

Zoonoses Associated with Wild Ungulates

This document provides information on various diseases that can be passed from deer, moose, elk, duikers, caribou and bighorn sheep to humans. Many times these diseases do not make the animal appear sick but can cause serious illness in humans. Persons with specific medical conditions such as an immunodeficiency and pregnancy may be at higher risk of developing disease or complications from a zoonotic disease and should consult with their physician before working with wild ungulates. The zoonotic diseases associated with wild cervids and bighorn sheep include Q fever, chlamydiosis, leptospirosis, campylobacteriosis, salmonellosis, cryptosporidiosis, pathogenic *E. coli* infection, yersiniosis and giardiasis.

Tuberculosis and brucellosis are potential zoonoses in deer, elk and caribou but due to a federal eradication program for *Mycobacterium bovis*, *Brucella abortus*, *Brucella suis* and *Brucella melitensis* in cattle and captive deer, these diseases are uncommon in the United States. Tuberculosis is present in certain populations of white-tail deer and elk in the North Central United States and brucellosis is present in elk and bison in the greater Yellowstone area of Montana, Wyoming and Idaho. Wild caribou have been reported to carry *Brucella suis*. Captive cervid populations are subject to state and federal tuberculosis and brucellosis control measures. Chronic wasting disease is a prion disease in deer that causes spongiform encephalitis similar to mad cow disease in cattle. It is not present in the Pacific Northwest and it has not been shown to infect people.

Coxiella burnetti and *Chlamydophila abortus* are bacterial agents associated with abortion in pregnant sheep, goats and cattle. These agents may also be carried by deer, moose, wild sheep and elk and may or may not result in disease. There is an especially high concentration of these agents at the time that the animals give birth, so particular care needs to be used in handling newborn animals, placental tissues and birth fluids. These agents can be acquired by exposure to placental membranes and fetuses from infected animals and by aerosol. *Chlamydophila* infections in pregnant women are associated with infectious abortion or miscarriage. Persons who are pregnant, have valvular heart disease or other chronic disease conditions should consult their physician before working with pregnant or birthing cervids or sheep.

Leptospirosis causes reproductive failure, anemia, liver and kidney disease in ruminants and is typically shed in the urine of infected animals. People acquire the infection by oral ingestion and skin contact with contaminated urine, placenta, and fetal tissues. The organism can infect hosts through abraded skin. Salmonellosis, campylobacteriosis, listeriosis, yersiniosis, pathogenic *E. coli* infections, cryptosporidiosis and giardiasis are acquired by contact and accidental oral ingestion of fecal material from infected animals. Animals infected with these diseases typically have diarrhea but some animals may show no symptoms of disease. Any animal with diarrhea should be suspect of having a zoonotic disease.

Individuals with exposure to animals and animal environments may develop allergic reactions to animal proteins (allergens). Approximately 20-30 percent of individuals working with laboratory animals will develop an allergic reaction to animal proteins and 5-10 percent of individuals will develop asthma. Personnel may be exposed to allergens through inhalation and contact with skin, eyes and mucous membranes. Animal allergens may be present in animal dander, hair, skin, urine, saliva, serum and any

contaminated feed or bedding materials. Risk factors for developing an allergic reaction include history of previous allergies to animals. The signs and symptoms of an allergic reaction are nasal discharge and congestion, conjunctivitis, tearing and eye itching, skin redness, rash or hives and lower airway symptoms (coughing, wheezing and shortness of breath). Individuals with symptoms suggestive of an allergic reaction related to a workplace allergen should report their concerns to their supervisor and consult a physician.

Transmission of zoonotic diseases from animals is primarily by direct contact, contact with contaminated bedding or materials, oral ingestion or inhalation of aerosolized fluids. We can protect ourselves from most diseases by using the following procedures:

- Handle animals safely to avoid injury.
- Do not eat, drink, apply makeup or use tobacco products while handling animals or in animal housing areas.
- Wear gloves when handling ill animals, animal tissues, body fluids and waste and wash hands after contact.
- Wear respiratory protection when appropriate.
- Wear dedicated protective clothing such as a coat or coveralls and shoe-covers or boots when handling animals. Launder the soiled clothing separate from your personal clothes and preferably at the animal facility.
- Keep animal areas clean and disinfect equipment after using it on animals or in animal areas.
- Most importantly, familiarize yourself about the animals that you will be working with and the potential zoonotic diseases associated with each species. If at any time, you suspect that you have acquired a zoonotic disease, inform your supervisor and seek medical care.

If you have further questions, contact:

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