

Occupational Health and Safety Working with Sheep

When working with sheep, you should be familiar with the following safe practices and potential health risks:

Potential Physical Injury

Sheep are large domestic animals that are normally docile. However, they can become dangerous especially when isolated from their flock. Jumping is common in sheep. They can jump with enough force to break a handler's legs. Butting is another defensive activity of sheep. The rule of handling is to never turn your back on the animal when in their pens. Ergonomic injuries such as back strain can occur from handling and restraining sheep due to their size and strength. Individuals with pre-existing back or joint problems may need assistance when working with sheep.

Staying Healthy

Wash your hands after animal handling and use. The most common way to contract a zoonotic infection is to place the infectious material directly in your own mouth. Always wash your hands after handling an animal or anything that the animal has touched. Never smoke, drink, or eat in the animal room, or before washing your hands. Wear protective clothing and appropriate personal protective equipment

Allergy to Animals

Personnel may be allergic to any animal species. The allergens are proteins that are excreted in the animals' saliva, urine, and/or from various glands associated with the skin. A person who is already allergic to one allergen (animal or otherwise) has a greater chance of becoming allergic to a new allergen than a person that has no allergies at all. The most effective way to control and prevent allergies is to minimize exposure to the allergens.

Rabies

Rabies virus (rhabdovirus) can infect almost any mammal. The source of infection to people is an infected animal. The virus is shed in saliva 1-14 days before clinical symptoms develop. Any random-source (animal with an unknown clinical history) or wild animal exhibiting central nervous system signs that are progressive should be considered suspect for rabies. Transmission is through direct contact with saliva, mucus membranes, or blood, e.g. bite, or saliva on an open wound. The incubation period is from 2 to 8 weeks or even longer. Symptoms are pain at the site of the bite followed by numbness. The skin becomes quite sensitive to temperature changes and there are laryngeal spasms. Muscle spasms and extreme excitability are present and convulsions occur. Rabies in unvaccinated people is almost invariably fatal.

Q-Fever

This rickettsial disease, caused by *Coxiella burnetii*, is most commonly associated with sheep, although goats, cattle, and other mammals can be sources of infection. Infected ruminants are usually asymptomatic. The organism is shed in the urine, feces, milk, and most importantly, birth products (placenta, amniotic fluid, blood and soiled bedding) of infected animals. Q-fever is spread by aerosolization of infected body fluids. Disease transmission can be reduced by careful disposal of birth products. In most cases, Q-fever is manifested by flu-like symptoms that usually resolve within 2 weeks and can be sometimes misdiagnosed as the flu. However, it can be severe in those with other health issues and can lead to pulmonary and cardiac complications. Respiratory protection should be used during the lambing process.

Contagious Ecthyma (Orf)

This poxviral disease is known as contagious ecthyma or soremouth in sheep and goats, and orf in people. In ruminants, it is evidenced by exudative (oozing) lesions found on the muzzle, eyelids, oral cavity, feet or external genitalia. It is more common in younger animals. The disease in ruminants is contagious to humans and other animals. Infected sheep or goats are the source of infection to people. Transmission can be by direct contact with lesions or indirectly by contaminated fomites (hair, clothing). No person-to-person contact has been reported. This is a self-limiting infection, which is usually found on the hands and consists of painful nodules (bumps) and cutaneous ulcerative lesions, and usually lasts 1-2 months.

Campylobacteriosis

Organisms of the genus *Campylobacter* have been recognized as a leading cause of diarrhea in humans and animals in recent years. Numerous cases involving the zoonotic transmission of the organisms in laboratory animals have been described. Young animals readily acquire the infection and shed the organism. Young animals often are implicated as the source of zoonotic transmission. The organism is transmitted by the fecal-oral route via contaminated food or water, or by direct contact with infected animals.

Campylobacter produces an acute gastrointestinal illness, which, in most cases, is brief and self-limiting. The clinical signs of *Campylobacter enteritis* include watery diarrhea, sometimes with mucus, blood and leukocytes; abdominal pain; fever; and nausea and vomiting. Unusual complications of the disease include typhoid-like syndrome, reactive arthritis, hepatitis, interstitial nephritis, hemolytic-uremic syndrome, febrile convulsions, meningitis, and Guillain-Barré syndrome.

