

BACKGROUND

This document provides information about potential zoonotic exposure while working with cattle or their products (e.g. fecal sample). The infectious agents listed here are not all inclusive, but provide the most common zoonotic agents seen in cattle. The safe work practices are provided as suggestions for staff and researchers who work with animals, in animal facilities, or with animal products.

ZOONOTIC PATHOGENS

There are a number of zoonotic diseases that can be spread from animal to human. In general, the risk of acquiring the diseases listed below is low, and in some cases, you are more likely to acquire an infection from other sources (e.g., contaminated food). However, you should remain vigilant and follow safe work practices and the instruction from your instructor or supervisor. Zoonotic diseases of concern include by are not limited to the following:

1. Rabies
 - a. Organisms: Rabies Virus
 - b. Clinical Signs
 - i. Animals - Depression or aggression; generalized neurological signs.
 - ii. Humans - Local pain at site of inoculation; headache, malaise, fever; anxiety, agitation, paralysis, coma.
 - c. Transmission: Saliva (via bites or open wounds), direct contact with CNS tissue.
 - d. Prevention: Wear gloves when in contact with saliva. Do not handle wildlife around the facility. Report any abnormal behavior in wildlife to facility manager immediately. Report any potential exposure to common potential carriers (e.g. bats, raccoons, skunks, foxes, etc.) to facility manager and seek medical evaluation immediately.
 - e. Animal Management: Animals are vaccinated for rabies prior to entering the herd.
2. Tuberculosis
 - a. Organism: *Mycobacteria tuberculosis*, *M bovis*, *M caprae*, *M. avium avium*
 - b. Clinical Signs
 - i. Animals – Pulmonary TB leading to chronic debilitation and coughing, and the potential for systemic spread to other organs
 - ii. Humans – Range of symptoms may be present including lung disease. Infections occur mainly in immunosuppressed individuals.
 - c. Transmission – Inhalation of aerosolized organisms
 - d. Animal Management: Animals are tested semiannually for tuberculosis.
3. Brucella
 - a. Organism: *Brucella abortus* and *B. suis*

- b. Clinical Signs
 - i. Animals – abortion
 - ii. Humans – Intermittent fever, headache, weakness, profuse sweating, chills, joint pain, localized infections
 - c. Transmission: Ingestion, direct contact via skin abrasions and mucous membranes, and inhalation; risk factors include contact with infected tissues, blood, urine, vaginal discharge, aborted fetuses;
 - d. Prevention: Wear gloves when handling aborted fetuses, fetal membranes, and uterine discharges.
 - e. Animal Management: Animals are tested semiannually for Brucella.
4. Leptospirosis
- a. Organisms: *Leptospira* spp.
 - b. Clinical Signs
 - i. Animals - Asymptomatic to decreased weight gain, anorexia, abortion, fever, diarrhea, and generalized neurological signs.
 - ii. Humans - Flu-like symptoms (fever, chills, headache, muscle ache, vomiting); liver and kidney failure.
 - c. Transmission: Ingestion, direct abraded skin, or mucous membrane contact with contaminated water, urine, aborted fetus, or vaginal discharge from infected animals; aerosolization can occur.
 - d. Animal Management: Animals are vaccinated for *Leptospira* prior to entering the herd.
5. Tetanus
- a. Organism: *Clostridium tetani*
 - b. Clinical Signs
 - i. Animals – Falling to the ground, arched back
 - ii. Humans - Spasms and stiffness in your jaw muscles, stiffness of your neck muscles, difficulty swallowing, stiffness of your abdominal muscles, painful body spasms lasting for several minutes
 - c. Transmission: Contamination of wounds with soil or foreign bodies carrying *C. tetani* spores
 - d. Animal Management: Animals are vaccinated for tetanus prior to entering the herd.
6. Dermatophytosis (Ringworm)
- a. Organisms: *Trichophyton verrucosum*
 - b. Clinical Signs
 - i. Animals - Dry, gray, hairless patches; common on the skin around the head and neck. Most common in heifers.
 - ii. Humans - Local itching, reddish skin, and hairlessness at the point of contact.
 - c. Transmission: Direct contact with skin lesions of infected animal. Can also be contracted via contaminated equipments and environmental objects (e.g. pen boards).
7. Gastrointestinal Infection
- a. Organisms: *Salmonella* spp., *Escherichia coli* (e.g., O157:H7), *Campylobacter jejuni*, *Campylobacter coli*, *Cryptosporidium parvum*.
 - b. Clinical Signs
 - i. Animals – Diarrhea.
 - ii. Humans – Diarrhea, nausea, vomiting, abdominal pain.
 - c. Transmission: Fecal-oral.

ANIMAL CARE PROGRAM

Healthy animals are less likely to transmit diseases. URI's comprehensive animal care program includes selection of the source of animals, quarantine of newly arrived animals where appropriate, preventative health programs and treatment of sick or injured animals. Where possible, animals are obtained from disease-free colonies or herds.

SAFE WORK PRACTICES

1. Good Personal Hygiene
 - a. Wash hands after working with animals or animal products and when leaving animal facilities.
 - b. Do not eat, drink, or use tobacco products in animal facilities.
 - c. Keep hands away from your mouth, nose, and eyes.
2. Personal Protective Equipment (PPE)
 - a. Use proper PPE for work setting as appropriate (e.g. coverall, facemask, boot covers). Maintain dedicated protective clothing and footwear while working with animals or in animal facilities. Do not wear protective clothing outside of animal facility or to other facilities.
 - b. Wear disposable gloves during procedures that increase the likelihood of exposure to zoonotic agents (e.g. during collection of blood from coccygeal (tail) vein, collecting fecal sample). Also wear disposable gloves for handling sick animals (i.e. animals showing clinical signs such as diarrhea or hair loss), or contaminated surfaces and/or equipment. Use disinfecting boot dips as applicable.
3. Animal Care
 - a. Isolate sick or infected animals.
 - b. Handle and care for sick or infected animals last.
4. Cleaning and Disinfection
 - a. Maintain clean, dry, and uncluttered animal areas and workspace.
 - b. Disinfect laboratory work surfaces after each use and after any spills when working with animal products. Use only disinfectants approved by facility managers and that are suitable for the potential agents identified in this information sheet.
 - c. Dispose of deceased animals, animal products, items contaminated by animal products, contaminated bedding, and laboratory waste in an approved manner.
- d. Proper Sharps Handling
- e. Work only with one uncapped needle at a time and immediately dispose after use in sharps receptacle.
- f. Avoid recapping needles whenever possible.
5. Medical Attention
 - a. Students: Contact URI Health Services (874-4763) for medical evaluation if you suspect any exposure, or if you develop any symptoms associated with infection with zoonotic agents (e.g., fever, malaise, diarrhea, abdominal pain). Alternatively, see your own personal health care provider if any injury or potential exposure to a zoonotic agent occurs.
 - b. Employees: Contact URI Environmental Health and Safety if you suspect any exposure, or if you develop any symptoms associated with infection with zoonotic agents (e.g., fever, malaise, diarrhea, abdominal pain). Alternatively, see your own personal health care provider if any injury or potential exposure to a zoonotic agent occurs.

- c. Notify the principal investigator or supervisor AND URI Environmental Health and Safety by completing an accident and injury report, http://www.uri.edu/publicsafety/EHS_incident_reporting_form.html

REFERENCES

Cornell Center for Animal Resources and Education.

http://www.research.cornell.edu/care/documents/OHS/zoonosis_information_sheet_cattle.pdf