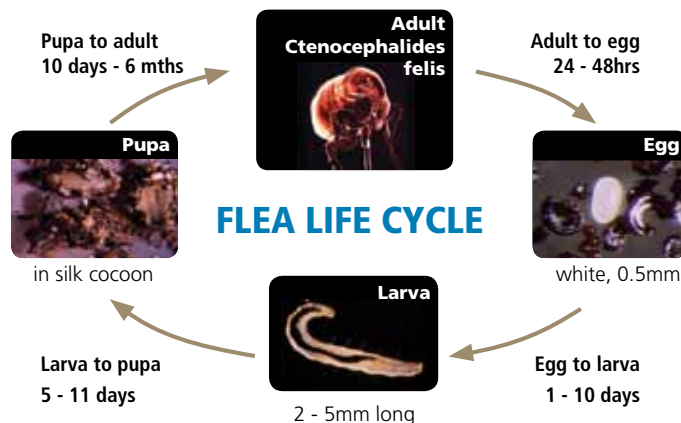
FLEA LARVAE. Flea eggs hatch within one to 10 days into larvae.¹ Flea larvae are mobile; moving away from light, towards moisture and the ground.

FLEA PUPAE. Within five to 11 days, flea larvae spin a sticky, silk cocoon to become pupae. Pupae can remain dormant for up to six months, depending on environmental conditions.¹

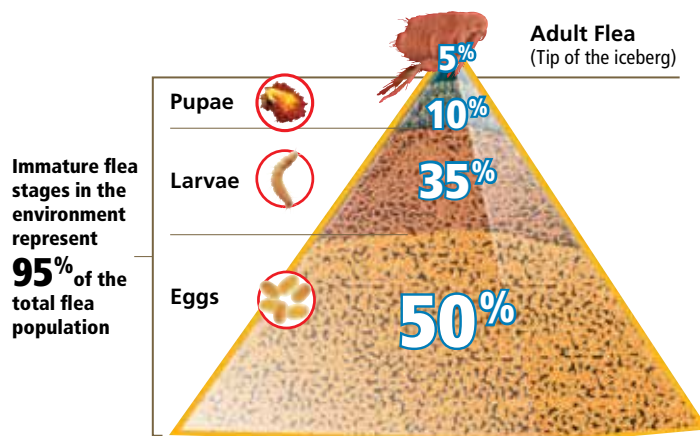
ADULT FLEAS. Young flea adults are stimulated to emerge from the cocoon by your pet's body temperature, movement, shadows and exhaled carbon dioxide. Within a second, your passing pet may acquire newly emerged fleas from its home environment (for example: under the house or veranda, within the pet's bedding, under leaf matter in parks or from the garden).

The adult fleas then mate on the pet within 8-24 hours. The production of flea eggs begins within 24-48 hours of their first blood meal.¹

FACT SHEET



FLEA PYRAMID



Adult fleas, the life cycle stage you see on your pet, make up just 5% of the total flea population. Ninety-five percent of the population is made up of eggs, larvae and pupae, which can be found in your pet's environment.

Did you know?

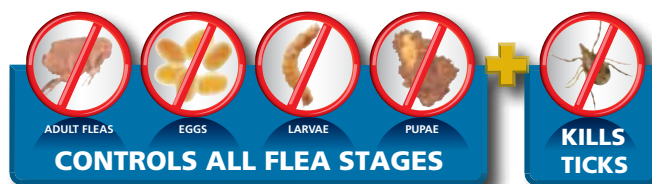
The most common way pets catch fleas is from the environment. Fleas rarely jump from pet to pet.

The key features of FRONTLINE® Plus

FRONTLINE Plus contains two active ingredients: fipronil, to kill the adult fleas on your pet, and (S)-methoprene, to prevent the development of eggs, larvae and pupae in the environment. FRONTLINE Plus does not repel fleas so the fleas must come into contact with the product on your pet's coat for it to have an effect.

Once applied appropriately, FRONTLINE Plus spreads all over the treated pet's body where it is stored in sebaceous (oil) glands in the skin. From these glands, it is continuously

replenished to the treated pet's hair and skin. This makes FRONTLINE Plus long lasting, even after swimming, grooming and bathing. FRONTLINE Plus is water fast and has been shown to remain effective against fleas following weekly water immersion or weekly shampooing.



1 Is this your first packet of FRONTLINE Plus?

If so, or if it has been a while since you last treated, your pet's environment is probably contaminated with immature flea stages (eggs, larvae, pupae). As flea pupae can remain dormant in the environment for up to 6 months, it may take some time for these fleas to emerge as adult fleas. This is called 're-emergence'. Emerging fleas will be killed on your pet when they come into contact with FRONTLINE Plus.

