



Cytomegalovirus (CMV)

General Information

Cytomegalovirus is an enveloped virus with a double-stranded DNA that belongs to the Herpesviridae family. CMV has a global seroprevalence of 60-90%. CMV infection typically causes mild or no symptoms but can cause serious complications in people with compromised immune systems.

Host Range

Humans and non-human primates serve as natural hosts.

Incubation Period

Between 3-12 weeks.

Survival Outside Host

CMV can survive on dry inanimate surfaces for 2 hours to up to 7 days, depending on the material.

Laboratory Hazards

Inhalation of concentrated aerosolized materials, droplet exposure of mucous membranes of the eyes, nose, or mouth, ingestion, and parenteral inoculation.

Symptoms of Exposure

Most healthy individuals experience no symptoms. Mild symptoms include fever, sore throat, fatigue, and swollen glands. Occasionally, CMV can cause mononucleosis or hepatitis. CMV can cause more severe symptoms in immunocompromised individuals. Congenital CMV can result in serious health problems for babies born with it.

Lab Acquired Infections (LAIs)

No LAIs have been reported.

Personal Protective Equipment



Disinfection & Inactivation

7.5% povidone-iodine; most herpes viruses are susceptible to 30% ethanol and isopropanol, 1% sodium hypochlorite, formaldehyde, 0.12% ortho phenylphenol,

and 0.04% glutaraldehyde. CMV can be inactivated by heat (56 °C for 30 min), low pH, UV light, and cycles of freezing/thawing.

Waste Management

Refer to [USC's Biological and Infectious Waste Management Plan](#).

Lab Containment

[Biosafety Level 2 \(BSL-2\)](#) for activities with materials and cultures known or reasonably expected to contain CMV.

Animal Containment

[Animal Biosafety Level 2 \(ABSL-2\)](#) for activities with experimentally infected animals.

Medical Surveillance/Treatment

Surveillance: Monitor for symptoms. CMV infections can be confirmed by PCR and serological tests.

Prophylaxis: Prophylaxis with intravenous ganciclovir is recommended for HIV-infected individuals who are CMV seropositive.

Vaccines: None.

Treatment: Supportive therapy for control of symptoms. More severe cases can be treated with antiviral medication. In healthy individuals, symptoms usually subside without treatment.

Spill Procedures

See [USC Biological Spill Procedures](#)

Exposure Procedures

See [USC Protocol for Post Exposure Evaluation and Follow-up](#). Use of sharps should be strictly limited. A biosafety cabinet should be used when there is a potential to create aerosols or droplets.

References

Public Health Agency of Canada (2012) Pathogen Safety Data Sheets: Infectious Substances – Cytomegalovirus. Pathogen Regulation Directorate, Public Health Agency of Canada

Mayo Clinic, "Cytomegalovirus (CMV) infection", <https://www.mayoclinic.org/diseases-conditions/cmV/symptoms-causes/syc-20355358>

CDC, "About Cytomegalovirus", <https://www.cdc.gov/cmV/overview.html>

Cleveland Clinic, "Cytomegalovirus (CMV)", <https://my.clevelandclinic.org/health/diseases/21166-cytomegalovirus>

P. Griffiths and M. Reeves, "Pathogenesis of human cytomegalovirus in the immunocompromised host", *Nature Reviews: Microbiology*, vol. 19, pp. 759-773, 2021.