Wild Tiger Health Centre Information Sheet

Disease threat: Francisella tularensis

Hazard description: Gram-negative – highly infectious cocco-bacillus causing tularaemia, a septicaemic disease of humans and animals. A significant zoonosis. There are four sub-species of *F. tularensis* of varying virulence:

- *F. tularensis* subsp. *tularensis* (Type A) – highly virulent, restricted to north America
- *F. tularensis* subsp. *holoartica* (Type B) – moderately virulent, occurs northern hemisphere
- *F. tularensis* subsp. *mediasiatica* – moderately virulent, occurs central Asia
- *F. tularensis* subsp. *novicida* – low virulence, occurs Australia and USA, associated with waterborne transmission

Host species: *F. tularensis* has a very broad host range. There are two epidemiological cycles.

- Terrestrial cycle – reported in many terrestrial vertebrate species and some invertebrates, but predominantly an infection of lagomorphs (in particular mountain and European brown hares) and rodents being the main reservoir hosts, with blood feeding arthropods transmitting infection, with ticks also being a reservoir host (Pennisi, Egberink, et al. 2013)
- Aquatic cycle with voles, muskrats, beavers being the main hosts shedding bacteria into the environment (Gyuranecz 2012).

Felid species can be a reservoir host with no clinical signs (thus representing a zoonotic risk) (ProMED-mail 2014b).

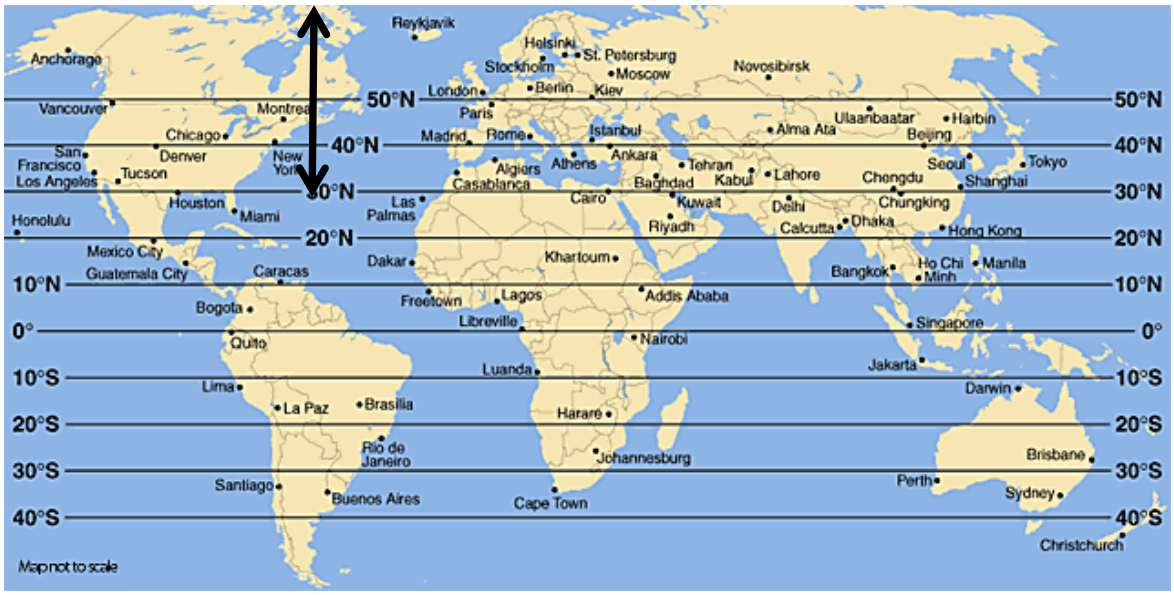
Pathogenesis: Infection acquired from arthropods or from infected prey species. Highly infectious, rapid multiplication in many cells, especially macrophages; resulting septicaemia may be fatal within 2-10 days. Susceptibility varies with species; lagomorphs and rodents most susceptible. Disease has been reported in domestic cats in north America only (Pennisi, Egberink, et al. 2013) (subsp. *tularensis* is more virulent than susbsp. *holoartica*). No reports found in wild felids.

Diagnosis: Specialist stains, culture (N.B. zoonotic risk). PCR.

Vaccination: None.

Free-ranging tiger occurrence: No reports found of disease or infection in wild felids were found.

Distribution: Restricted to northern hemisphere. Thus tiger range states most likely affected include Russia and China with susbsp. *holoartica*, and subsp. *mediasiatica* in central Asian states north of the equator. Endemic in Russia, reported in human from Amur region (ProMED-mail 2007a; Busoedova et al. 1977).



Assumptions: Assume wild felids are relatively resistant to disease.

Limitations: Test detection sensitivity.