

Managing infection risks at petting zoos

Introduction

Petting zoos provide the public with recreational and educational opportunities to interact with many types of animals, but usually young farm animals. Animal contact opportunities can also include wildlife encounters, aquatic touch tanks, walkthrough aviaries and animal rides. These can involve many different animal species such as native wildlife (e.g. kangaroos, koalas and reptiles), aquatic animals, birds and other animals (e.g. European rabbits). Petting zoos and other animal contact opportunities may be permanent, temporary or mobile set-ups, located at venues such as agricultural shows, open farms, zoos, amusement parks, fetes, shopping centres, markets and functions.

Animals can shed germs (micro-organisms) that make people sick, including some types of bacteria, viruses, parasites and fungi. Animals can shed germs even though they appear healthy. Infectious diseases that spread from animals to people are called zoonoses. This guidance provides practical information on how to protect the health and safety of workers and visitors from acquiring zoonoses from contact with animals at petting zoos and other animal contact opportunities.

How zoonoses spread

Zoonoses spread in the following ways.

Contact with animals and animal environments

Many zoonoses, such as gastroenteritis, spread by contact with animals.

This includes contact with:

- animals or their blood and body substances (e.g. urine, faeces, saliva or birth products)
- an animal's environment (e.g. gates, handrails, bedding, aquarium water or equipment).

Following contact, germs enter a person's body through:

- non-intact skin (e.g. cuts, abrasions, dermatitis, animal bites and scratches)
- the mucous membranes that line a person's eyes, nose and mouth such as when a person touches their face with contaminated hands
- ingestion (e.g. when a person eats food with contaminated hands).

Infectious droplets

Some zoonoses, such as leptospirosis, spread when germs contained in droplets of animal blood, body substances or contaminated water splash onto a person's face and enter the eyes, nose or mouth.

Zoonoses that spread by droplets also commonly spread by contact with animals and animal environments.

Infectious aerosols and dust

Some zoonoses, such as Q fever and psittacosis, spread when germs contained in aerosols or dust contaminated with an animal's body substances become airborne and are breathed in (e.g. during cleaning, animal movement or animal birthing).

Vectors

Some zoonoses spread by vectors such as rodents, ticks, fleas, mites and flies.

Zoonoses and petting zoos

The most common illness associated with petting zoos is gastroenteritis. Germs that cause gastroenteritis include:

- Shiga-toxin-producing *E. coli* (STEC)
- non-typhoidal *Salmonella*
- *Cryptosporidium*
- *Giardia*
- *Campylobacter*.

Animals can shed these germs in their faeces (manure), which then contaminates the animal's body and its environment. People become infected when they touch the animal or its environment and then accidentally ingest the germs. For example, from touching the face with contaminated hands, eating in an animal contact area, or kissing or being licked by an animal. Gastroenteritis commonly causes nausea, vomiting and diarrhoea but it can occasionally cause more serious illness. STEC bacteria are a particular risk to young children and the elderly who occasionally develop serious illness such as life-threatening kidney failure. Infection can occur from exposure to a very small number of germs.

Workers and visitors may also be exposed to other zoonoses depending on the species of animals that are displayed. For example:

- Q fever - a disease of animals such as cattle, sheep, goats and kangaroos
- Leptospirosis - a disease of animals such as cattle, pigs and rodents
- Psittacosis - a disease of birds, especially parrots
- Dermatophytoses (also known as tinea or ringworm) - a disease of animals such as horses and cattle
- Orf - a disease of animals such as sheep and goats
- *Mycobacterium marinum* infection - a disease of aquarium fish.

Ensuring health and safety

Operators of petting zoos and other animal contact opportunities have a duty to ensure, so far as is reasonably practicable, the health and safety of workers and other people including visitors. Businesses where petting zoos are displayed, such as agricultural shows and school fetes, may also have a health and safety duty. Ensuring health and safety protects workers and visitors from illness and enhances the animal contact experience for visitors.

Managing zoonoses

The risk to workers and visitors from zoonoses should be managed by:

- identifying hazards
- assessing risks
- implementing suitable control measures
- periodically reviewing the control measures to make sure that these are working properly.

This should be supported by policies, procedures, training and allocation of responsibilities.

