Diseases Communicable From Animals to Humans-Zoonoses

**General Information:**

Humans may be susceptible to infectious diseases suffered by animals. Infectious diseases transmitted from animals to humans are called zoonotic diseases. In many cases the animal shows little, if any, sign of illness. A bacterium from the normal flora of a healthy animal may cause a serious disorder in a person exposed to it.

While the animals have developed a “resistance” to these microorganisms, humans with no previous exposure to the agent may lack this protective immunity. Therefore, one should always be aware of the possible consequences of working with animals and take appropriate precautions to minimize the risk of infection. In the event that an individual becomes ill, it is important that they inform their personal physician that they work with animals.

Some common sense steps can be taken to decrease the risk of infection. These include cleanliness in routine tasks around animals and hand washing after completion of each animal-related task. You can protect yourself against contact exposure by wearing gloves; taking enough time to give injections properly; never recapping, clipping or breaking needles; discarding syringes and needles in containers designed for proper disposal; and inoculation of animals in teams of two. Eating and drinking are not allowed in animal rooms. Break rooms are provided for these activities.

Procedures such as necropsy, bedding changes, inoculations with certain agents and tissue and fluid sampling may require using physical containment devices, respirators or other personal safety gear as indicated.

**If You Work with Rodents (e.g. Guinea Pigs, Hamsters, Mice and /or Rats):**

If you work with rodents (e.g. guinea pigs, hamsters, mice and /or rats) you should be aware that contact with rodents or rodent tissue requires precautions against some diseases such as lymphocytic choriomeningitis (LCM). LCM is a rodent neurological virus that can be transmitted to humans. Attention should also be paid to the possibility of allergic reactions. An additional concern for investigators coming in contact with wild rodents is hantavirus. Wearing gloves and good thorough hand washing after handling the animals and /or their bedding, feces, etc. protects against exposure to infectious agents.

**If You Work with Birds, Rabbits or Reptiles and Amphibians:**

Birds can carry diseases such as psittacosis. Only inspected and properly quarantined birds should be used in research or teaching. Individuals can also be allergic to birds or avian feathers.

Individuals working with rabbits should be aware of possible allergic reactions.

Salmonella is frequently harbored in turtles and other reptiles and amphibians. The use of gloves and good hand-washing is always recommended after contact with reptiles and amphibians.

The animal care program will not maintain or have access to any medical records. The University’s occupational health program recommends tetanus vaccinations for all animal users. During training animal users are provided information on tetanus and where to go for vaccination. Animal users are instructed, both in the Occupational Health Brochure and via signs posted throughout the animal facilities, that there is an official reporting system for all injuries which may occur on the job.

All personnel should also be aware that laboratory animals (particularly rats, rabbits, guinea pigs, hamsters) are sources of potential allergens to sensitized persons.

**Information on Some Additional Zoonotic Diseases:**

1. **Rat Bite Fever (RBF)**

The disease may be caused by Streptobacillus moniliformis or Spirillum minus. The usual source of infection is the bite of a rodent. RBF may occur in humans one day to six weeks following a bite. Signs include regional inflammation and lymphadenopathy, headache, fever, chills, and a macular rash. If untreated, further complications may ensue.

1. **Lymphocytic Choriomeningitis (LCM)**

LCM occurs as a latent virus in the mouse which is easily transmitted from animals to humans. Mice and hamsters are asymptomatic carriers. Human infections have resulted from improper handling of infected tissues, e.g., directly from feces, urine or inhaling aerosolized dust from animal rooms. LCM often presents as a mild influenza like syndrome with or without central nervous system involvement.

1. **Leptospirosis**

Leptospira are found in a wide variety of mammals and reptiles. Hamsters, young guinea pigs and gerbils are especially susceptible. Rodents can shed leptospiras throughout their life without clinical signs. L. ballum is the most common serovar in rats, mice, and rabbits. All excrement and secretions of infected animal should be considered infective. Leptospirosis in humans may range from unapparent disease to death.

1. **Tuberculosis**

The natural reservoir hosts include M. avian (birds), M. tuberculosis (humans), and various species in fish (M. marincum, M. pisicum, M. fortuitum). Transmission occurs via aerosol from infected animals or by exposure to their dust bedding. Symptoms in man include anorexia, weight loss, fatigue, fever, chills and cachexia and other symptoms dependent upon the organ system involved. Tuberculosis contracted from fish have been largely integumentary.

