Q fever – in the school environment

Q fever and animals

Q fever is an infectious disease that passes from animals to humans (i.e. a zoonotic disease). Q fever can be a very serious disease and prevention is a priority.

Q fever is caused by a bacteria called *Coxiella burnetii*, carried by animals such as cattle, sheep and goats, native wildlife (e.g. bandicoots, wallabies and kangaroos which may inhabit livestock or grazing paddocks or school ovals) as well as dogs and cats. People usually catch the infection by breathing in droplets or dust contaminated by birth fluids, faeces, or urine from infected animals. The bacteria can also exist in the general environment (e.g. dust and soil) Spread of infection from person-to-person is rare.

Infected animals usually show no signs of illness but shed the bacteria into their environment via their urine, faeces, milk and birth tissues and fluids. Pregnant and birthing animals present a high risk as birth products can have very high concentrations of Q fever bacteria.

Laboratories must notify Queensland Health (QH) of any confirmed Q fever cases and a QH Public Health Unit will investigate the likely source of infection. Under the Work Health and Safety Regulation 2011, Q fever is a "prescribed serious illness". Therefore, if contracted at a workplace, any instance of Q fever (e.g. employee, student or contractor) is to be **notified** to Workplace Health and Safety Queensland (WHSQ). The school or workplace is responsible for notifying WHSQ as soon as they become aware. It is likely that WHSQ will contact your workplace to assess the processes in place to manage Q fever.

Transmission to humans at the workplace

Q fever has a low infective dose, so a very low exposure can cause an infection. People usually get Q fever through:

- **Inhalation** - breathing in the Q fever bacteria from infected animal body fluids, either directly in the air or when the bacteria is attached to droplets or dust particles.
- **Ingestion** - drinking raw milk from infected animals is also a potential source of infection
- **Broken skin** - through contaminated fluids on broken skin - for example, through cuts with contaminated knives or needle-stick injuries when working with infected animals.

"Q fever risk environments" are the working and learning environments where a person may be exposed to Q fever, with or without direct contact with animals. Q fever risk environments must be managed to minimise any potential exposure to Q fever bacteria. Q fever is not usually transmitted from human to human.

High risk activities associated with Q fever exposure may include:

- observing or assisting with animal birthing and handling birthing products
- herding and transporting stock or handling animal material such as wool, hay or manure
- slaughtering animals and dressing the carcass
- handling stillborn and aborted carcasses
- generating dust and aerosols when cleaning up birth products and animal excreta (e.g. dry sweeping, using a high-pressure hose)

- drinking unpasteurised milk
- mowing areas contaminated by infected animal body fluids and faeces (e.g. ovals that are contaminated with kangaroo/wallaby/bandicoot faeces).
- visiting at-risk workplaces may also expose staff and students to risk.

How do I know if an animal is infected with Q fever?

Animals should not be tested for Q fever. From a risk management perspective, it is more appropriate to assume that all animals known to carry Q fever are potentially infected and to manage the risk to people working with these animals or exposed to contaminated environments. This is because:

- infected animals rarely show any clinical signs of Q fever, although infection can cause abortions.
- animals cannot be vaccinated against Q fever.
- an animal that has tested negative for Q fever may subsequently become infected.
- Q fever bacteria may persist in the environment.

Is Q fever infection dangerous?

In humans, Q fever can present as:

- **subclinical** (unapparent) infection with no or few symptoms
- **acute** infection which can present as a severe influenza-like illness. Complications may include pneumonia or inflammation of the liver. Most people make a full recovery but a small number of people may develop chronic fatigue or post Q fever fatigue syndrome. Infection during pregnancy may cause pregnancy complications such as miscarriage, premature delivery or low infant birth weight
- **chronic** illness affecting the heart, bones or joints. People most at risk of chronic Q fever after an acute infection include pregnant women and people with pre-existing heart valve disorders or who are immunocompromised (weakened immune system).

People who have previously had Q fever infection are immune to future infection.

As Q fever is a bacterial infection it can be treated with specific antibiotics. It is therefore important that people who work and learn in “Q fever risk environments” know to tell their doctor about their animal contact if they get sick – particularly if they are not immune to Q fever and have “flu-like” symptoms.

Management of Q fever risk environments:

- Identify Q fever risks – environments and activities.
- Implement Q fever risk controls.
- Ensure staff, contractors and relevant students and their parents are appropriately informed.
- Complete – Checklist: Q fever Infection Control in the Working and Learning Environment (p.4).
- Review control measures on a regular basis (e.g. each term) and whenever there is a change to the environment that might impact the hazard or risk e.g. change of employees responsible for managing the program, any addition or change to facility structures and/or change to type of animals present.
- Maintain relevant documentation e.g. control measures in place, training, correspondence with employees, students and parents, vaccination information, immunity status, within your record keeping system.

