McMaster University
Medical Monitoring Program Information Sheet

The purpose of this document is to provide information on an agent/virus in order for all McMaster University staff and students to make an informed decision about entering our medical monitoring program.

Please review this document, print your name, sign and date the Memorandum of Understanding and Agreement and then provide it to your supervisor.

**Lymphocytic choriomeningitis Virus**

The following summary is provided by the McMaster Biosafety Office.

For a complete copy of the excerpted text below please refer to: http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds97e-eng.php

**HOST RANGE:** Humans, guinea pigs, hamsters, mice, monkeys

**INFECTIOUS DOSE:** Unknown. Infected mice excrete virus in saliva, urine and feces; man is infected through inhalation of infectious aerosolized particles of rodent urine, feces or saliva, food contaminated with virus, contamination of mucus membranes, skin lesions or cuts with infected body fluids

**INCUBATION PERIOD:** 8-13 days; 15-21 days (meningeal symptoms)
House mouse (*Mus musculus*) - virus is harboured throughout life of mouse and transmitted to offspring which become healthy carriers; natural infections also occur in non-human primates (including macaques and marmosets), swine, dogs, hamsters, guinea pigs. Virus survives out of host - mice dropping

Susceptible to 1% sodium hypochlorite, 2% glutaraldehyde, 70% ethanol, formaldehyde. Sensitive to heat inactivation

**LABORATORY-ACQUIRED INFECTIONS:** Well documented hazard (46 cases with 5 deaths), especially from infected laboratory rodents (hamsters and mice); cases also reported arising from contaminated cell lines
Blood, CSF, urine, secretions of the nasopharynx, feces; infected tissues from animals or human sources; presence of virus may be ascertained by inoculation of sample into uninfected mice, presence of specific antibodies by ELISA or IFA is considered diagnostic
**PRIMARY HAZARDS:** Parenteral inoculation, inhalation, contamination of mucous membranes or broken skin with infected animal tissues or fluids, and exposure to infectious aerosols. Contaminated tissue cultures represent a potential hazard.

Biosafety level 2 practices safety equipment and facilities for laboratory-adapted LCM strains; biosafety level 3 practices, safety equipment, and facilities for activities involving the manipulation of the neurotropic strains of virus and animal studies. Laboratory coat; gloves and gown with tight wrists and tie in back should be worn while working with infectious materials. Special precautions when working with infected hamsters may be indicated (HEPA filtered respirator); virus may pose a special risk during pregnancy because of potential infection of the fetus.

The following summary is provided by Employee Health Services.

For a complete copy of the excerpted text below please refer to:
http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/lcmv/ga.htm

**Facts**

Lymphocytic choriomeningitis, or LCM, is a rodent-borne viral infectious disease that presents as aseptic meningitis (inflammation of the membrane, or meninges, that surrounds the brain and spinal cord), encephalitis (inflammation of the brain), or meningoencephalitis (inflammation of both the brain and meninges). Its causative agent is the lymphocytic choriomeningitis virus (LCMV), a member of the family Arenaviridae that was initially isolated in 1933. Although LCMV is most commonly recognized as causing neurological disease, as its name implies, infection without symptoms or mild febrile illnesses are common clinical manifestations. Additionally, pregnancy-related infection has been associated with congenital hydrocephalus, chorioretinitis, and mental retardation. Infected mice excrete virus in saliva, urine and feces; man is infected through inhalation of infectious aerosolized particles of rodent urine, feces or saliva, food contaminated with virus, contamination of mucus membranes, skin lesions or cuts with infected body fluids. Person-to-person transmission has not been reported, with the exception of vertical transmission from infected mother to fetus. Recent investigations indicate that organ transplantation may also be a means of transmission.

**Symptoms**

Some people infected with LCMV do not become ill. For infected persons who do become ill, onset of symptoms usually occurs 8-13 days after being exposed to the virus. A characteristic biphasic febrile illness then follows. The initial phase, which may last as long as a week, typically begins with any or all of the following symptoms: fever, malaise, lack of appetite, muscle aches, headache, nausea, and vomiting. Other symptoms that appear less frequently include sore throat, cough, joint pain, chest pain, testicular pain, and parotid (salivary gland) pain. Following a few days of recovery, the second phase of the disease occurs, consisting of symptoms of meningitis (for example, fever, headache, and a stiff neck) or characteristics of encephalitis (for example,
drowsiness, confusion, sensory disturbances, and/or motor abnormalities, such as paralysis). LCMV has also been known to cause acute hydrocephalus (increased fluid in the brain), which often requires surgical shunting to relieve increased intracranial pressure. In rare instances, infection results in myelitis (inflammation of the spinal cord) and presents with symptoms such as muscle weakness, paralysis, or changes in body sensation. An association between LCMV infection and myocarditis (inflammation of the heart muscles) has been suggested.

During the first phase of the disease, the most common laboratory abnormalities are a low white blood cell count (leukopenia) and a low platelet count (thrombocytopenia). Liver enzymes in the serum may also be mildly elevated. After the onset of neurological disease during the second phase, an increase in protein levels, an increase in the number of white blood cells or a decrease in the glucose levels in the cerebrospinal fluid (CSF) is usually found.

**Diagnosis**
Confirmation by virus isolation and serology.

**Treatment**
No specific treatment; anti-inflammatory drugs may be useful. There is no immunization available.

**Prevention**
Laboratory coat; gloves and gown with tight wrists and tie in back should be worn while working with infectious materials. Special precautions when working with infected hamsters may be indicated (HEPA filtered respirator); virus may pose a special risk during pregnancy because of potential infection of the fetus. Individuals of all ages who come into contact with urine, feces, saliva, or blood of the house mouse are potentially at risk for infection. Laboratory workers who work with the virus or handle infected animals are also at risk. However, this risk can be minimized by utilizing animals from sources that regularly test for the virus, wearing proper protective laboratory gear, and following appropriate safety precautions. Owners of pet mice or hamsters may be at risk for infection if these animals originate from colonies that have become contaminated with LCMV, or if the animals become infected from other wild mice. Human fetuses are at risk of acquiring infection vertically from an infected mother.

---

**Memorandum of Understanding and Agreement ("MUA") for BSL2 Medical Monitoring Program**

**Note:** This MUA is to be signed by the employee/student and supervisor, filed and kept by the supervisor. It will be reviewed during the annual biosafety audit by the McMaster Biosafety office.

The employee/student named below acknowledges and agrees as follows:

- I have read and understand all of the information in this Medical Monitoring Information Sheet provided jointly by the McMaster Biosafety Office and Employee Health Services
and reviewed the biologically hazardous agent to which I have potential exposure. 

**Initial here**

- I will report a pregnancy or a compromised immune system (due to medication {steroid or other immunosuppressive therapy}, organ transplant, chemotherapy or radiation therapy, HIV infection etc.) to my supervisor and X (graduate students) or Employee Health Services Occupational Health Nurse at ext. 20310 (faculty and staff) **Initial here**

- I will report an exposure to a biological agent to my supervisor immediately and complete a McMaster incident/accident report. **Initial here**

- I will report any illness that resembles the symptoms listed in this Medical Monitoring Information Sheet to my supervisor. **Initial here**

- I recognize my responsibility to observe all safety practices and precautions while present in the BSL2 laboratory. **Initial here**

- I am aware of, and wish to participate in, the medical monitoring program (RMM #605) for this biological level 2 agent. Please circle: [yes] [no] **Initial here**

Employee/Student print name: ________________________________

Supervisor print name: ________________________________

Signature: ________________________________

Signature: ________________________________

Date: ________________________________

Date: ________________________________