Hazards and risks from zoonoses vary depending on the size and type of display (e.g. permanent, temporary or mobile), the species and age of the animals, the level of contact with the animals and how the display is managed.

Be informed about the zoonoses associated with your animals. Know how these diseases spread to people and how to control the risk. Seek advice as necessary.

All animals have the potential to spread zoonoses however some animals pose a higher risk. This includes:

- animals that naturally shed germs that cause gastroenteritis in people, for example farm animals (e.g. cattle, sheep and goats), reptiles (e.g. snakes, crocodiles, turtles and lizards), amphibians (e.g. frogs and salamanders) and poultry (e.g. chicks, ducklings and goslings)
- animals that are newborn or newly hatched, unweaned, juvenile, pregnant, birthing, , co-mingled with other species, stressed or sick
- animals that are unused to being handled or display aggressive behaviour
- some species of wildlife (e.g. microbats and flying foxes), exotic animals (e.g. monkeys) and rodents (e.g. rats).

Zoonoses can affect anyone, however some people are at a higher risk. This includes:

- workers who are not immune to zoonoses that are vaccine-preventable (e.g. Q fever)
- pregnant women
- people aged 65 years and older
- people with an impaired immune system because of a medical condition or treatment
- children under five years and infants under one year of age.

Young children and infants are especially at risk because of age-related factors such as an immature immune system, natural curiosity and attraction to animals, putting fingers and objects in their mouth and poor hand washing.

Control measures

The following content provides examples of ways to manage infection risks to workers and visitors from contact with animals at petting zoos. Operators of petting zoos should determine which practices are most appropriate for their business giving consideration to the type of display and the level of risk.

Design

The design of petting zoos can significantly reduce infection risks.

Consider the following:

- Have designated animal contact areas, non-animal contact areas and transition areas between the two. Transition areas can be used to control visitor numbers, provide safety information and direct visitors to the hand washing facilities
- Have separate entry and exit points and a one directional flow of visitors through the display
- Clearly separate animal contact areas from food services, eating areas and children's play areas.
- Make sure that structures, furnishings and equipment (e.g. gates, barriers) are made of materials that can be readily cleaned and disinfected.
- Prevent visitors who are outside the animal contact area from touching the animals (e.g. by using double fencing, barriers and signage).
- Provide a storage area for strollers to discourage these from being brought into the animal contact area and spreading germs via contaminated wheels.
- Ensure good drainage to prevent the accumulation and stagnation of water and liquid effluent.

Hand hygiene

Hand hygiene is critical to preventing zoonoses and assists in preventing the spread of infection from people to animals.

Consider the following:

- Provide suitable and sufficient hand hygiene facilities for workers and visitors.
- Best practice includes liquid soap, running water, single-use paper towels in a dispenser and waste bins. These should be positioned immediately adjacent to the exit of the animal contact area or the display positioned close to existing hand washing facilities.
- If permanent hand washing facilities are not readily available or are insufficient for busy periods such as school holidays, use temporary hand washing facilities such as portable hand washing stations.
- Waterless hand sanitisers should only be used where it is not reasonably practicable to provide permanent or temporary hand washing facilities. It is important to note that these products do not kill some types of germs shed by animals (e.g. *Cryptosporidium*) and do not work properly when the hands are soiled with dirt or dust. If used, hand sanitisers should contain an alcohol content of > 60 per cent v/v and visitors should be instructed to wash their hands with soap and water at the first opportunity and before eating. Use of hand sanitisers should be supervised to prevent inadvertent contact with the eyes or potential ingestion which can be harmful, especially to children. Hand sanitisers may also be used before contact with animals to prevent the spread of germs to animals.
- Do not provide containers of collected water (e.g. wash bowls) or shared towels for use by multiple people. This spreads germs, even if a disinfectant is added to the water, and is unacceptable.
- Regularly clean and restock hand washing facilities, empty waste bins and make sure that portable hand washing stations have sufficient water supplies.

