Potential Zoonoses Associated with Small Ruminants

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

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1. Introduction: This document provides information about potential exposure to zoonotic organisms while working with small ruminants 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 small ruminants. The safe work practices are provided as guidelines 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., *Cryptosporidium parvum*.
      ii. Clinical Signs
          1. Animals – Diarrhea.
      iii. Transmission: Accidental ingestion of fecal-contaminated materials.
      iv. Prevention: Good personal hygiene, wear gloves when working with animals with diarrhea and wash hands after removing gloves and before leaving the animal facility.
   b. Rabies
      i. Organism: Rabies Virus
      ii. Clinical Signs:
          1. Animals - Depression or aggression; generalized neurological signs.
          2. Humans - Local pain at site of inoculation; headache, malaise, fever; anxiety, agitation, paralysis, coma.
      iii. Transmission: Saliva (via bites or open wounds), direct contact with central nervous system tissue (e.g., brain, spinal cord).
      iv. 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. Seek medical evaluation immediately after any possible exposure to common potential carriers of the virus (e.g. bats, raccoons, skunks, foxes, etc.), and report the presence of these animals to the facility manager.

c. Contagious Ecthyma (Orf)
   i. Organism: Parapoxvirus
   ii. Clinical Signs:
       1. Animals – vesicles and scabs around the mouth, and nostrils of lambs, or on the udder and teats of milking females.
       2. Humans – Skin blisters, pustules and scabs which usually resolve on their own, but secondary bacterial infection may occur.
   iii. Transmission: Direct contact with skin lesions of infected animals or contaminated environment.
   iv. Prevention: Wear gloves when in contact with infected animals or their environment. Maintain dedicated clothing (e.g. coveralls and boots) and equipment when working with infected animals (clothing and equipment may act as vector to spread infection to other areas).

d. Coxiellosis (Q Fever)
   i. Organism: Coxiella burnetii
   ii. Clinical Signs:
       1. Animals – Asymptomatic or may cause abortion.
       2. Humans – Acute fever, headache, weakness, fatigue, pneumonia, hepatitis, heart valve infection, or may be asymptomatic.
   iii. Transmission: Inhalation or accidental ingestion following exposure to placenta, amniotic fluid, milk or urine.
   iv. Prevention: Wear gloves when in contact with placenta or amniotic fluid, wash hands after handling animals or being in their environment. Do not drink raw, unpasteurized milk. Wear N95 respirator during procedures that could aerosolize organism (e.g. changing bedding).

3. Safe Work Practices
   a. Good Personal Hygiene
      1. Wash hands after working with animals or animal products and when leaving animal facilities. For further instruction refer to CARE SOP 713 Hygiene-Hand Washing.
      ii. Do not eat, drink, or use tobacco products in animal facilities.
      iii. Keep hands away from your mouth, nose, and eyes.
   b. Personal Protective Equipment (PPE)
      1. 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.
      ii. Wear disposable gloves during procedures that increase the likelihood of exposure to zoonotic agents (e.g. handling animals, fecal material, saliva, bedding). Also wear disposable gloves for handling sick animals, or contaminated surfaces and/or equipment.
      iii. Use disinfecting boot dips as applicable.
   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.
   iii. Dispose of deceased animals, animal products, items contaminated by animal products, contaminated bedding, and laboratory waste in a facility 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 CARE SOP 711.01-Sharps Precautions.

f. Medical Attention
   i. Contact Cornell Health Occupational Medicine office (255-6960) for medical evaluation if you suspect any zoonotic 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: http://prp.ehs.cornell.edu/Acc-Inj/.

g. Allergies
   i. Handling of bedding, hair, and fur may aggravate allergies.
   ii. 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. CARE SOP 713 Hygiene-Hand Washing:
   b. CARE SOP 711.01-Sharps Precautions:
   c. Allergen Prevention:
      http://www.research.cornell.edu/Care/documents/OHS/AllergyPreventionFactSheet.pdf
   d. Cornell Health, (607) 255-5155 or https://health.cornell.edu/