

## Reducing the Risk of Animal-to-Human Disease Transmission at Fairs, Achievement Days, and Petting Zoos

Russ Daly, DVM | Professor, SDSU Extension Veterinarian, State Public Health Veterinarian

Fairs and achievement days allow opportunities for those not involved with farming and ranching to gain a greater understanding of animal agriculture in our state.

However, exposure to animals in public settings can pose a risk of zoonotic (or animal-to-human) diseases. In the past, a number of human disease outbreaks have been associated with visitors to animal exhibits.

Enteric (intestinal) diseases are the most commonly reported health risks associated with animals in these settings. Other conditions such as ringworm, external and internal parasitisms, and other bacterial, viral, or fungal infections are also a source of concern. Injuries from kicks and bites, allergies, and rabies exposures also have been reported from contact with animals in public settings.

### Enteric (Intestinal) Zoonoses

By far the most important class of human disease that can be transmitted from animals is enteric, or intestinal disease. Agents of particular interest include *E. coli* 0157:H7, *Campylobacter*, *Salmonella*, and *Cryptosporidium*.

### Sources of Risk

These pathogens can be isolated from perfectly healthy animals, primarily—but not limited to—cattle, sheep, and goats. Organisms are shed through the animals' fecal material. The primary manner of transmission to humans is the fecal-oral route. These organisms are shed intermittently, so screening for these agents and removal of positive-testing animals is not effective, nor is antibiotic treatment of the animal. Because of the fecal-oral mode of transmission, several activities place people at risk for acquiring these infections:

1. Because it is common for an animal's fur, hair, skin, or saliva to become contaminated with these fecal organisms, transmission may occur when people pet, touch, or are licked by animals.
2. Touching surfaces that animals or manure may contact such as walls, floors, bedding, panels, or pen dividers also represents a source of infection to humans.
3. **Hand-to-mouth activities** such as eating, drinking, smoking, and use of pacifiers and sippy cups increase risk of infection.

### Who is at Risk?

Infections can occur in people of all ages, however three groups of individuals are at highest risk: 1) young (<5 years old) children; 2) the elderly; and 3) immunocompromised individuals (e.g. patients on immunosuppressive therapy, HIV/AIDS patients).

### Symptoms of Infection

Generally, symptoms involve abdominal cramps, nausea, diarrhea (often bloody), and sometimes vomiting, 2-5 days following exposure in the case of *E. coli* and *Campylobacter*. The most severe complication of *E. coli* 0157:H7 is Hemolytic Uremic Syndrome (HUS), which develops in approximately 6% of infected patients, and is characterized by anemia and renal failure.

### Recommendations

#### 1. Visitors to Animal Exhibits:

- Avoid direct contact with animal manure and surfaces on which animals have defecated.
- Refrain from hand-to-mouth activities while visiting animal exhibits: eating, drinking, smoking.
- Wash hands (see below) immediately after leaving

the exhibit, especially when any contact has occurred with animals, their bedding, or surfaces the animal can contact.

## 2. Parents:

- Closely supervise small children so that contact with animal manure and contaminated surfaces is minimized.
- Put away all bottles, pacifiers, sippy cups, and carrying toys while visiting animal exhibits.
- Wash children's hands (see below) after visiting animal exhibits or closely supervise their hand washing.
- Clean and disinfect stroller wheels after leaving animal exhibits (or leave stroller outside).

## 3. Animal Exhibitors

- Promptly clean up manure from public and animal areas.
- Continually monitor animals for illness or diarrhea; obtain veterinary care for ill animals and remove them from the exhibit.
- Refrain from eating or drinking in the barn. Set a good example for visitors.
- Wash your hands (see below) after working with your animal(s).

## Additional Recommendations for Fair Boards, Operators, and Staff

- Manage animal exhibit areas so that there are "transition areas" between animal and non-animal (e.g. food consumption and preparation) areas.
- Transition areas should include adequate size and numbers of hand washing stations and educational signs.
- Make sure the hand-washing stations are kept in good working order, continually stocked with soap and towels, and accessible to small children.
- Hot water is preferable, but cold water is acceptable if the soap will adequately lather.
- Common wash basins where water is used by more than one person are not adequate.
- Communicate the potential risk to visitors through the use of signage. Train staff to assist visitors and

explain the risk-reduction recommendations.

## Hand Washing

Hand washing is the single most effective means of reducing spread of disease from animals to humans in these settings.

- Hands should be washed after leaving animal areas and before eating or drinking.
- Soap and water is the preferred method of handwashing. If water is not available, hand sanitizers may be used. Effectiveness of hand sanitizers is limited by presence of organic matter, so visible contamination must be removed from the hands first. Hand sanitizers are effective against many—but not all—common disease agents (an example is *Cryptosporidium*).

## Proper Way to Wash Hands\*

1. Wet hands with running water.
2. Place soap into palms of hands.
3. Rub together to make a lather.
4. Scrub vigorously for 20 seconds. It helps to have small children sing a song while washing hands and not stop until the song is done.
5. Rinse soap off hands.
6. Dry hands with disposable towel.
7. Turn off water using the disposable towel if possible.

Animal exhibits at our fairs and achievement days are valuable and substantially safe—but not risk-free. Adequate hand-washing and common-sense safety measures will help ensure a safer experience for everyone involved.

## Reference

National Association of State Public Health Veterinarians, 2013. Compendium of Measures to Prevent Disease Associated with Animals in Public Settings. Available at: <http://nasphv.org/Documents/AnimalContactCompendium2013.pdf>