Q fever risk controls

Vaccination

- Vaccination is a safe and effective way to prevent Q fever infection.
- Vaccination is recommended for those at risk of infection who are aged 15 or older. Individuals who have previously been diagnosed with Q fever are not to be vaccinated.
- Pre-vaccination screening (blood and skin test) is required *before* vaccination.
- Q-Vax (the vaccine) is given as a single dose (no booster vaccine is recommended).
- Immunity develops 15 days after vaccination.
- Vaccinated individuals or authorised users can record immune status information including vaccine details in the **Australian Q fever register** http://www.qfever.org. This site includes information on Q fever as well as vaccination.

Immunisation for employees undertaking high risk activities

- Ascertain the Q fever immune status of employees required to work in Q fever risk environments.
- The school / workplace is to pay for pre-vaccination screening of employees and if found to be non-immune, the vaccination of these employees is required.
- Maintain immunisation records.
- Identify employees who can't be vaccinated or refuse vaccination as enhanced risk controls will be required for these individuals including P2 respirators.

Risk controls for students undertaking high risk activities

- Inform parents/caregivers of risks and options to vaccinate students who are 15 years or older.
- For those who can't or won't be vaccinated advise parents of the enhanced risk controls required - P2 respirator must be worn and associated checks need to be performed (e.g. fit testing).

Substitution, Isolation and Engineering Controls

- Locate livestock areas away from general school areas.
- Use dust suppression (sprinkler systems).
- Redesign tasks to reduce dust and aerosols.
- Provide hand hygiene facilities.

Administrative Controls

- ***Infection control program:*** schools that have animals that may harbour Q fever (including marsupials that may be on school grounds such as kangaroos and wallabies out of school hours) must ensure that there is an infection control program:
  - for employees, students and any visitors including school incursions/excursions,
  - for contractors e.g. fencing contractors / mowing contractors
  - that includes provision of infection control training: hand and environment disinfection, waste removal, correct PPE use.
- ***Annual information and training:*** to inform relevant employees, contractors, visitors, parents/caregivers about Q fever, the school's risk management strategies and vaccine options.
  - This may involve a combination of information, instruction, training and supervision, including induction and annual refreshers.
  - All records of information and training are to be kept
- ***Procedures and signage in place:***
  - about Q fever management on site

  - to restrict non-immune and pregnant persons from higher risk activities, especially birthing.
  - to restrict access to stockyards and high-risk activities
  - about PPE where relevant.
- ***Cleaning and maintenance:***
  - maintain yards in clean and hygienic condition.
  - Implement safe handling and prompt disposal of birth products and contaminated materials procedures that are best practice for the workplace, this may include deep burial/incineration.
- ***Documentation and records*****:** maintain relevant documentation e.g. control measures in place, reviews, training, correspondence with staff, students and parents, vaccination information, immunity status etc.

Personal Protective Equipment:

- ***Respiratory Protection:*** respiratory protection reduces the risk of airborne transmission but does not offer as high a level of protection as vaccination. The level of protection is based on risk assessment – the higher the risk (i.e. above non-work-related exposure) the more effective the control measure needed.
- A respiratory protection program can be used for non-immune staff, students and contractors who can't/won't be vaccinated and where work restrictions are not reasonably practicable. For example, non-immune contractors engaged to do fencing or other work at an agriculture site or school with wild animal incursions, schools officers mowing fields adjacent to agriculture plots or with wild animal incursions.

  Requirements:
  - P2 filtered respirator is the minimum level of protection. P2 filtered respirators may include Powered, Air-Purifying Respirator (PAPR), reusable and disposable equivalents.
  - Correct fit of the respirators is required. A fit test is to be conducted before the respirator is worn for the first time and annually or if there is any change to facial shape (e.g. tooth extraction or significant weight changes).
  - Facial hair must not interfere with the respirator seal with the skin. (employees and students that need to wear the respirator are to be clean shaven).
  - Staff, students and contractors require proper instruction on donning and doffing the respirator and how to perform a fit check. Fit checking is to be undertaken each time the respirator is worn.
  - Maintain records of fit testing and checking at the workplace.

- ***Other Personal Protective Equipment for Q fever***
  - PPE will be determined by risk assessment, however generally safety eyewear will be required. Gloves and protective clothing/gowns will be needed depending on the activity. Individual task/location risk assessment should be undertaken.

