Q Fever - Also a Small Animal Zoonotic Disease
By Dr Steve Ferguson BVSc

The AVA recommends that all veterinarians and veterinary nurses be vaccinated against Q Fever.

Did you know that you and your staff may be exposed to Q Fever the next time you do a dog or cat caesarian?

AVA NSW have recently become aware of a number of outbreaks of Q Fever in small animal practitioners, their staff and clients linked to contact with fluids from caesarians.

Q fever is caused by the bacteria *Coxiella burnetii*. This illness was named “Q (for query) fever” in 1937 when the first cases of the disease were reported but very little was known about it. Since then, the cause and routes of the disease have been discovered but the name has been retained.

What are the risk factors for Q Fever infection?

- Any animal can carry Q fever - wildlife carriers include kangaroos, bandicoots; domestic species - cattle, sheep, goats, dogs, cats, rodents, rabbits, birds (wild birds, pigeons - possibly the best reason to get rid of Indian mynas)
- It is transferred by ticks between animals e.g. bandicoots to dogs and cats. Ticks are a temporary host. Transference from ticks to people not reported.
- Dogs and cats can be infected by eating infected material - e.g. placentas and newborn of wildlife, rabbits, rodents.
- Pregnant animals can be a major source of *Coxiella* - in urine, birth fluids, placenta, foetuses, milk, and manure - especially if recently infected. *Coxiella* can cause foetal death - this may be the reason for caesarean intervention.
- Aerosol transfer to people occurs- via droplets or desiccated motes - in dust.
- Human exposure is possible via manure and urine of infected animals. Semen can also carry *Coxiella*.
- Human exposure is possible via contaminated wool and hides.
- Milk transfer to people - drinking unpasteurised milk, milk aerosols in a dairy
- Smoking in an area where infected animals have been.
- *Coxiella* can exist in environment for a long period of time. People can become infected from the environment for some period after the infected animal has moved on.
- People older than 15 years of age more susceptible to infection

Clinical signs in people: Q fever usually presents in people as a flu-like illness but can progress to a potentially fatal atypical pneumonia, hepatitis and endocarditis. Approximately half of all human infections are asymptomatic.

Practical Risk reduction

- The AVA Guidelines for veterinary personal biosecurity recommend that all veterinarians, veterinary students and veterinary nurses and veterinary staff be vaccinated - even though some staff may never enter surgery suite, corridors and rooms near the surgery may become contaminated by infective aerosols (administrative control)
Cat and dog caesarians were identified as potentially very dangerous sources of infection for veterinary staff and potentially their clients.

- An immediate ban on mouth to snout resuscitation should be implemented,
- Q fever serology should be considered in all pets undergoing an elective caesarean and only vaccinated staff should be attending to caesarians.
- All staff present around a caesarian need to be masked (P2 mask, not standard surgical mask) and wearing eye protection, gloves and a disposable gowns.

- Ensure the air flow in the surgery unit does not flow to client waiting rooms etc.
- Wash hands thoroughly after handling all pregnant patients and before touching another patient, person or common area e.g. opening fridge to get food
- Consider alternative methods for resuscitation of pups which doesn't involve breathing directly into the pup or dispersing birth fluid around the room
- Collect all birth waste and fluids into biohazard bag/bottle for autoclave before disposal or for incineration
- Since majority of human infections start by aerosol, use of P2 masks, goggles or safety glasses with coveralls during Caesarian - PPE. Remove PPE before leaving surgery suite especially coveralls (surgery gown) as these will be contaminated and could spread Coxiella to a clean area. Autoclave disinfect reusable items
- Cover any open skin wounds - including using gloves to cover roughened skin on hands before handling patient.
- Clean and disinfect surgery suite after Caesarian completed and patients removed. Any staff should be wearing PPE during the cleaning process - remove before exiting the suite. Autoclave/disinfect reusable items.
- Isolate suspect patient from other patients - isolation ward
- Any body waste from patient to be collected and disposed by autoclave/incineration

The QVAX vaccine is available, all veterinarians and veterinary personnel should take advantage of its availability and effectiveness. Potential vacinees need a blood test to test for C. burnetii antibodies, and a skin test (to look for T-lymphocytes sensitised to C. burnetti). If either test is positive, immunity is assumed and the person is not vaccinated. Taken from http://www.ava.com.au/11026

The Sydney South West Public Health Unit recently ran a debriefing session to discuss a Q fever outbreak affecting vet staff in a domestic animal veterinary clinic. The AVA, University of Sydney, VPB and VNCA were all represented.

The key recommendations from this session were the need to develop a set of national guidelines on personal infection control in veterinary practice. The AVA has since released very comprehensive personal biosecurity guidelines that are available to all members online. This should be compulsory reading and are located at http://www.ava.com.au/biosecurity-guidelines.

Personal Protective equipment, although essential is not an alternative to identifying and minimising risks of exposure in the first place - see Hierarchy of controls below that should be applied to all zoonotic risks.
<table>
<thead>
<tr>
<th>Table of Hierarchy of controls</th>
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<tbody>
<tr>
<td><strong>Elimination</strong></td>
<td>change the system of work, the most effective way to make the workplace safe is to get rid of the hazard</td>
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<tr>
<td><strong>Substitution</strong></td>
<td>use a safer alternative</td>
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<tr>
<td><strong>Isolation</strong></td>
<td>separate workers from the hazard</td>
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<tr>
<td><strong>Engineering control</strong></td>
<td>use engineering solutions such as replacing humans with technology where exposure to a major health hazard is imminent, alarm systems, security, building layout and safer machinery options</td>
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<td><strong>Administrative control</strong></td>
<td>training workers in appropriate systems of work such as handling used NS, blood &amp; body wastes, chemicals</td>
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<tr>
<td><strong>Personal protective equipment (PPE)</strong></td>
<td>this includes equipment such as gloves, goggles and sharp resistant clothing for workers</td>
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The University of Sydney in association with Charles Sturt University is doing further study into the prevalence of Q fever in companion animals. The AVA and Sydney University would be keen to hear about any cases of Q fever, especially originating from cats and dogs, contact Dr Katrina Bosward (katrina.bosward@sydney.edu.au)