Also consider the following:

- Place hand washing facilities at a suitable height for children and wheelchair users or provide raised steps for children.
- The use of hands-free taps (e.g. sensor or pedal operated taps) can reduce contamination.
- Taps that stop the flow of water when the hands are released are water saving, but may prevent proper hand washing.
- If providing warm water make sure that the water temperature at the tap does not cause scalding.
- Hot air dryers may take longer to use and result in queues or incomplete hand drying
- Make sure there is sufficient water pressure at each tap, manage wastewater by ensuring it is connected to a drain or stored in a tank for subsequent disposal, and clean up spills of water to prevent the ground from becoming muddy or creating a slip hazard.

Instruct workers and visitors about hand hygiene:

- Instruct visitors to wash their hands after leaving the animal contact area, even if the animals were not touched. Place staff at the exit to direct visitors to the hand washing facilities or to actively offer hand sanitiser.
- Instruct workers to cover non-intact skin with a water-resistant dressing and to wash their hands regularly. Hands should be washed:
 - before eating and drinking
 - after contact with animals, animal waste and potentially contaminated surfaces or equipment
 - on leaving the animal contact area
 - after removing personal protective equipment (PPE).
- Instruct workers about personal hygiene (e.g. keeping work clothes and footwear clean).

Food hygiene

Food hygiene is important to prevent gastroenteritis.

Consider the following:

- Do not allow workers to consume food or drinks in animal contact areas.
- Discourage visitors from bringing food or drinks into animal contact areas, including baby bottles, spill proof cups and dummies.
- Have separate areas, equipment and utensils for storing and preparing animal food and food for human consumption.
- If providing animal feeding opportunities, do not place the food in consumable items such as ice cream cones. Supervise the feeding activity and do not let children eat the food. Do not let visitors handle animal food that may contain harmful germs (e.g. feeder animals such as rodent carcasses).
- If providing milking displays, do not offer unpasteurised milk for tasting.
- Do not allow displayed animals, including birds, in areas where people prepare or eat food (e.g. restaurants and functions).

Cleaning

Cleaning is important because some germs, including those that cause gastroenteritis, persist in the environment. Maintaining an animal's environment and equipment in a clean and hygienic condition helps protect workers and visitors from contact with germs and helps keep animals healthy.

Consider the following:

- Establish a cleaning schedule and keep a cleaning log to make sure that it is being carried out.
- Regularly clean and disinfect surfaces (at least daily) in animal contact areas. Pay particular attention to frequently touched surfaces such as railings, barriers, gates, handles and taps.
- Clean surfaces thoroughly using a detergent. This is an important step because disinfectants may not work effectively on dirty surfaces. After cleaning, apply a disinfectant and allow a sufficient contact time to kill the germs. Alternatively use a product that is both a detergent and disinfectant. Disinfectants should be rotated regularly to prevent germs from developing resistance. Always follow the manufacturer's safety instructions when using cleaning chemicals.
- Seek veterinary advice about a suitable disinfectant if animals develop illness such as diarrhoea.
- Use dedicated cleaning equipment for cleaning animal environments and equipment. Wash cleaning equipment after use and store dry.
- Clean and disinfect animal food and water containers (at least daily) including reusable containers provided to visitors for animal feeding.
- Do not clean animal equipment using hand washing or dining facilities.
- Where possible, avoid or minimise exposure to dust and aerosols when cleaning. For example, use a wet mop instead of dry sweeping and avoid using water under high pressure. When cleaning bird waste, moisten the area with water before disturbing it and wear a particulate respirator to protect against diseases such as psittacosis.
- If adventure activities such as rope climbing or treetop walks are co-located within an animal contact area, make sure that railings and equipment are regularly cleaned.
- After packing up a temporary or mobile petting zoo, clean and disinfect all areas where animals have been.
- Monitor and maintain water quality where people have contact with aquatic animals and their water (e.g. aquatic touch tanks).
- Implement a pest control program (e.g. rodent, fly or mosquito control). Make sure that pest control products such as baits are used safely to avoid injury and illness in people and animals. Restrict access by pests to animal feed and waste (e.g. use covered containers).