Recommendation: Continue to treat all of your pets with FRONTLINE Plus all year round, and see the general recommendations below.

2 Are you using FRONTLINE Plus on all dogs and cats in your home all-year-round?

Flea treatment is an all-year-round commitment because fleas can be active in all seasons.¹ Fleas can breed on any untreated animals within your home to produce eggs that can cause reinfestation of all your pets in the future.

Recommendation: Treat all dogs and cats in your household for fleas routinely with FRONTLINE Plus. Visit www.frontline.nz.merial.com to sign up for flea treatment reminder emails.

3 Are you using the correct type of FRONTLINE Plus for each of your pets?

FRONTLINE Plus pipettes are specifically designed to give the correct dose of treatment to pets in particular weight ranges. It is also important to note that FRONTLINE Plus products for dogs and cats are different.

Recommendation: Ensure you use the correct type of FRONTLINE Plus for your cat or the weight of your dog and read the label for application instructions.

4 Does your pet go outside of your house or apartment?

If your dog or cat goes outside of your enclosed home environment, it may come into contact with fleas that have been deposited by untreated pets or animals. These areas can include your own garden (if untreated animals have access), the neighbour's garden, under the house or veranda, the park or friends' houses. This is referred to as 're-infestation'.

Recommendation: Continue to treat all of your pets with FRONTLINE Plus all year round, and see the general recommendations below.

5 Do you bathe your pet or allow your pet to swim? What sort of shampoo do you use?

There are some circumstances when washing and swimming may potentially interfere with your flea preventative treatment. For example, the use of shampoos not specifically designed for use in pets may disrupt the normal protective oils on the skin potentially making the skin itchy or vulnerable to infections.² In addition, the effect of non-pet or other insecticidal shampoos (e.g. flea

shampoos, wool wash, human shampoo, hair conditioner, laundry soap, washing liquid and household disinfectant) on the activity of flea treatments is unknown.

The frequency of water immersion is also important. It is possible that intensive shampooing, e.g. more than once to twice weekly, and frequent (daily) swimming, may reduce the duration of activity of topically applied flea control products¹.

Recommendations: Read the information regarding bathing and swimming on the FRONTLINE Plus product label. If your pet swims or is bathed, ensure the coat is completely dry before applying FRONTLINE Plus and avoid bathing for the next 48 hours. Consider limiting the frequency of bathing and swimming to once a week. If you are concerned about the shampoo you are using on your pets, please ask your veterinarian for advice.

6 How many live fleas are you seeing on your pet each day?

If you observe a small number of fleas, remember FRONTLINE Plus works by killing these fleas as they come into contact with the product on the pet's coat. Therefore, if your pet is exposed to a source of fleas in the home or external environment, fleas may be observed on the coat from time to time.

Recommendation: Continue to treat all of your pets with FRONTLINE Plus all year round and see the general recommendations below.

General recommendations to help to reduce the risk of flea re-emergence and re-infestation³

- Discard all flea infested items (e.g. bedding) where practical.
- Clean between floorboards and in cracks between tiles and pavers.
- Vacuum regularly; steam clean where possible. This will assist with removal of eggs and stimulate fleas to emerge.
- Wash pet bedding and blankets regularly – (in water above 60°C for at least 10 minutes).
- Place any household items that come into contact with pets and cannot be washed (e.g. rugs, cushions, door mats) in direct sunlight every few days – this will help kill the immature flea stages.
- Prevent pet's access to areas of potential flea contamination (e.g. block pet's access to under the house or veranda and keep moist shady areas free from debris).
- Where possible, prevent untreated animals from entering your home environment.
- Consider conducting your own "white sock test"⁴. Put on a pair of long white socks and walk around your pet's environment. This will stimulate the fleas to emerge and jump onto the socks to help you determine where fleas are coming from. If you find a flea source, clean up the area as much as possible.



FRONTLINE®
Recommended by Veterinarians *Plus*

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¹ Burton, G, Shipstone, M & Burrows, M (2003) Veterinary Guidelines for the control of Fleas in Dogs and Cats in Australia Aust Vet Practit 33(3)117-124. ² Scott DW, Miller WH & Griffin CE (2001) Small Animal Dermatology, 6th Edition, Saunders, Philadelphia. ³ Persistent Flea Infestations in Dogs and Cats controlled with monthly topical applications of Fipronil and Methoprene. A. Chin, P. Lunn & Michael. W. Dryden. Aust Vet Practit 35(3) September 2005. ⁴ Jacobs, DE, Hutchinson, MJ and Ryan WG (2001) Control of flea populations in a simulated home environment model using lufenuron, imidacloprid or fipronil, Med Vet Entomol 25:73.

*For control of ticks on cats and dogs, FRONTLINE Plus should be applied every 4 weeks. Always read the label instructions.