Q-Fever Risk Management Guideline

Section 1 - Purpose and Scope

(1) The University of Queensland (UQ) is committed to managing the risk of Q Fever in the workplace and prevention of infection.

(2) The purpose of this Guideline is to provide information on risk management of infection including:

a. reservoirs and modes of transmission of the bacteria that causes Q fever;
b. risk groups;
c. risk controls;
d. pre-vaccination screening and vaccination recommendations;
e. Q fever register.

(3) This Guideline applies to all UQ workers – including staff, students, visitors, volunteers and contractors that work in agricultural settings and/or interact with or work in close proximity to agricultural livestock or other animals.

(4) Further information about working with biological material and immunisations is provided in the Working with Hazardous Biological Material Procedure and the Vaccinations and Immunisation Guideline.

Section 2 - Q Fever

Type of Infection

(5) Q Fever is a zoonotic infection caused by the bacterium Coxiella burnetii, usually via inhalation of contaminated dust and aerosols from infected animals. It is a relatively common but preventable condition which, while rarely fatal, can cause a severe acute illness with complications such as hepatitis and pneumonia. It can also cause damage to heart valves and precipitate chronic fatigue and long-term disability.

Signs and Symptoms

(6) Many infected people have no symptoms. People who do become sick often have a severe flu-like illness. Symptoms begin approximately two – three weeks after exposure to the bacteria. However, this period can be as short as four days and as long as six weeks.

(7) Typical symptoms of acute Q Fever include:

a. Fever and chills.
b. Severe sweats.
c. Severe headache (especially behind the eyes).
d. Muscle pain.
e. Weakness and tiredness.

Risk.

(8) Some patients may develop pneumonia (chest infection) and hepatitis (inflammation of the liver) during the course of acute illness. Although most people make a full recovery, and become immune to future Q fever infections.

(9) Q Fever can be diagnosed based on symptoms, clinical examination, and laboratory tests on blood samples. Two or more blood samples on separate occasions are often required to confirm a Q Fever diagnosis.

Section 3 - Identifying Q Fever Risk

(10) Q Fever is primarily an occupational disease of workers from the livestock and meat industry. Over 90% of cases of acute Q Fever occur in new entrants to the workforce or those who have been in the workforce five years or less. Q Fever affects mainly men between 20 and 50 years of age. Women entering high-risk occupations should be vaccinated before considering a pregnancy to avoid the significant risk to the foetus in the event of Q Fever infection occurring in pregnancy.

Animals Infected

(11) Cattle, sheep and goats are the main sources of infection, however a wide range of animals including domestic and feral dogs and cats, feral pigs, horses, rabbits, rodents, alpacas, camels, llamas, foxes, and Australian native wildlife (including kangaroos, wallabies and bandicoots) can also spread the bacteria to humans. Infected animals often have no symptoms. Human companion animals such as cats and dogs can also become infected.

(12) The bacteria can be found in the placenta and birth fluids (in very high numbers), urine, faeces, blood or milk of animals who are infected with or carry the bacteria.

(13) The bacteria can survive in the soil and dust for many years and be spread over several kilometres by the wind.

Modes of Transmission

(14) Coxiella burnetii is a highly infectious bacterium that can survive in harsh environmental conditions. For example, it has survived for seven to nine months on wool at 15 to 20°C, for more than one month on fresh meat in cold storage and for more than 40 months in skim milk at 4 to 6°C.

(15) The bacteria is transmitted to humans via inhalation, ingestion, inoculation or via direct contact with infected aerosols or dust.

(16) Infection with Q Fever is most commonly caught by breathing in droplets or dust containing the bacteria from infected animals such as during:

a. animal birthing, slaughtering or butchering infected animals (especially cattle, sheep or goats), these activities carry a very high risk of infection;
b. handling infected animals, infected animal tissues, fluids or excretions or animal products e.g. veterinary/diagnostic procedures;
c. handling materials that have been infected including wool, hides, straw, manure fertiliser and clothes (e.g., washing clothes worn when birthing, butchering or slaughtering animals);
d. while herding, shearing or transporting animals;
e. while mowing grass contaminated by infected animal excretions; and
f. when visiting, living or working in/near a high-risk industry.

(17) Infection with Q Fever can also occur through:

a. direct contact with infected animal tissue or fluids on broken skin (e.g. cuts or needlestick injuries when working with infected animals);
b. drinking unpasteurised milk from infected cows, sheep and goats;
c. ticks (rare) transferring the infection to people through tick bites, from breathing in tick excreta or through direct contact (e.g. removal of ticks from domestic animals, aerosol-generating activities such as shearing, or crushing ticks with bare hands);
d. human to human transmission (rare) via blood transfusion from blood collected in the late incubation period of primary infection.

