

ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES

Petting Zoos and Fairs — Animals, Children, and Zoonotic Diseases

Petting zoos, fair exhibits, and other similar events allow humans to closely interact with animals, and can be important for learning about animals and developing the human-animal bond. However, petting zoos and fairs have been associated with multiple zoonotic disease outbreaks, including outbreaks of Shiga toxin-producing *Escherichia coli* (STEC), cryptosporidiosis, campylobacteriosis, and influenza A (H3N2). While no outbreaks associated with animal exhibits have been reported to DPHHS, during 1996 to 2012, approximately 200 infectious disease outbreaks associated with animals and public settings were reported to the Centers for Disease Control and Prevention. These reported outbreaks likely represent only a small proportion of the actual disease outbreaks associated with animal exhibits. Considering the public health impact of these outbreaks, it is essential veterinarians, public health practitioners, and event organizers work collaboratively to reduce the potential for disease outbreaks in petting zoos, fairs, and other animal exhibit settings.

In this issue of *Montana One Health*, we describe key considerations for management and care of exhibit animals, and guidelines that should be adopted to lower the risk of zoonotic disease transmission associated with animal exhibits.

Animal Care and Management

Veterinarians have the ability to directly impact human health by working with petting zoo, fair, and other animal exhibit organizers to ensure the exhibits are as safe as possible for both animals and humans.

All animals in exhibits should be considered potential carriers of zoonotic pathogens. To prevent disease transmission, the following measures should be implemented at animal exhibits:

- 1) Animals should be monitored daily and any animals with signs of illness should be removed from display
- 2) Animals should be cared for by licensed veterinarians and receive all recommended species-appropriate vaccines and parasite control
- 3) Open air birthing exhibits should be prohibited because of possible Q fever transmission associated with many farm animals
- 4) Animal housing should limit the potential for exhibit animals to interact with wildlife
- 5) Facility design should limit the risk associated with animal contact, including exposure to manure (**Table 1**)

All veterinarians, cooperative extension personnel, venue operators, and others managing animals in public settings should have access to and be familiar with the complete set of recommendations in the ‘Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2013’ published in *JAVMA*. A complete copy of these recommendations can be found at <http://avmajournals.avma.org/> (Volume 243, No.9, November 1, 2013)

Table 1. Key considerations for animal-contact areas at animal exhibits

Animal-contact area design

- ◇ **Isolate animal-contact areas** from other event areas by use of physical barriers (e.g., fence, wall)
- ◇ Use dedicated **visitor entrance and exit areas**
- ◇ Ensure all visitors pass through exit area with adequate number of **handwashing station(s)**
- ◇ Establish **transition zones** that separate the entrance and exit areas from animal contact area — use these areas to promote ways to reduce potential illness from animal contact (after entrance) and importance of washing hands with soap and water (before exit)
- ◇ Identify a **separate service access** point inaccessible to visitors that can be used for transporting animal feed, waste, and other possibly pathogen-containing materials
- ◇ Consider **slope, elevation, and water flow** to prevent animal waste being carried away by rainfall or wind
- ◇ Define **safe areas** where personal items (e.g., strollers) can be left and not brought into animal-contact areas

Animal hygiene and bedding

- ◇ **Keep animals clean** by removing urine and manure promptly via the service access point and replacing bedding daily
- ◇ **Clean and sanitize** housing, fencing, and walkways at least daily when visibly soiled

Do not allow animals outside of animal-contact areas

Visitor education

- ◇ Make sure **trained staff** are located in the entrance, transition, animal-contact, and exit areas to provide disease transmission and hygiene education
- ◇ Post **signage** to inform visitors about risks of disease transmission, risky behaviors, and importance of handwashing

Human Prevention Measures

The fecal-oral route is the primary means of acquiring enteric illness at animal exhibits. Public health officials should partner with event organizers and focus efforts on preventing children and mentally-impaired visitors from placing hands or other objects in their mouth; ensuring an adequate number of handwashing stations in exit areas; and, educating visitors about the risk of disease transmission, and the importance of avoiding risky behaviors and washing their hands (Table 2).

Inadequate cleaning of surfaces, improper maintenance, and faulty facility design can also lead to outbreaks, even in the absence of direct animal contact. Enteric pathogens can persist on contaminated surfaces for prolonged periods; for example, STEC O157:H7 can persist on surfaces for months. Therefore, it is essential walkways, fencing, or other areas visibly soiled with urine or manure are cleaned and sanitized daily. Facilities should be designed so that children's play areas, and areas where food and beverages are consumed are located as far away from animal exhibits as possible. Additionally, maps of the water distribution system should be available and reviewed to identify potential or actual problems that could lead to outbreaks (e.g., backflow issues, water runoff from animal pens).

Table 2. Recommended guidelines involving animal exhibits

- Prohibit **human food and drinks** in animal-contact areas
- Allow **human food** to be sold and consumed only at human eating areas; these areas should be located as far from animal-contact areas as possible
- Do not allow **children aged <5 years and mentally impaired visitors** into animal-contact areas unless closely supervised by an adult
- Prohibit **toys, strollers, pacifiers, spill-proof cups, baby bottles**, or similar personal items in animal-contact areas
- Prohibit **smoking or any hand-to-mouth tobacco product use** in animal-contact areas
- Discourage **hand-to-mouth behaviors** (e.g., thumb sucking)
- Discourage visitors from **kissing exhibit animals**
- Do not allow visitors **inside animal pens** or to have direct contact with **manure, urine, or soiled bedding**
- Prohibit **sitting, laying, or playing on the ground**
- Encourage **hand washing with soap and water** immediately upon soiling; **soap and water preferred over hand sanitizer**
- Keep **animal feed, water, waste, and tools** away from visitor reach
- Do not provide **animal food for visitors** to feed animals; however, if animal food is sold or provided, do so in a disposable container and never in edible containers
- Discourage **visitors with acute respiratory illnesses** from entering animal exhibits to prevent human-to-animal influenza transmission

*Adapted from Erdozain, et al. Zoonoses and Public Health. 2014 [Epub ahead of print]

Animal Exhibit Key Points

Animal health

- Animals should be monitored for signs of illness, cared for by licensed veterinarians, and receive all species-appropriate preventive care services, including vaccines and parasite control.

Human health

- Ensure adequate handwashing facilities at exit areas; trained staff should encourage visitors to wash hands.
- Partner with organizers to make sure animal exhibit facilities are adequately designed, cleaned, and maintained.

References

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