



Zoonoses Associated with Laboratory-reared Rodents

Summary

Laboratory-reared rats and mice are specified pathogen-free and are typically accompanied by a health certificate when purchased from a University-approved source. Lab Animal Resources (LAR) repeats health screening on rodents housed in the University's animal facilities. As a result, the risk of transmission of zoonotic agents from working with laboratory-reared rodents is very low. However, human bite wounds and skin scratches may become infected and must be treated through immediate cleansing and follow-up through University Health Services.

Zoonotic Agents of Concern

Lymphocytic Choriomeningitis Virus (LCMV)

Testing of purpose-bred mice and murine tumors and cell lines has significantly decreased the potential for transmission of LCMV in the laboratory setting. However, to reduce the potential for transmission, vigilance in screening all murine tissues is required. Tumors may acquire LCMV as an adventitious virus without obvious effects on the tumor. The virus may survive freezing and storage in liquid nitrogen for long periods. Humans become infected by inhaling infectious aerosolized particles of rodent urine, feces, or saliva; by ingesting food contaminated with virus; by contamination of mucous membranes with infected body fluids; or by directly exposing cuts or other open wounds to virus-infected blood. Symptoms are flu-like and include fever, headache, muscle pain and malaise and may progress to more serious illness including meningoencephalitis, lymphadenopathy and neurologic impacts.

Rat-Bite Fever

The risk of rat-bite fever from *Streptobacillus moniliformis* or *Spirillum minor* inoculation into the bite wound is minimal due to the eradication of the causative agent from commercial rat colonies. The organisms are found in the respiratory tract and mouths of rats and are typically transmitted via bite wounds. Symptoms develop within 3-10 days, are flu-like and include fever, chills, muscle pain and headache. A rash may develop after fever onset. Without treatment, rat-bite fever can be serious or potentially fatal. Severe illnesses can include infections involving the heart, brain, lungs and abscesses in internal organs.

Campylobacter

Transmission of campylobacter species from animals to humans is through the fecal-oral route. Symptoms develop within two to five days after exposure and include diarrhea, vomiting, abdominal pain, fever, nausea.

Prevention

Wear Protective Clothing: Laboratory coat, disposable gloves (preferably nitrile), bonnet and surgical mask are required when working in rodent housing and procedure areas.

Hand washing is the most important measure you can take to prevent transmission of zoonotic organisms. Wash your hands with warm water and soap after handling rodents, soiled bedding or soiled cages.

Report injuries or illnesses to your supervisor and University Health Services.

Cleanse bite and scratch wounds immediately with soap and warm water. Report rodent bites and scratches to University Health Services.

Always tell your treating physician about your research. Regardless of your symptoms, tell your physician about the work you do in the laboratory. Persons with weakened immune systems should seek advice from University Health Services practitioners on risks associated with exposure to zoonotic agents in the animal laboratory.

References

Centers for Disease Control and Prevention. 2014 <http://www.cdc.gov/rat-bite-fever/index.html>

Fleming, DO and Hunt DL, eds. 2006. Biological Safety: Principles and Practices, 4th ed. Washington, D.C: ASM.