Section 4 - Q Fever Risk Management at UQ

(18) Workers at UQ considered to be at significant risk of infection transmission include agricultural and farm workers and students, veterinarians and veterinary students and agricultural and wildlife research workers and students.

Risk Assessment

(19) A risk assessment should be undertaken in UQ workplaces where agricultural or feral animals (or their products) are handled or housed or roam in close proximity to work areas. The following factors should be considered as part of a risk assessment.

Identify the Hazard and Assess the Risk

(20) Consideration needs to be given to the following where:

a. Workers may inhale aerosols or droplets of urine, faeces, milk, birth fluids, placenta, blood and possibly semen from animal sources.
b. Workers may be exposed to eye contamination from splashes or aerosols from substances described above.
c. Workers are potentially liable to inhale dust that contains dried body fluids from animals.
d. Workers are likely to work with high-risk veterinary specimens, including:
    i. tissue samples known to contain Coxiella burnetii;
    ii. animal birth products, urine, milk and faeces; or
    iii. samples that could contain soil and dust from animal holding areas, where procedures create a droplet or aerosol risk. This is because soil and dust from animal holding areas may be contaminated with birth products, urine, milk and faeces.
e. Needlestick injury risk are a possibility (although rare, transcutaneous inoculation is possible).

(21) In relation to the above points, the frequency of exposure should be considered.

Risk Groups

(22) At UQ those considered to be at risk include the following:

a. Veterinarians, veterinary nurses/students/researchers, and others working with veterinary specimens.
b. Those undertaking abattoir placements.
c. Agricultural or environmental science staff and students regularly interacting in areas with high-risk animals.
d. Laboratory workers handling high risk veterinary specimens or working with Q fever organism (Coxiella burnetti).
e. Laboratory/biological resources workers in contact with sheep/goats/cattle/wild animals and/or their products.
f. Sewage treatment operators or workers in areas/ tasks where high concentrations of animal waste/bi-products

exist.

g. Fieldworkers interacting with soils potentially contaminated with animal excreta on a regular basis.
h. Grounds workers/gardeners, who mow and slash grass contaminated with animal excreta or those exposed to animal manures in fertilisers and soil conditioners.

Risk Controls

(23) A combination of control measures may be used if a single control is not adequate to minimise the risk. Consider all possible control measures and assess which controls are reasonably practicable. Determining which controls are reasonably practicable includes assessing availability and suitability of control measures, regarding the level of risk. The hierarchy of controls must also be considered with a preference for engineering controls above administrative controls or personal protective equipment (PPE). Cost may be a relevant factor in determining reasonably practicable controls but should not be the primary consideration. The most effective control measure is to eliminate the hazard completely. However, it is unlikely that the hazard, namely the Coxiella burnetii can be permanently eliminated from the animals.

(24) Pre-screening of animals and using only Q Fever negative animals can be considered where possible. If this is not possible and if workers are significantly exposed to the risk of Coxiella burnetii on a regular basis, then the following control measures should be instituted.

Engineering Controls

(25) A safe and effective vaccine (Q-VAX®) is the best way to prevent Q Fever infection. The exact nature and requirements of the engagement with UQ must be considered when initiating immunisation requests to UQ workers, prospective workers, and students. The requirements and recommendations for each category above are summarised in the following tables:

a. UQ Student Immunisation/Screening Requirements by Program/Course (Table 1).
b. UQ Occupational Immunisation and Screening Requirements for UQ workers, Prospective Workers, HDR and other Research Students (Table 2).

(26) Other engineering controls include:

a. implementing dust suppression measures to minimise airborne dust such as water sprinklers or wet cleaning of animal areas rather than sweeping;
b. changing a high-pressure water cleaning method with a low-pressure water system to minimise airborne aerosols;
c. maintaining ventilation and air conditioning systems in animal areas to minimise the dispersal of airborne contaminants;
d. locating high traffic areas, car parks, site entry, offices and dining facilities away from higher risk areas;
e. provide suitable washing facilities for workers.

Elimination Controls

(27) Restricting non-essential and non-immune persons from entering Q Fever risk areas.

Administrative Controls

(28) Providing workers including contractors with information, induction, instruction, and training on Q Fever.

(29) Keeping the workplace clean to minimise the accumulation of dust and dirt as well as washing animal urine, faeces, blood and other body fluids from equipment and surfaces where possible.