Waste management

Animal waste contains germs so make sure that the waste is managed hygienically. Consider the following:

- Clean up animal waste and soiled bedding promptly, and replace animal bedding as needed. Animals may shed more of the germs that cause gastroenteritis during warmer weather requiring more frequent clean-up of manure.
- Store animal waste hygienically. Fit waste bins with a lid and seal plastic bags before disposal.
- Regularly clean equipment used for waste management (e.g. shovels and wheelbarrows).
- Store animal waste and cleaning equipment away from visitor areas.
- If possible, have a separate service entrance to the animal contact area for the movement of animals and manure to prevent contamination of visitor walkways.
- Consider having a separate night time holding area for animals to reduce the amount of animal waste in the animal contact area.
- Make sure that animal carcasses and birth products are handled and disposed of safely. This includes aborted fetuses, placenta and items that have had contact with birth products such as straw, bedding and towels.
- Instruct workers to wear PPE to prevent their hands and clothing from becoming contaminated with animal waste.
- Do not allow visitors to collect manure to take home.
- If contamination of footwear, strollers or wheelchairs is likely, provide ways for these to be cleaned to prevent the transfer of germs to other areas (e.g. a disinfectant footbath).
- Comply with laws for the storage, transport and disposal of waste and seek advice as necessary.

Information, training and supervision

Educating workers and visitors is important to promote safe contact with animals.

Provide workers, including temporary, seasonal and volunteer workers and students, with information, training and supervision on infection risks from contact with animals, how to protect themselves and visitors from infection and how to recognise and discourage unsafe visitor behaviour.

Provide visitors with safety information and target this to their age and languages. This should be worded carefully so that visitors are informed about how to stay safe around animals without detracting from the enjoyment of the experience. Key messages include the following:

- Animal contact is fun but animals can spread germs that occasionally make people sick.
- Stay safe around animals (e.g. handle animals gently, don't kiss or be licked by animals, don't touch animal faeces, don't touch, lie down or roll in bedding, don't take food, drinks, baby bottles, spill proof cups, dummies or strollers into the animal contact area).
- Some people should take extra care around animals (e.g. pregnant women, infants, young children, the elderly and people with illnesses that weaken their immune system).
- Wash hands after visiting the animals.
- Supervise children in the animal contact area and when washing hands.
- Follow instructions provided by staff.

Information can be provided in various ways including signage, continuous loop videos, pictograms, the attraction's website and brochures. Pre-visit information packs can help teachers and others to prepare children for the visit.

Signage is an important way to communicate safety messages. Signage for petting zoos can be downloaded at no cost from various government websites. Display signage at:

- entrances to instruct visitors about health risks and safe animal contact

- exits to instruct visitors to wash their hands
- hand washing facilities to instruct visitors on how to wash their hands properly.

Ensure that there are a sufficient number of trained staff to properly supervise visitors and consider limiting the number of visitors allowed inside the animal contact area or the time spent inside the area so that proper supervision can be maintained. Although parents and carers are responsible for their children, staff may need to remind visitors, especially young children, about safe behaviour around animals and to wash their hands.

First aid

Contact with animals may cause injuries and illnesses that require first aid, including bites, scratches, stings, kicks and allergies. Provide first aid facilities including a suitably stocked first aid kit and access to trained first aid personnel. Wounds inflicted by animals can readily become infected by germs that are naturally found in the mouths of animals and in animal environments. Wounds should be thoroughly cleaned and covered with a dressing. Wounds should be assessed by a doctor, especially tetanus-prone wounds such as serious, deep, dirty or puncture wounds and wounds that show signs of infection such as swelling, pain or redness.

Worker health

Ensure that workers have the necessary vaccinations to do their job safely and that these are up to date. Seek medical advice about vaccination as necessary. A staff vaccination policy helps communicate vaccination requirements to workers. Recommended vaccinations include:

- Q fever vaccination for workers who work with livestock (e.g. cattle, sheep, goats and camels) and native wildlife (e.g. kangaroos, wallabies and bandicoots). Contractors who provide cleaning services for animal contact areas or who handle and dispose of animal waste or birth products should also be vaccinated against Q fever
- seasonal influenza vaccination for workers who work with pigs or poultry
- current tetanus vaccination
- current rabies vaccination for workers who handle bats.

PPE protects workers against contact with infectious substances and may also be used to manage biosecurity risks. Workers working with animals should wear a staff uniform or other dedicated work clothing and suitable footwear. In addition, PPE should be provided and worn where contact with animal blood and body substances is likely and workers should be instructed in its use. When selecting PPE, consider the level of contact with blood and body substances and how this could occur.

