QUEENSLAND MUSEUM

LEPTOSPIROSIS

FACT SHEET



Q26-027

Queensland Government

WHAT IS LEPTOSPIROSIS?

Leptospirosis is a zoonotic disease caused by spiral-shaped bacteria of the genus *Leptospira*. The bacteria are carried by animals and shed in urine. Multiple species and serovars (strains) can infect humans, with *Leptospira interrogans* and *Leptospira borgpetersenii* being the most common pathogenic species.

ℹ Leptospirosis occurs across Australia, especially in tropical and rural areas.

Natural hosts

Rodents, particularly rats, are the most important reservoir hosts worldwide, but many other mammals can carry and shed the bacteria.

How is it spread?

Leptospira bacteria are carried in the kidneys of infected animals and shed in their urine, contaminating water, soil and vegetation. The bacteria can survive for weeks or months in warm, moist environments, particularly in water and soil. In Australia, native wildlife, livestock and domestic animals all contribute to transmission.

Humans become infected through contact with contaminated water or soil. The bacteria enter humans through:

- breaks in the skin (cuts, scrapes or open wounds)
- mucous membranes (eyes, nose, mouth)
- ingestion of contaminated water.

ℹ Water and mud are common sources of infection.

Direct transmission to humans can occur through:

- contact with the body fluids (faeces, urine or blood) and tissues of infected non-human mammals (e.g. rats, cattle, pigs, dogs)
- contact with infected animals during handling, slaughter or veterinary procedures, particularly when handling or assisting with animal births.

Indirect transmission to humans can occur through:

- contact with water or soil contaminated with the urine of an infected animal (e.g. swimming, wading or kayaking in freshwater streams, rivers, lakes or floodwaters)
- handling contaminated objects or equipment in wet conditions
- drinking untreated water contaminated with the urine of an infected animal.

Human-to-human transmission is extremely rare; this is not a typical transmission route.



ℹ Infection comes directly from animals or from environments contaminated with the urine of infected animals.

Who is at risk?

- Vets and vet nurses, farmers, agricultural workers, abattoir workers (e.g. dealing in cattle, pigs or sheep), wildlife workers, zoo workers, animal refuge staff, pest control workers and sewer workers.
- Recreational athletes and others engaging in freshwater activities (e.g. swimmers, kayakers, white-water rafters, triathletes, adventure racers or fisherpersons), particularly in tropical Queensland.
- Military personnel during training exercises in wet environments.
- People exposed to floodwaters during natural disasters or clean-up operations.
- Cane cutters and banana workers in tropical regions.
- Dog owners (dogs can shed bacteria even when vaccinated).

⚠ Floodwaters are high risk! Directly after floods in Queensland or NSW, leptospirosis cases increase significantly.

What are the symptoms?

In animals

Symptoms in cattle may include:

- fever
- reduced milk production
- loss of appetite
- abortion in pregnant cows
- bloody urine
- jaundice.

Some cattle become chronic carriers with no visible symptoms but shed bacteria in urine.

Pigs are important carriers and shedders of *Leptospira* bacteria. They often show no symptoms. When present, symptoms may include:

- fever
- abortion in pregnant sows
- stillbirths
- weak piglets.

Symptoms in dogs may include:

- fever
- lethargy
- vomiting
- diarrhoea
- reluctance to move (muscle pain)
- increased thirst and urination
- jaundice
- acute kidney or liver failure.

Some dogs become chronic carriers.

Symptoms in horses may include:

- fever
- depression
- jaundice
- red-brown urine
- abortion in pregnant mares
- eye inflammation (moon blindness/recurrent uveitis).

Rodents (e.g. rats, mice) are usually asymptomatic carriers, shedding bacteria in their urine throughout their lives. This makes them highly effective reservoir hosts.

Australian native wildlife, including bandicoots, possums, flying-foxes and kangaroos, can carry *Leptospira* bacteria. Most are asymptomatic carriers but shed bacteria in urine, contaminating the environment.

In humans

Many infections are mild or asymptomatic and go undiagnosed. Symptomatic leptospirosis has two phases. Symptoms typically appear 5–14 days (range 2–30 days) after exposure.

Phase 1 is a sudden onset flu-like illness lasting about a week that may resolve without specific treatment.

Symptoms may include:

- high fever
- chills
- severe headache
- muscle aches (especially in the calves, thighs and lower back)
- red eyes (conjunctival suffusion)
- nausea
- vomiting
- diarrhoea
- cough
- rash.

After brief improvement, some people develop phase 2 (severe leptospirosis), known as Weil's disease.

⚠ Weil's disease occurs in 5–15% of cases and can be fatal.

Symptoms may include:

- jaundice (yellowing of skin and eyes)
- kidney failure
- liver failure
- bleeding (from lungs and/or gastrointestinal tract)
- meningitis (inflammation of brain membranes)
- respiratory failure
- cardiovascular collapse.

ⓘ Many animals shed *Leptospira* bacteria without showing symptoms. This makes the disease hard to control as it is difficult to identify infected animals.



How can I prevent infection?

In Australia, vaccines are available for dogs and livestock but not for humans. Dog vaccines protect against some serovars but not all. Vaccinated dogs can still become infected and shed bacteria. Prevention for humans focuses on avoiding contaminated water and soil.

Prevention measures include:

- Avoid swimming, wading or kayaking in fresh water, especially after heavy rain or floods.
- Wear protective waterproof clothing, boots and gloves when working in wet environments or with animals.
- Cover cuts and abrasions with waterproof dressings before exposure to potentially contaminated water.
- Wash hands thoroughly after animal contact or exposure to potentially contaminated environments.
- Control rodent populations around homes and farms.
- Provide clean drinking water for livestock and fence off contaminated water sources.
- Vaccinate dogs and livestock if a vaccine is available.
- Avoid contact with animal urine.
- Drink only treated or boiled water in areas with poor sanitation.
- Shower after freshwater activities.

Wear protective gear during flood clean-up. Floodwater is heavily contaminated with *Leptospira* bacteria from rodent and animal urine – protective measures reduce the risk of infection.

What treatments are available?

Leptospirosis is treatable with antibiotics if caught early. Mild cases can be treated with oral antibiotics. Severe cases require hospitalisation, intravenous antibiotics and supportive care if organ failure is present or likely. Early treatment significantly improves outcomes. If you develop flu-like symptoms with red eyes after water or animal exposure, seek medical attention promptly and inform your doctor about the exposure.

Early antibiotic treatment can prevent severe disease. Don't delay seeking medical care if you have suspicious symptoms as severe leptospirosis can be life-threatening.

If you think you may have been exposed to *Leptospira* bacteria, please contact your doctor or public health agency for further advice.

Cover: Flooded farmland along the Queensland–New South Wales border. QM, Gary Cranitch
Page 2: Kayakers in the Noosa Everglades, Queensland. Courtesy: eGuide Travel licensed under CC BY 2.0
Page 3: A long-nosed bandicoot. QM, Gary Cranitch

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