(30) Handling and disposing of animal products, waste, placenta and aborted foetuses appropriately, and where possible prevent animals from eating the placenta after giving birth.

(31) Using signage to inform people about Q Fever risk and to use personal protective equipment (PPE).

(32) Practising good hygiene such as ensuring that hands, and face are washed thoroughly before eating or smoking. Consider enforcing policy that prohibits eating or smoking in areas where there is a risk of exposure.

(33) Appropriate treatment of animal manure: do not remove manure from deep litter sheds or yards for at least one month after birthing season; compost manure or alternatively store manure for three months prior to spreading as fertiliser.

(34) Implementing biosecurity measures to prevent the spread of infection between animals, e.g. tick treatments.

Personal Protective Equipment (PPE)

(35) Respiratory protective equipment (RPE) may be used as an interim or short-term control measure to protect non-immune workers, contractors and visitors in Q Fever risk areas. The minimum level of respiratory protection is a fit tested half facepiece respirator with a P2 filter. This must be of a suitable size and fit and worn by the worker. The worker is to be instructed in its correct use and fit.

(36) Removing protective and/or contaminated clothing before returning to the home environment. Personal protective equipment and contaminated clothing should be removed at the site, and appropriately bagged and washed on site, to reduce the risk of exposing non-vaccinated individuals and family members outside of the workplace to Q Fever.

(37) Disposable latex or vinyl gloves, disposable gowns and eye protection when performing clinical procedures on animals or handling animal tissue, blood, body fluids or birthing products.

(38) Covering wounds with waterproof dressings when handling or disposing of animal products, waste, placentas, and aborted foetuses.

Section 5 - Immunisation

Pre-vaccination Screening and Vaccination

(39) The pre-vaccination antibody screening and vaccination process involves two visits to a medical practitioner. Visits must be exactly seven days apart.

(40) Screening prior to vaccination is undertaken by the medical practitioner on the first visit to exclude persons who are already sensitised to Q Fever antigens and who may therefore experience a severe hypersensitivity reaction if vaccinated. Pre-vaccination screening incorporates taking a detailed history to exclude the likelihood of the person previously having had Q Fever infection or being previously vaccinated with Q Fever vaccine.

(41) If a Q Fever vaccination is required, exposure in high-risk environments should be avoided until 15 days after vaccination to allow immunity to develop. See WorkSafe Queensland - Q Fever.

(42) Q Fever testing and vaccination is available through medical practices. See the Australian Q Fever Register (AMPC).

Q Fever Register

(43) The Australian Q Fever Register (AMPC) website contains general information on Q Fever and a platform for

authorised users to access the register that stores information about the immune status of people who have undertaken Q Fever screening and who consent to being listed on the register. It allows those who may have forgotten or lost their Q Fever screening or immunisation details to quickly recover this information.

(44) Those listed on the register can be safely employed in a new job where there is a risk of contracting Q fever without having to re-test. Being on the register can also help avoid the risk of adverse reactions occurring when a person who is already immune to Q Fever is inadvertently re-vaccinated.

(45) For more information about the Q Fever register, refer to the Q Fever register website.

Section 6 - Responsibilities

(46) Refer to the Vaccinations and Immunisation Procedure for responsibilities of UQ, Heads of Schools and Organisation Units, Supervisors, Health, Safety and Wellness Division, Individuals and Contractors (including sub-contractors) in the implementation of this Guideline.

(47) Supervisors who require assistance with implementing this Guideline should contact the Health, Safety and Wellness Division.

Section 7 - Appendix

Definitions

Term	Definition
Bacterium	A single cell micro-organism some of which can cause disease.
Personal Protective Equipment (PPE)	Equipment worn to minimise exposure to hazards that may cause workplace injuries and illnesses.
UQ Workers	For the purposes of this Guideline includes: • staff - continuing, fixed-term, research (contingent funded) and casual staff; • contractors, subcontractors and consultants; • visiting academics and researchers; • academic title holders, visiting academics, Emeritus Professors, adjunct and honorary; • title holders, Industry Fellows and conjoint appointments; • Higher Degree by Research students; • volunteers and students undertaking work experience.
Zoonotic	An infectious disease that is transmitted between species from animals to humans

Contacts

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b. Biosafety Advisor (HSW) - biosafety@uq.edu.au – (07) 3365 2365.
c. Health, Safety and Wellness Division (HSW Division) - hsw@uq.edu.au or (07) 3365 2365.

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