PPE may include the following items::

- Gloves (e.g. disposable gloves or heavy-duty gloves) if contact with animal blood, body substances, tissues (e.g. placenta) mucous membranes (e.g. inside the animal's mouth), non-intact skin (e.g. animal wounds) or contaminated items, equipment and surfaces is likely
- Puncture-resistant gloves and gauntlets if animal bites or scratches are likely (e.g. when handling raptors)
- Protective clothing (e.g. coveralls) if contamination of personal clothing with animal blood or body substances is likely
- Safety eyewear (e.g. safety glasses, goggles or face shield) if contamination of the eyes or face with splashes of animal blood, body substances or contaminated water is likely
- Respiratory protective equipment (e.g. a particulate respirator) if exposure to potentially infectious dust or aerosols is likely. Workers who are required to wear a tight-fitting respirator should be clean-shaven, know how to perform a fit check and undergo a fit test to make sure that their respirator fits properly.

Instruct workers on what to do if they have accidental contact with animal blood or body substances.

For example:

- if blood or body substances get on unprotected skin or on a wound, wash the area with soap and water as soon as possible. Where water is not immediately available, wipe the area clean, apply a waterless hand sanitiser and wash the area with soap and running water as soon as possible
- if the eyes are contaminated, gently but thoroughly rinse open eyes with water or normal saline for at least 30 seconds
- if blood or body substances get in the mouth, spit the substance out and then rinse the mouth with water several times.

Inform workers about medical conditions that increase the risk of zoonoses (e.g. pregnancy or an impaired immune system) and to seek medical advice if they have health concerns. Instruct workers to tell their doctor that they work with animals if they become sick as this may assist with early diagnosis and treatment. Work-caused infectious diseases must be [notified](#) to Workplace Health and Safety Queensland.

Animal management

Good animal management protects both people and animals because animals that are healthy and well cared for are less likely to shed germs. However, this alone will not prevent the spread of zoonoses because healthy animals can naturally shed germs.

Consider the following:

- Obtain animals (including feeder animals such as rodents) from reputable sources with good biosecurity and animal husbandry practices.
- Quarantine newly arrived animals and isolate sick animals.
- Minimise animal stress from prolonged transportation, confinement, crowding, handling and extremes of temperature.
- Provide animals with clean and hygienic housing, food, water and bedding.
- Provide animals with a rest area away from visitors or rotate animals through the animal contact area so that they have sufficient rest time.
- Monitor animals for signs of illness and injury and seek veterinary advice as necessary.
- Do not provide the following animals for patting or other animal contact opportunities:
 - ill or injured animals, including animals with diarrhoea, respiratory illness or open wounds (e.g. recently dehorned animals)
 - animals showing aggressive or unpredictable behaviour or which are not used to being handled
 - birthing or recently birthed animals and their newborn
 - animals that are not suitable for patting (e.g. bats, venomous or toxin producing animals, or monkeys– these animals should be used for visual display only).
- If a pregnant animal births or aborts unexpectedly, remove the animal from display because birthing animals can shed the bacteria that cause Q fever. Where possible, place the animal in a well-ventilated area away from visitors as these bacteria spread in the air. Do not allow visitors to watch the birthing. After the birthing, safely remove and dispose of the birth products. Clean, disinfect and ventilate the area thoroughly before allowing visitors to return as the bacteria can persist in the environment. People who assist with the birthing, handle birth products or clean the birthing area should be immune to Q fever. A particulate respirator may be used as short-term protection where this is not possible.
- Talk to your veterinarian about preventative medicine and biosecurity measures to protect your animals against infectious diseases. This may include nutrition, vaccination (e.g. leptospirosis and

Hendra virus vaccination), parasite control, management of newly arrived and sick animals, health surveillance and management of pest species.

- The [National Zoo Biosecurity Manual](#) published by the Zoo and Aquarium Association provides more information.

For more information

For more information contact the Workplace Health and Safety Queensland on 1300 362 128 or visit worksafe.qld.gov.au.

For more information on human health, contact your nearest public health unit or the 13HEALTH information line on 13 43 25 84. If you have concerns about your health after contact with animals seek advice from your doctor, local hospital emergency department or local public health unit. Queensland Health's [Animal contact guidelines](#) provides information and resources for petting zoos.