Detection of tularemia infection in NSW wildlife: Information for veterinarians

Background

- In 2016, Tularemia (Francisella tularensis) infection was confirmed in historical samples collected from two separate clusters of deaths in ringtail possums in 2002 and 2003.
- Evidence of tularemia infection was initially detected using whole genome sequencing.
- This was the first diagnosis of tularemia in an Australian animal and was confirmed by PCR testing and culture at the Australian Centre of Disease Preparedness (formerly Australian Animal Health Laboratory) in Geelong.
- This finding was not unexpected given that there have been reported human cases of Tularemia in Australia, including two separate cases in Tasmania from 2011.
- The infective agent in the ringtail possums is Francisella tularensis subsp holarctica and is very similar to the genomic material identified in the 2011 Australian human cases.
- Worldwide tularemia can affect a wide range of mammals including rabbits, hares, rodents and wildlife. It may cause acute septicaemia and death in these species.

Current Situation

- A probable human tularemia case has recently been identified in NSW in 2020. While a species has not yet been isolated from this particular case, it is not a virulent clinical presentation.

How to handle animals with suspect tularemia

As tularemia may cause infection in humans, good hygiene and infection control measures should be used when handling suspect cases.

- Cover cuts and abrasions with a waterproof dressing.
- Wear gloves.
- Use sedation or appropriate restraint to minimise scratches and bites when handling animals.
- Wash and dry hands after handling potentially infected material.
- Do not eat or smoke while handling animals that may be infected. Wash and dry hands before smoking or eating.
- Shower after work.
- Do not cut open an animal that you suspect may have tularemia.

Diagnosis of suspect tularemia in animals

- Tularemia may present as an acute mass mortality event in wildlife such as ringtail possums, rabbits and hares. Gross pathology may include pale foci of necrosis (white spots) in the liver and spleen, which are generally enlarged. Foci of caseous necrosis are often present in lymph nodes particularly in the abdominal cavity.
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- Contact NSW Department of Primary Industries Laboratory Services Customer Service (1800 675 623 or emai.svd1@dpi.nsw.gov.au) to provide advanced notice of your submission. This will allow specific biosecurity precautions to be undertaken at the laboratory.
- SEND THE WHOLE ANIMAL FOR TESTING TO THE STATE VETERINARY DIAGNOSTIC LABORATORY at EMAI, Menangle, NSW.
- Send chilled not frozen.
- Ensure the whole animal is double bagged and then placed in a rigid container for transport to the State Veterinary Diagnostic Laboratory. Clearly label specimens as Suspect Tularemia and place a warning note Suspect Tularemia under the lid of the outer rigid container.
- For further information on sample submission see the DPI webpage “Information for vets” at http://www.dpi.nsw.gov.au/content/biosecurity/animal/info-vets.

Advice to the public re sick or dead wildlife

- Avoid touching sick or dead wildlife.
- People who find sick, injured or orphaned wildlife should contact a local wildlife care organisation.
- If you must handle wildlife, wear gloves and make sure the animal is well restrained.

Reporting unusual signs of disease or death in wildlife

To report unusual signs of disease or death in wildlife:

- Contact your state Wildlife Health Coordinator, or
- Ring the emergency animal disease hotline on 1800 675 888.

For advice on human health

- If you have any concerns regarding your health or the health of other people in-contact with the suspect animal contact your local NSW Health public health unit on 1300 066 055 and tell them that you have had contact with a sick animal.

Additional information on tularemia

Francisella tularensis is an emergency animal disease in NSW and Australia, as some strains may cause significant disease in humans, wildlife and domestic animals.

Aetiology and World Distribution

Francisella tularensis is an aerobic, gram negative, intracellular coccobacillus with four subspecies - F. tularensis tularensis (type A), F. tularensis holartic (type B), F. tularensis mediasiatica and F. tularensis novicida. The highly virulent F. tularensis tularensis is only found in North America.

Worldwide tularemia occurs primarily in rodents, rabbits and hares, but has a broad range of hosts, including mammals, birds, amphibians and invertebrates such as ticks.

Clinical Signs in animals

These are vague and variable and can include sudden death, pyrexia, depression, localized inflammation and/or ulceration at the entry point, localized lymphadenopathy. Onset of clinical signs is approximately two to ten days post exposure to an infected animal.
**Human Infections in Australia**

Human infections are extremely rare in Australia. There have been less than five locally acquired cases of *Francisella tularensis* infections in people in Australia. All recovered uneventfully with antibiotic treatment.

- Tasmania 2011 - a woman was scratched by a ringtail possum and diagnosed with *F. tularensis subsp holartica*.
- Tasmania 2011 - a woman was bitten by a possum and diagnosed with *F. tularensis subsp holartica*.
- NSW 2020 – a woman was bitten and scratched by a ringtail possum, and is considered a probable case (further testing is continuing to confirm the diagnosis).

Follow-up surveys of possums from the area in Tasmania where the women were infected failed to detect tularaemia in animals.

Transmission of the tularaemia strain found in Australian animals could occur through

- Direct contact with sick infected animals through broken skin, such as cuts or abrasions.
- Contaminated water, blood or tissues on broken skin or mucous membranes.
- Ingestion of undercooked infected animal meat.
- Theoretically, arthropod bites, noting that the organism has not been identified in Australian ticks or mosquitoes.

**Further Information**