



Potential Zoonoses Associated with Swine

The intent of this Information Sheet is to describe the most common zoonotic agents seen in swine and the safe work practices suggested to mitigate the exposure to these pathogens.

TABLE OF CONTENTS

Introduction
Zoonotic Pathogens
Safe Work Practices
References

-
1. **Introduction:** This document provides information about potential zoonotic exposure while working with swine or their products (e.g. fecal sample). The infectious agents listed here are not all inclusive, but are the most common zoonotic agents likely to be present in domestic swine. The safe work practices are provided as suggestions for staff and researchers who work with animals, in animal facilities, or with animal products.
 2. **Zoonotic Pathogens**
 - a. Gastrointestinal Infection
 - i. Organisms: *Salmonella* spp., *Escherichia coli*, *Campylobacter* spp., *Yersinia enterocolitica*, *Cryptosporidium parvum*, *Giardia intestinalis*, *Balantidium coli*.
 - ii. Clinical Signs
 1. Animals – Diarrhea.
 2. Humans – Diarrhea, nausea, vomiting, abdominal pain.
 - iii. Transmission: Fecal-oral.
 - b. Dermatophytosis (Ringworm)
 - i. Organisms: *Microsporum nanum*, *Microsporum canis*, *Trichophyton mentagrophytes* and *T. verrucosum*
 - ii. Clinical Signs
 1. Animals - Crusty, dark, hairless patches; common on the skin around the head and neck; thorax, flank, behind the ears, on the legs.
 2. Humans - Local itching, reddish skin, and hairlessness at the point of contact.
 - iii. Transmission: Direct contact with skin lesions of infected animal. Can also be contracted via contaminated equipments and environmental objects (e.g. pen boards).
 - c. Leptospirosis
 - i. Organisms: *Leptospira* spp.
 - ii. Clinical Signs

1. Animals - Asymptomatic to decreased weight gain, anorexia, abortion, fever, diarrhea, and generalized neurological signs.
 2. Humans - Flu-like symptoms (fever, chills, headache, muscle ache, vomiting); liver and kidney failure.
 - iii. 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. Swine influenza
- i. Organism: Influenza virus
 - ii. Clinical Signs
 1. Animals – Sudden onset of fever, depression, coughing (barking), discharge from the nose or eyes, sneezing, difficulty breathing, anorexia
 2. Humans – Similar to seasonal influenza (fever, lethargy, lack of appetite, coughing, nausea, vomiting, diarrhea)
 - iii. Transmission: Aerosolization or direct exposure to respiratory secretions from infected animals

NOTE: Other zoonotic pathogens (e.g., Rabies, *Hepatitis-E*, *Streptococcus suis*, *Erysipelas rhusiopathiae*, *Brucella suis*, & *Trichuris suis*) may occur in outdoor herds or those acquired from non-commercial sources. Most research swine at Cornell are produced within a closed colony and are housed indoors; therefore, these pathogens are uncommon.

3. Safe Work Practices

- a. Good Personal Hygiene
 - i. Wash hands after working with animals or animal products and when leaving animal facilities. For further guidelines, refer to ACUP 713 Hygiene-Hand Washing.
 - ii. Do not eat, drink, or use tobacco products in animal facilities.
- b. Personal Protective Equipment (PPE)
 - i. 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.
 - ii. 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 (i.e. animals showing clinical signs such as diarrhea or hair loss), or contaminated surfaces and/or equipment.
 - iii. Use disinfecting boot dips as applicable.
 - iv. For further guidelines, refer to ACUP 715 Personal Protective Equipment.
- c. Animal Care
 - i. Isolate sick or infected animals.
 - ii. Handle and care for sick or infected animals last.
- d. Cleaning and Disinfection
 - i. Maintain clean, dry, and uncluttered animal areas and workspace.
 - ii. 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.
- iii. Dispose of deceased animals, animal products, items contaminated by animal products, contaminated bedding, and laboratory waste in an approved manner.
- e. Proper Sharps Handling
 - i. Work only with one uncapped needle at a time and immediately dispose of after use in sharps receptacle.
 - ii. Avoid recapping needles whenever possible.
 - iii. For further guidelines, refer to ACUP 711 Sharps Precautions.
 - f. Medical Attention
 - i. Contact Gannett Occupational Medicine office (255-6960) 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.
 - ii. Notify the principal investigator or supervisor and complete an accident and injury report. (See references for report link).
 - g. Allergies
 - i. Handling of bedding and animal products may aggravate allergies
 - 1. Proper use of PPE reduces, but does not eliminate, the risk of developing allergies. Refer to the Allergy Prevention web page (see References) for further information.

4. References

- a. ACUP 711 Sharps Precautions:
<http://www.research.cornell.edu/care/documents/ACUPs/ACUP711.pdf>
- b. ACUP 713 Hygiene-Hand Washing:
<http://www.research.cornell.edu/care/documents/ACUPs/ACUP713.pdf>
- c. ACUP 715 Personal Protective Equipment:
<http://www.research.cornell.edu/care/documents/ACUPs/ACUP715.pdf>
- d. Allergen Prevention:
<http://www.research.cornell.edu/Care/documents/OHS/AllergyPreventionFactSheet.pdf>
- e. Gannett Health Services, (607) 255-5155 or www.gannett.cornell.edu/
- f. Cornell Environmental Health and Safety, Accident Report:
<http://www.ehs.cornell.edu/forms/>
- g. CDC, Diseases From Farm Animals:
http://www.cdc.gov/healthypets/animals/farm_animals.htm
- h. CDC, Key Facts about Swine Influenza:
http://www.cdc.gov/flu/swineflu/key_facts.htm