

MEDICAL MANAGEMENT PLAN

Lymphocytic choriomeningitis virus (LCMV) lab-adapted strains requiring BSL-2/ABSL-2

Below is a protocol for accidental exposure to LCMV lab-adapted strains requiring BSL-2/ABSL-2.

POST-EXPOSURE CONTACTS

Contact UW Employee Health Center Nurse	206-685-1026 (M-F, 8am-5pm)
If After-Hours, call UW Medical Center Paging Operator and request the Campus Health Physician	206-906-8082
Contact UW Environmental Health & Safety Dept. for assistance	206-221-7770 (M-F, 8am-5pm)
Call 911 for a life-threatening emergency	911

Medical Protocol

First aid	<p>Mucous Membrane Exposure (eye, nose, or mouth):</p> <ol style="list-style-type: none">1. Flush the affected areas immediately and thoroughly with water for 15 minutes.2. Use an eyewash if available, use cold water, and keep eyelids open.3. Go to UWMC/HMC Emergency Department (ED) for medical treatment/evaluation and lab work. <p>Percutaneous injury (intact skin):</p> <ol style="list-style-type: none">1. Splash to intact skin: Wash the site immediately and thoroughly with soap and water for 15 minutes. <p>Percutaneous Injury (through the skin):</p> <ol style="list-style-type: none">1. Wash the site immediately and thoroughly with soap and water for 15 minutes (without scrubbing).2. Do not use harsh detergents or abrasive scrubbing on wounds.3. Go to UWMC/HMC ED for medical treatment/evaluation and lab work (baseline LCMV titer)
Surveillance	<p>Pre-work counseling with EHC recommended for those who are pregnant or planning to become pregnant and for immunocompromised individuals:</p> <ol style="list-style-type: none">1. Special precautions when working with infected rodents may be indicated (HEPA filtered respirator) during pregnancy because of potential infection of the fetus.2. Immune compromised individuals may have an increased risk for lab-acquired illness should an exposure occur.

Post exposure Or Symptoms	<p align="center">Post Exposure Protocol for LCMV</p> <ol style="list-style-type: none"> 1. Within 20 minutes of the incident, or as soon as possible, call the EHC at 206-685-1026 between 8:00 a.m. to 5:00 p.m., Monday to Friday. Tell them you were exposed to LCMV. 2. Outside of business hours, holidays or weekends, personnel will report immediately to the UWMC Emergency Department for medical evaluation. 3. The injured employee should take a copy of this medical management plan to the ED, including specific strain information associated with the exposure. 4. LCMV titers should be obtained within 1-2 days of exposure. A baseline titer following exposure is critical since 5-10% of the US population has preexisting antibodies. 5. Monitor for flu like signs and symptoms for 21 days post exposure and notify EHC if change in status. 6. Convalescent follow-up serum titers should be obtained within 30 days of exposure: https://testguide.labmed.uw.edu/view/645 7. For a life-threatening emergency, call 9-1-1.
Treatment	<p>Recommended Treatment:</p> <ol style="list-style-type: none"> 1. Symptomatic and generally supportive 2. Ribavirin is effective <i>in vitro</i>, and may be effective for treatment of LCM
Reporting	<p>Report all accidents, injuries and near miss events as soon as possible on the UW Online Accident Reporting System.</p>

BACKGROUND INFORMATION

Mode of transmission

Mice infected *in utero* asymptomatically shed LCMV in their feces, urine, saliva, breast milk, and semen, and transmit the virus to humans (and other rodents, such as hamsters) by direct contact, through damaged skin or mucous membranes, inhalation of aerosolized virus, ingestion of virus contaminated food or dust, through rodent bites, or by contact with infected fomites. Transmission is also possible through organ transplantation from LCMV infected donors, and vertically from an infected mother to her fetus.

Infectious dose

Unknown

Incubation period

8-13 days; 15-21 days (meningeal symptoms)

Communicability

No evidence of person to person spread; vertical transmission from mother to child is possible.

Vaccines

No vaccine currently available.

Characteristics

As a member of the family *Arenaviridae*, genus *Arenavirus*, LCMV is an enveloped, round, oval, or pleomorphic virion, measuring roughly 110 nm to 130 nm in diameter, enveloped, with a bipartite single-stranded RNA genome. The virion interior contains granules resembling grains of sand, which are characteristic of the family *Arenaviridae*, while the surface has hollow golf-club shaped projections. Lymphocytic choriomeningitis Virus (LCMV) is also known as LCM, lymphocytic meningitis, and Armstrong disease.

Signs and Symptoms

LCMV infection in immunocompetent adults may be asymptomatic (nearly one third of all infections) or limited to a non-specific, self-limited viral syndrome with symptoms such as fever, cough, malaise, myalgia, headache, photophobia, nausea, vomiting, adenopathy, and sore throat. The illness can progress to include meningitis or meningoencephalitis, and other less common neurologic symptoms such as paralysis, sensorineural hearing loss, and Guillain-Barré type syndrome. Uncommon non-neurologic manifestations of illness include pancreatitis, orchitis, arthritis, pericarditis, parotitis pneumonitis, and rash. Acquired LCMV infection is usually non-fatal, with a mortality rate of less than 1%, and recovery from even severe disease occurs without sequelae in most cases.

Survival Outside the Host

Unless it is preserved at -80°C, LCMV is quickly inactivated outside its host. LCMV will retain its infectivity for at least 206 days if stored in 50% glycerin and 0.85% saline at 4-10°.

Prior Laboratory Acquired Illness

LCMV infection is a well-known occupational risk for those working with rodents, especially hamsters and mice. 76 cases were reported up until 1978, including 3 outbreaks between 1973 and 1975 among laboratory workers who had handled hamsters that had tumor grafts containing LCMV. Further cases have occurred since then, notably in an outbreak associated with nude mice, in which 9% of 82 animal care workers were found to be seropositive for LCMV. Cases also reported arising from contaminated cell lines.

REFERENCES:

- BMBL6: Lymphocytic Choriomeningitis Virus [Biosafety in Microbiological and Biomedical Laboratories—6th Edition \(cdc.gov\)](#) Pages 264-265. Accessed 02/27/2023.
- Centers for Disease Control and Prevention: [Lymphocytic Choriomeningitis \(LCM\) | CDC](#) Accessed 02/27/2023.
- Government of Canada: [Pathogen Safety Data Sheets: Infectious Substances – Lymphocytic choriomeningitis virus - Canada.ca](#) Accessed 02/27/2023