Cryptosporidiosis

Cryptosporidium are common protozoans that cause enteritis and diarrhea in a number of domestic species. Cross-infectivity studies have shown a lack of host specificity for many of the organisms. Cryptosporidiosis is common in young animals, particularly ruminants and piglets.

Transmission is usually by the fecal–oral route but can also occur by aerosols. Sporulated oocysts are shed in the feces and are immediately infectious; they may survive for 2 to 6 months in a moist environment. Direct transmission between animals or humans is common. An estimated 50% of dairy calves shed oocysts; calves often spread cryptosporidiosis to each other or to humans.

In humans, the disease is characterized by cramping, abdominal pain, profuse watery diarrhea, anorexia, weight loss, and malaise. Symptoms can wax and wane for up to 30 days, with eventual resolution. However, in immunocompromised persons, the disease can have a prolonged course that contributes to death.

Colibacillosis

Escherichia coli is a normal component of the flora in the large intestine of warm-blooded animals. The pathogenic strains, which cause enteric disease, are grouped into six categories. These categories differ in their pathogenesis and virulence properties, and each comprises a distinct group of O:H serotypes.

In terms of zoonoses, the most important category is the enterohemorrhagic, which is also the most severe. Cattle are considered the primary reservoir for the enterohemorrhagic group. The principal etiologic agent of this colibacillosis is *E. coli* O157:H7.

In man, the incubation period varies from two to nine days. The appearance of the disease ranges from a slight case of diarrhea to severe hemorrhagic colitis, with strong abdominal pains and little or no fever. At

the outset, diarrhea is watery but later becomes hemorrhagic, either with traces of blood or highly hemorrhagic stools. Diarrhea lasts an average of four days and about 50% of patients experience vomiting. *E. coli* O157:H7 is feared primarily because of complications, which can include hemolytic uremic syndrome, or thrombotic thrombocytopenic purpura.

Giardiasis

Giardia is a flagellate protozoan that lives in the anterior portion of the host's small intestine. Giardiasis is endemic throughout the world. The infection has been confirmed in a wide variety of domestic and wild mammal species. The giardias that infect man and domestic and wild animals are morphologically identical, and cross-species infections can occur. Surveys from all over the world have found prevalences of 5% to 90% in calves.

In man, the incubation period is generally 3-25 days. The symptomatology consists mainly of diarrhea and bloating, frequently accompanied by abdominal pain. Nausea and vomiting occur less frequently. The acute phase of the disease lasts 3-4 days. In some persons, giardiasis may be a prolonged illness, with episodes of recurring diarrhea and flatulence, urticaria, and intolerance of certain foods.

Leptospirosis

This is a contagious bacterial disease of animals and humans due to infection with *Leptospira interrogans* species. Domestic livestock are among the animals that are considered reservoir hosts. Leptospire are shed in the urine of reservoir animals, which often remain asymptomatic and carry the organism in their renal tubules for years. The usual mode of transmission occurs through abraded skin or mucous membranes, and is often related to direct contact with urine or tissues of infected animals.

Clinical symptoms may be severe, mild or absent, and may cause a wide variety of symptoms including fever, myalgia, headache, chills, icterus and conjunctival suffusion.

Salmonellosis

Enteric infection with *Salmonella spp.* has a worldwide distribution among humans and animals. The organism is transmitted by the fecal-oral route, via direct contact with infected animals.

Salmonella infection of animal origin produces a sudden onset of fever, myalgias, cephalalgia, and malaise. The main symptoms consist of abdominal pain, nausea, vomiting, and diarrhea. Dehydration may be serious. The presence and severity of symptoms depends on the infecting dose. Typically there is watery diarrhea for about ten days, possibly leading to dehydration, with abdominal pain and low-grade fever. Septicemia and focal infections occur as secondary complications. Focal infections can be localized in any tissue of the body, so the disease has diverse manifestations.