Department of Primary Industries

BIOSECURITY BULLETIN

19 June 2020

Detection of tularaemia infection in NSW wildlife: Information for veterinarians and para-veterinarians

Background

- In 2016, tularaemia (*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 tularaemia 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 Tularaemia in Australia, including two separate cases in Tasmania from 2011.
- The infective agent identified in the ringtail possums was *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 and rodents. It may cause acute septicaemia and death in these species.

Current Situation

- There have been two probable human cases of tularaemia identified in NSW in 2020.
- The first case was linked to bites and scratches from a possum. The second case is believed to have been acquired in a laboratory setting, with likely exposure during a necropsy of Australian wildlife which did not include a possum species. The source of infection in this case has not yet been identified.
- Investigations are underway to research the wildlife host(s), geographic and temporal distribution of tularaemia in the Sydney basin. Samples have been collected from sick and healthy small wild mammals in search of vectors, reservoir and end-stage hosts. Sample collection has focused on swamp wallabies, ringtail possums, brushtail possums and long-nosed bandicoots, due to their prevalence and interactions with humans in suburban and wildlife rehabilitation settings.

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 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* subsp. *tularensis* (type A), *F. tularensis* subsp. *holartica* (type B), *F.tularensis* subsp. *mediasiatica* and *F. tularensis* subsp. *novicida.* The highly virulent *F. tularensis* subsp. *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.

- 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).
- NSW 2020 - a laboratory-acquired case where exposure likely occurred during an autopsy of infected wildlife. This is considered a probable case (further testing is continuing to confirm the diagnosis and potential source of infection).

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

Laboratory-acquisition of tularaemia is less likely to occur through inoculation of the skin (bites or scratches), and more likely to occur through inhalation of contaminated aerosols during examination. Through this exposure route, symptoms are likely to appear as atypical pneumonia.

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

- Wildlife Health Australia- Tularaemia and Australian wildlife fact sheet https://wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/Public%20health/Tularaemia_and_Australian_Wildlife.pdf
- WHO Guidelines on Tularaemia http://www.cdc.gov/tularemia/resources/whotularemiamanual.pdf
- NSW Health Tularaemia Factsheet http://www.health.nsw.gov.au/Infectious/factsheets/Pages/tularemia.aspx
- DPI webpage on wildlife health and disease http://www.dpi.nsw.gov.au/content/biosecurity/animal/wildlife-and-feral-animals