1. **Chlamydiosis or Psittacosis**

Avian species are the main reservoir of C. psittaci infection although the organism has a broad host range including rabbits, mice, guinea pigs, cats, lambs, calves, and frogs. Transmission may occur by aerosolization of dried fecal materials which contain organisms from enteric shedding. Control should be maintained by introduction of animals know to be free of the disease. Animals of unknown background should undergo chlorotetracycline chemoprophylaxis. Staff should wear protective clothing such as masks, gloves and lab coats. Psittacosis in humans may occur acutely or have an insidious onset. Signs include fever, chills, anorexia, headache and a respiratory component. A toxic or septic form of the disease also exists.

1. **Salmonella**

Salmonella inhabits the intestinal tract of many animals. As many as 94% of all reptiles harbor Salmonella sp. Endemic salmonellosis in commercial raised guinea pigs has also been a source of infection. Environmental contamination, feeds of animal by-products and the house mouse all serve as reservoirs of infection. Both humans and animals are carriers and periodic shedders of salmonella. Clinically, salmonellosis in humans presents as gastroenteritis with sudden onset, diarrhea, nausea, abdominal pain and fever.

1. **Dermatomycoses (Ringworm)**

Trichophyton mentagrophytes is the organism most frequently isolated with rodent associated infections. It may be asymptomatic in rodents and only recognized when laboratory personnel become infected. Transmission occurs by direct or indirect contact with visibly infected animals, asymptomatic carriers, bedding or fungi present in the air or dust. Control is by regular cleaning of cages and rooms. Clinically, the infection may manifest as skin lesions with erythema, scaling, and occasionally vesicles or as nail thickening and discoloration.

1. **Allergies**

Many laboratory animals have been shown to be responsible for allergic skin and respiratory reactions in numerous laboratory personnel. Methods to reduce exposure to offending allergens include reduced animal contact time and increased room ventilation and cleaning schedule. The use of filter caps on animal cages, exhaust hoods, protective clothing and masks have also been implemented.

**Prevention of Zoonotic Diseases:**

**Proper Personal Hygiene**

* 1. Wash hands before and after animal handling.
  2. Do not eat or drink in the animal rooms.
  3. Avoid any unnecessary work time in the animal rooms.
  4. Wear laboratory coat or coveralls when handling animals.
  5. Avoid handling sick animals or animals with lesions unless gloved, or unless other protective wear is utilized.
  6. Wear a mask if you are allergic or if dust is present (note environment maintenance).
  7. If you are sick, **DO NOT** enter lab animal facilities.
  8. Routinely wear gloves when cleaning animal rooms.
  9. Note progression of any illness and your current history relevant to animal work.
  10. Inform physician of your animal related activities.

**Environmental Maintenance**

* 1. Keep animal rooms clean.
  2. Avoid urine and fecal build-up. Dry feces result in fecal dust which may be inhaled.
  3. Clean rooms have a lower likelihood of horizontal or zoonotic transfer.
     1. Proper ventilation protects the animal and workers. Use hood or cage filters when necessary.
     2. Clean litter from floors. Litter attracts vermin which may introduce a zoonotic disease into the facility.

**Colony Maintenance**

* 1. Observe animals for health status on a daily basis.
  2. Report sick or dead animals.
  3. Note health problems.
  4. Take extra precautions in cleaning, etc.
  5. Isolate affected animals.
  6. Record history or progression of animal disease.
  7. Bring only healthy animals with a known history into an existing colony.

**Other Potential Zoonotic Diseases:**

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| Pox Viruses | Shigellosis | Contagious Ecthyma |
| Erysipeloid | Hemorrhagic Fever | Streptococci |
| Yellow Fever | Tularemia | Measles |
| Pseudomonas | Hepatitis | Staphylococcus |
| Herpesvirus B | Toxoplasmosis | Marburg Virus (African Hemorrhagic Fever) |
| Disease Amebiasis | Cat Scratch Disease | Rabies |
| Balantidiasis | Q Fever | Giardiasis |
| Rocky Mountain Spotted Fever | Cryptosporidiosis | Helminths |
| Brucellosis | Murine Typhus | Cestodiasis |
| Plague | Listeriosis | Campylobacteriosis |