Further Information

- Queensland Health - Q fever Animal Contact Guidelines
- DoE Curriculum Activity Risk Assessments (CARAs) Curriculum Risk Management Guidelines
- Departmental resources - Australian Q fever register
- National - Infection Control procedure
- Queensland Health - http://conditions.health.qld.gov.au/HealthCondition/condition/14/33/116/q-fever
- How to manage work health and safety risks – Code of practice
- Animal handling | WorkSafe.qld.gov.au
- Q fever | WorkSafe.qld.gov.au
- Working with animals | Safe Work Australia

Checklist

Infection control for working and learning in a Q fever risk environment

Date Completed …../…../….. Required review date …../…./…. *(Every year or whenever conditions change)*

Location Details: ……

Is Q fever a risk at your location? Yes / No **If yes: -**		
Ensure the Q fever risk location is defined for the purposes of contractors, visitors and other school staff. (e.g. 'Restricted entry. Q fever risk area – do not enter without authorisation. Please report to: ……')		
Staff immunisation / immunity risk		**Y / N**
1	Is a record kept of the Q fever immune status of all at-risk staff?	
2	Are at-risk staff identified and advised of vaccination availability and process?	
3	Does the school fund the immunity (pre-vaccination) check and vaccination process?	
4	Are non-immune staff restricted from higher risk activities where practicable? (e.g. assisting with animal birthing, handling birth products)	
5	If restriction is not reasonably practicable for non-immune staff, is appropriate respiratory protection and relevant training provided?	
Student / Parent - Risk Assessment		**Y / N**
6	Are parents/caregivers asked for informed consent before their student undertakes a Q fever risk activity?	
7	Are parents of these students required to provide evidence of student immunity status?	
8	Are student Q fever vaccination or Q fever immunity records kept?	
9	Are processes in place to restrict non-immune students from higher risk activities?	
10	Are non-immune students provided appropriate respiratory protection and is relevant fit testing training provided?	
Contractors and visitors		**Y / N**
11	Are contractors or visitors ever required to work in Q fever risk locations?	
12	If yes, are they provided with information on the hazards, risks of working in a Q fever environment and the controls required for working in a Q fever environment?	
13	Is Q fever immunity evidence required to work as a contractor in Q fever risk locations?	
14	Does the school have a process for managing non-immune contractors and visitors? • Exclusion from Q fever risk area • Requirement to use P2 respirator • Refer to information, training instruction and supervision.	

	Information, training, instruction and supervision – for all persons	Y / N
	Have staff, students, visitors and contractors:	
15	been provided with information, instruction and training on Q fever and risk controls?	
16	instructed in safe work practices to minimise generating dust and aerosols?	
17	Are records kept of information, training, instruction and supervision as well as other relevant correspondence?	
	Are those who are not immune to Q fever:	
18	instructed not to drink unpasteurised (raw) milk from livestock?	
	Environmental controls and student activities	**Y / N**
19	Are dust suppression methods used in stockyards and other livestock holding areas (e.g. sprinkler systems) to minimise dust?	
20	Are livestock areas located away from the main school areas?	
21	Have dust and aerosol generating activities been identified, and have steps been taken to minimise the creation of dust and aerosols?	
22	Are livestock activities conducted in well-ventilated areas?	
23	Are livestock areas maintained in a clean and hygienic condition?	
24	Is animal manure disposed of in a hygienic manner?	
25	Are animal birth products disposed of promptly (buried/incinerated)?	
	Hygiene practices – for staff, students, visitors and contractors	**Y / N**
26	Are staff, students and contractors provided with instruction on: • hand hygiene as well as given ready access to adequate hand washing facilities - soap, running water and disposable paper towel? • Not to eat or drink and avoid any hand to mouth activities such as nail biting in the risk location	
27	Is there signage providing instructions on where and how to effectively wash hands?	
28	Are open wounds or broken skin (cuts/scratches) covered with waterproof dressings?	
28	Are open wounds or broken skin (cuts/scratches) covered with waterproof dressings?	
29	Are processes in place to remove/launder contaminated work clothes onsite and away from unvaccinated people?	
30	If no onsite laundry, are instructions in place regarding: • Removal and bagging of any contaminated clothing if taking away to launder.	

	• All persons including parents/guardians of students to wash contaminated clothing separately from personal clothes. • Laundering should only be undertaken by a person immune to Q fever.	

Respiratory protection program		**Y / N**
31	Are non-immune staff, students and contractors required to wear a minimum P2 respirator for high-risk activities?	
32	For high-risk activities, is there a range of respirator models and sizes available?	
33	Are these staff provided with a respirator fit test?	
34	Are staff, students and contractors who are provided with a P2 respirator instructed in the proper use of PPE, including how to fit the respirator and perform a fit check?	
35	Are individuals required to wear respiratory protection clean-shaven?	
Notes addressing negative responses to above:		
Details of site contact officer responsible for Q fever.		
Name: *Date: / /*	*Signature:* *Position* *(Principal/HOD/Teacher/Other……..…..)*	