Detection of tularaemia infection in NSW wildlife: Information for veterinarians

Current Issue

- Tularaemia (Francisella tularensis) infection has been 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 Next Generation Sequencing.
- This is the first diagnosis of tularaemia in an Australian animal and has now been confirmed by PCR testing and culture at the Australian Animal Health Laboratory in Geelong.
- This finding is not unexpected given that there have been reported human cases of Tularaemia in Australia, including one case in Darwin in 2003 and two separate cases in Tasmania from 2011.
- The infective agent in the ringtail possums is Francisella tularensis subsp holartica and is very similar to the genomic material identified in the 2011 Australian human cases.

Worldwide tularaemia can affect a wide range of mammals including rabbits, hares, rodents and wildlife. It may cause acute septicaemia and death in these species.

How to handle animals with suspect tularaemia

As tularaemia 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 tularaemia.

Diagnosis of suspect tularaemia in animals

- Tularaemia 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.
- Contact NSW Department of Primary Industries Laboratory Services Customer Service (1800 675 623 or emai.svdl@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 Tularaemia and place a warning note Suspect Tularaemia 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. http://www.health.nsw.gov.au/Infectious/factsheets/Pages/tularemia.aspx

Additional information on tularaemia
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 coccibacillus with four subspecies- F. tularensis tularensis (type A), F. tularensis holarctica (type B), F. tularensis mediiasiatica and F. tularensis novicida. The highly virulent F. tularensis tularensis is only found in North America.

Worldwide tularaemia 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.
- Darwin 2003- a man cut his toe in brackish water and his toe then became infected. A Francisella tularensis subsp novicida-like organism was identified.
• 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 ringtail possum and diagnosed with *F. tularensis subsp holartica*

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

Transmission of the tularemia 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

• Wildlife Health Australia- Tularemia and Australian wildlife fact sheet
  raemia%20and%20Australian%20Wildlife%20May%202013%20(1.5).pdf
• NSW Health Tularemia Factsheet
• DPI webpage on wildlife health and disease

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (06 October 2016). 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 NSW Department Primary Industries or the user’s independent adviser.