



# FBCSA BC

## Federation of Boxer Clubs of Southern Africa Breed Council



### Hookworm

Adult hookworms attach themselves to the wall of the intestine, where they suck blood. Thus, one of the obvious symptoms of hookworm infestation is anaemia. The effects of hookworm on puppies are far more severe than on adults. Hookworms are the most virulent worms in suckling pups. In heavy infestations pups can lose up to a quarter of their circulating red blood cells per day.

### Symptoms of hookworm in puppies:

- Anaemia
- Bloody diarrhoea with lots of mucous
- Weakness
- Weight loss
- Death

### Life Cycle

Hookworm females in the intestines produce numerous eggs daily. The eggs are passed with the faeces of the dog. The eggs “hatch” in the environment and after a development period of a few days the larvae can infect dogs.

The larvae are highly sensitive to desiccation, but resistant to cold and heat and can survive for a couple of months. Hookworm is a major problem in moist warm conditions. Good hygiene with frequent removal of faeces will ensure that fewer larvae survive.

### Routes of Infection

The most important route of infection is lactogenic (transmammary). Most puppies are infected in this way.

The most common route of infection in **adult dogs** is via the skin. Infective larvae can also enter the body of the adult dog via the mouth. Contact with infective larvae usually results from poor environmental hygiene and exposure to faeces through stepping in it or contact per mouth.

The infective larvae penetrate the skin and often result in severe irritation and dermatitis under the paw. Most pet owners have seen dogs furiously biting the underside of a paw. This behaviour must be distinguished from generalized irritation as a result of other contact irritants or allergies.

### Common symptoms of hookworm infestation in adult dogs after larvae penetrated the skin

- Moist dermatitis between pads
- Licking/biting
- Ulceration
- Self-mutilation
- Limping

The larvae will enter circulation and reach the smaller blood vessels of the lungs after 2-7 days. They develop and burst through the walls of the alveoli (little air sacks in the lungs). As part of the lungs’ normal clearing mechanisms, the larvae are coughed up and swallowed. These larvae complete their development on reaching the small intestines and develop into adults producing eggs. From infestation to egg production takes 2-3 weeks. With infestation via the mouth, this period is 15-17 days.

**Puppies** can be infected via the milk (most often), the skin, the mouth.

Bitches can become infected as a pup or any time thereafter. Some of the larvae become dormant in the tissues of the bitch after repeated infection and immunity developing. Under the influence of the hormonal changes associated with whelping, larvae migrate to the mammary glands and appear in the milk for the first 20 days of lactation. These “re-activated” larvae might also result in the bitch becoming infected. This is known as endogenous auto-infection.

More than 95% of pups are infected via the milk. It is important to note that first litters are most heavily infested. In each subsequent litter, the degree of infestation becomes less. After 15-17 days the larvae have developed to adult worms (producing eggs in the faeces of the puppy).

If puppies become infected while in the uterus, the developmental period is 13 days after birth. Most bitches are still very meticulous “cleaners” at this age and the potential for the bitch to become infected per mouth is obvious.