

Title of Presentation: Exposure to *Coxiella burnetii* (Q fever) and *Rickettsia* spp. in Australian wildlife rehabilitators

Abstract 1: *Coxiella burnetii* exposure, Q fever vaccination and Q fever disease status in Australian wildlife rehabilitators

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Study rationale: Q fever is a zoonotic disease caused by the bacterium *Coxiella burnetii* and is recognised as a public health concern globally. Macropods (kangaroos and wallabies) have been suggested as a potential source of *C. burnetii* infection for humans. The aim of the study was to determine the level of exposure to *C. burnetii* in Australian wildlife rehabilitators (AWRs) who care for Australian mammals and assess Q fever disease and vaccination status within this population.

Methods: This cross-sectional serosurvey was conducted at the Australian Wildlife Rehabilitation Conference in Sydney in July 2018. Blood samples were collected from AWRs over 18 years who cared for Australian mammals. Participants also completed a questionnaire to accompany their blood sample. Antibody titres (IgG, IgA and IgM) against phase I and phase II bacterial antigens for *C. burnetii* were determined by immunofluorescence assay, and risk factor analysis for exposure to *C. burnetii* and Q fever vaccination was performed using logistic regression.

Results: Of 147 unvaccinated AWRs 6.1% (9/147) had evidence of exposure to *C. burnetii* and three (3/147, 2%) self-reported having had medically diagnosed Q fever disease. Of the 160 total participants, 8.1% (13/160) had been vaccinated against Q fever. Participants reporting occupational contact with cattle, sheep and goats, were eight times more likely to have been vaccinated than those reporting no occupational animal contact.

Conclusion: Although there was no association between contact with macropods and exposure to *C. burnetii* these findings suggest that AWRs are approximately twice as likely to be exposed to *C. burnetii* and additionally self-report a higher level of Q fever disease compared with the general population. providing support for the recommendation Q fever vaccination for rehabilitators of Australian wildlife. Further investigation is required to determine whether macropods are a source of *C. burnetii* infection for AWRs.

Disclosure of Interest Statement:

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Abstract 2: Serological evidence of exposure to Spotted Fever Group and Typhus Group rickettsiae in Australian wildlife rehabilitators

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Study rationale: Rickettsial diseases are transmitted to humans by arthropod vectors (ticks, fleas, lice and mites) and several of these diseases occur in Australia. Australian wildlife rehabilitators (AWRs) are potentially at risk of contracting rickettsial diseases because the wildlife for which they care may harbour these arthropod vectors. This study aimed to assess the exposure levels to, and risk factors for *Rickettsia* spp. among AWRs.

Methods: Blood samples were collected from AWRs attending the Australian Wildlife Rehabilitation Conference in Sydney in July 2018. Participants also completed a questionnaire to accompany their blood sample. Antibody titres against Spotted Fever Group (SFG), Typhus Group (TG) and Scrub Typhus Group (STG) antigens were determined using an immunofluorescence assay. PCR targeting the *gltA* gene was performed on DNA extracts from whole blood and serum. Risk factor analysis for exposure to *Rickettsia* spp. was performed using logistic regression.

Results: Of the 22% (27/122) seropositive participants, four (14.8%) were classified as exposure to *R. australis*, one (3.7%) to *R. honei* and one (3.7%) to *R. felis*. The rickettsia species responsible for the exposure in the remaining 21 (77.8%) seropositive participants was unable to be determined, however 85.7% (18/21) were classified as tick transmitted *R. australis/R. honei* exposures. Rickettsia DNA was not detected in whole blood or serum.

Conclusion: These findings suggest that AWRs are at increased risk of contracting *Rickettsia*-related illnesses. The majority of exposures were from *Rickettsia* species known to be transmitted by ticks, however the activities associated with tick exposure are unclear. Australian wildlife rehabilitators would benefit from education to increase their awareness of arthropod-borne infections .

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