



What is leptospirosis?

- *Leptospira* spp. are mobile bacteria that can infect many mammalian species, including humans. Leptospirosis is considered a zoonotic disease (Weil's disease in humans).
- Subclinically infected wild and domestic animals are reservoir hosts and a potential source of infection.

Infection

- There are over 250 pathogenic serovars, adapted to different wild or domestic animal reservoir hosts.
- Leptospire are found in the environment, particularly in contaminated water, where they can remain infectious for several months.
- In cats, infection with different serovars has been identified (e.g. *L. icterohaemorrhagiae*, *canicola*, *grippotyphosa*, *pomona*, *hardjo*, *autumnalis*, and *ballum*).
- Transmission of leptospire occurs by direct or indirect contact.
 - Cats mostly become infected through feeding on natural reservoir hosts, such as when hunting rodents. Cats can also be exposed to urine of cohabitating dogs.
 - Transmission through water contact is less likely in cats.
- After penetration of mucous membranes or skin, leptospire multiply rapidly upon entering the blood vascular space. They can invade many organs, especially the kidney, in which leptospire can persist and cause shedding for months to years.

Clinical signs

- Experimental infection of cats results in leptospiraemia and leptospiruria, but only mild clinical signs result despite histologic evidence of renal and hepatic inflammation.
- Clinical signs in naturally infected cats seem to be rare, but pathogenesis of feline leptospirosis is not yet well understood.
- However, recent studies have demonstrated a potential association between feline chronic kidney disease and *Leptospira* spp. infection, but the importance of *Leptospira* spp. as pathogens in cats has to be further investigated.

Diagnosis

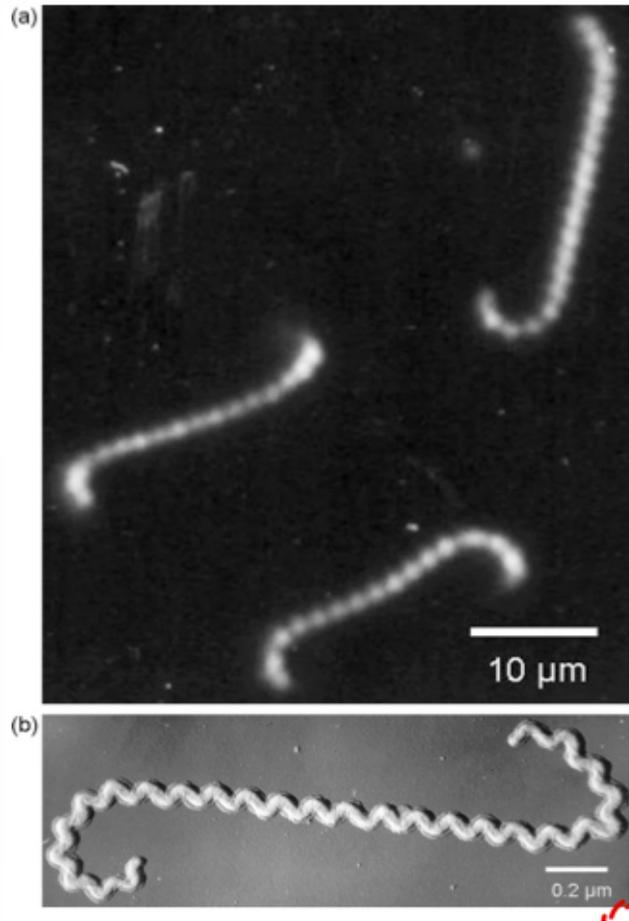
- For direct identification of leptospire, PCR is commonly performed.
 - PCR can detect leptospiral DNA in urine, blood, or tissue samples and confirms the infection (if results are positive).
 - Negative PCR results do not rule out infection due to intermittent shedding. If the cat has received antibiotics, PCR becomes negative within hours.
- Of the antibody tests, MAT is the test of choice.
 - However, correct assessment of MAT results is difficult due to inter-laboratory variation and differences in host-specific immunity. Cross-reactivity makes identification of the infective serovar impossible.
 - As no feline vaccines are available, MAT results are more meaningful in cats than in dogs.
- A definitive diagnosis of infection is based on raising MAT titres (4-fold increase/2 titre steps) with 7-14 days apart.

Disease management

- In healthy cats that shed leptospire, treatment with doxycycline (mg/kg q 12 h PO for 3 weeks) should be initiated to eliminate the carrier state.
- As in dogs, treatment of ill cats consists of antibiotics and supportive therapy, depending on the severity of clinical signs.

Prevention

- No vaccine is available for cats.
- The only way to prevent cats from getting infected is to avoid the feeding on potentially infected rodents and possibly contact with stagnant water.
- Cats that are kept indoors only have a very low risk of being infected.



Dark field photomicrograph (a) and shadowed electron micrograph (b) of *Leptospira* spp. (courtesy of Ben Adler, Australian Research Council Centre of Excellence in Structural and Functional Microbial Genomics, Monash University, Clayton, Australia).

Immunohistology staining of leptospires in the kidneys of an infected hamster. Leptospires stained with specific antiserum (arrow) are seen lining the proximal renal tubules (courtesy of Ben Adler, Australian Research Council Centre of Excellence in Structural and Functional Microbial Genomics, Monash University, Clayton, Australia).

