

BACKGROUND

This document provides information about potential zoonotic exposure while working with or exposed to swine or their products (e.g., fecal sample). Swine can be vectors/reservoirs of pathogens that are zoonotic (i.e. can infect humans). The infectious agents listed here are not all inclusive, but provide the most common zoonotic agents seen in swine. 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. Brucella
 - a. Organism: *Brucella suis*
 - b. Clinical Signs
 - i. Animals – Abortion, temporary or permanent sterility, inflammation of testes, lameness, posterior paralysis
 - ii. Humans – Intermittent fever, headache, weakness, profuse sweating, chills, joint pain, localized infections
 - c. Transmission: Through 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.
2. 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.
 - 3. Erysipelas
 - a. Organisms: *Erysipelas rhusiopathiae*
 - b. Clinical Signs
 - i. Animals - Fever, prostration, anorexia, vomiting, reluctance to walk, classic diamond-shaped lesions
 - ii. Humans - Skin lesion with intense burning sensation.
 - c. Transmission: Shed in the feces, urine or oronasal secretions. Direct contact with infected animals through skin wounds.
 - 4. Mycoplasma
 - a. Organism: *Mycoplasma hyopneumoniae*
 - b. Clinical Signs
 - i. Animals – Coughing, retarded growth rate
 - ii. Humans – May cause upper respiratory tract infection
 - c. Transmission: Direct contact with infected pigs. Humans have been implicated as transmitting disease from pig to pig.
 - d. Animal Management: Animals are tested periodically.
 - 5. Swine influenza
 - a. Organism: Influenza virus
 - b. Clinical Signs
 - i. Animals – Sudden onset of fever, depression, coughing (barking), discharge from the nose or eyes, sneezing, difficulty breathing, anorexia
 - ii. Humans – Similar to seasonal influenza (fever, lethargy, lack of appetite, coughing, nausea, vomiting, diarrhea)
 - c. Transmission: Aerosolization or direct exposure to respiratory secretions from infected animals
 - 6. Gastrointestinal Infection
 - a. Organisms: *Salmonella* spp., *Escherichia coli* (e.g., O157:H7), *Campylobacter* spp., *Yersinia enterocolitica*, *Cryptosporidium parvum*, *Giardia intestinalis*, *Balantidium coli*.
 - b. Clinical Signs
 - i. Animals – Diarrhea.
 - ii. Humans – Diarrhea, nausea, vomiting, abdominal pain.
 - c. Transmission: Fecal-oral.
3. NOTE: Other zoonotic pathogens (e.g., Rabies, Hepatitis-E, *Streptococcus suis* & *Trichuris suis*) may also occur.

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 tail vein, collecting fecal sample). Also wear disposable gloves for handling sick animals, or contaminated surfaces and/or equipment.
 - c. 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.
 - c. Dispose of deceased animals, animal products, items contaminated by animal products, contaminated bedding, and laboratory waste in a facility approved manner.
5. Proper Sharps Handling
 - a. Work only with one uncapped needle at a time and immediately dispose after use in sharps receptacle.
 - b. Avoid recapping needles whenever possible.
6. 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

- CDC, Diseases from Farm Animals: http://www.cdc.gov/healthypets/animals/farm_animals.htm
CDC, Key Facts about Swine Influenza: http://www.cdc.gov/flu/swineflu/key_facts.htm