

## Ehrlichiosis in dogs (*Ehrlichia canis*): Information for veterinarians

**Ehrlichia canis** was detected in a small number of dogs in the Kimberly region of Western Australia in May 2020 and in Katherine and Alice Springs in the Northern Territory in June 2020. This is the first detection of ehrlichiosis in dogs in Australia that have not been imported from overseas.

### What is ehrlichiosis?

Ehrlichiosis is a tick-borne disease caused by the organism *Ehrlichia canis*, an obligate gram negative intracellular bacteria. *E. canis* occurs worldwide, particularly in tropical and subtropical regions.

**Infection with *E. canis* (ehrlichiosis) is a notifiable disease in Australia. If you suspect ehrlichiosis, call the Emergency Animal Disease hotline on 1800 675 888.**

### Aetiology

The brown dog tick (*Rhipicephalus sanguineus*) acts as the primary vector of *E. canis*, spreading the pathogen between hosts during blood meals. It is widely distributed worldwide, including Australia. The tick retains the pathogen through its life stages (transstadial transmission) and can infect hosts in both nymphal and adult stages. Brown dog ticks use canine species as a primary host, and as such, ehrlichiosis is predominately associated with dogs, however, the bacteria can also infect other animal species, including humans.

Unexposed ticks acquire the organism after feeding on an infected dog, then transmit the infection to other dogs during successive life stages. The organism can also be transmitted through blood transfusions.

### Clinical signs

Ehrlichiosis has three phases of disease: acute, subclinical and chronic. Severity of disease can vary considerably among dogs. The incubation period for the development of acute disease is about 1–3 weeks, although the chronic form of ehrlichiosis may not manifest until months or years after infection.

## **Acute**

Acute disease is characterised by non-specific signs such as lethargy, fever, anorexia, weight loss and lymphadenopathy. Other signs include ocular and nasal discharges and bleeding tendencies including petechiae, ecchymoses and epistaxis. Thrombocytopenia is a common haematological finding. This phase typically lasts for 2–4 weeks. Although dogs may seem pretty sick in this phase of the infection, it is rarely life-threatening. Most dogs clear the organism if they are treated in this stage, but those that do not receive adequate treatment will go on to the next phase after 1 to 4 weeks.

## **Subclinical**

In this phase, the dog appears normal, with the organism sequestering in the spleen. Dogs can stay in this phase for months or even years. A mild thrombocytopenia and/or hyperglobulinaemia may be present in the absence of clinical signs. Dogs in this phase may clear the organism, remain asymptotically infected or progress to the chronic form of ehrlichiosis.

## **Chronic**

Only some dogs will develop chronic ehrlichiosis. Clinical signs are similar to those seen in the acute phase but are more severe with a worse prognosis. Clinical signs can include fever, weakness, weight loss, bleeding disorders, pallor, dyspnoea, splenomegaly, hepatomegaly, ocular and neurological abnormalities and increased susceptibility to secondary infections. Haematological abnormalities include severe thrombocytopenia and nonregenerative anaemia. Pancytopenia can occur as a result of bone marrow hypoplasia.

## **Differential diagnoses**

Differential diagnoses may include anaplasmosis, babesiosis, lymphoma, multiple myeloma and other immune-mediated diseases.

## **Sample collection & testing**

Infection with *E. canis* is a nationally notifiable disease. If you have a suspect case, contact the Emergency Animal Disease hotline on 1800 675 888, so that government veterinarians can assist with managing the case and advise on sampling requirements.

Diagnosis of ehrlichiosis is achieved through serological and/or molecular testing. The diagnosis is supported by clinical signs, haematological and serum biochemistry abnormalities and response to treatment.

The immunofluorescent antibody test (IFAT) detects IgG antibodies against *E. canis*. IFAT is generally used as the first screening test. Antibodies may not be detectable early in disease, and titres can persist for months to years after the infection is resolved.

PCR tests detect organism-specific DNA in the blood. PCR can be positive before seroconversion occurs and can detect an active infection.

Suitable specimens for laboratory testing include:

- blood samples in EDTA and serum tubes
- ticks collected from the affected dog either dry or placed in ethanol.

Specimens should be sent to the NSW DPI Laboratory Services, Elizabeth Macarthur Agricultural Institute, Woodbridge Road, Menangle NSW 2568. A [veterinary specimen advice submission form](#) must accompany specimens submitted to the laboratory.

## Prevention

Prevention of ehrlichiosis is enhanced by controlling ticks on dogs:

- Maintain dogs on a tick control program
- Avoid taking dogs into tick-infested areas such as the bush where possible
- Inspect dogs for ticks after being in tick-infested areas and carefully remove any ticks

## Zoonotic aspects

While infected dogs do not transmit ehrlichiosis to people, in rare cases, infected ticks may transmit *E. canis* to people. See the [Department of Health website](#) for information on human health implications associated with ticks, as well as prevention, removal and first aid advice.

V20/6360#2

© State of New South Wales through the Department of Planning, Industry and Environment, 2020. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute the NSW Department of Primary Industries as the owner.

---

**Disclaimer:** The information contained in this publication is based on knowledge and understanding at the time of writing (June 2020). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser.