

Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

Hantavirus

CHARACTERISTICS	
<i>Background and Morphology</i>	Member of the Bunyavirus family, enveloped virus with three, spherical-ssRNA segments.
<i>Growth Conditions</i>	Cell culture
HEALTH HAZARDS	
<i>Host Range</i>	Field rodents (mice, rats, voles, lemmings) and mammals including humans.
<i>Modes of Exposure</i>	Aerosol and droplet exposure from infected rodents via urine, feces, saliva, and respiratory secretions. Virus may also be transmitted by contact with mucous membranes, broken skin and bite of an infected host. Human to human transmission is very rare and has not occurred in the US.
<i>Signs and Symptoms</i>	Hemorrhagic fever with renal syndrome (HFRS): Fever, conjunctival injection, prostration, lower back and abdominal pain, anorexia and vomiting. After 3-6 days, hemorrhagic manifestation occurs and is followed by hypotension, proteinuria, and shock. Hantavirus pulmonary syndrome (HPS): Disease begins with fever, chills, myalgia, and hypotension. Death then occurs in approximately 35% of US cases due to pulmonary edema and shock.
<i>Infectious Dose</i>	Unknown
<i>Incubation Period</i>	3-60 days. 2 to 4 weeks (range from few days to 2 months) for HFRS; and 14-17 days for HPS
MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	None available
<i>Vaccines</i>	None available
<i>Diagnosis & Treatment</i>	Ribavirin given IV may be effective for HFRS. No treatment available for HPS (only supportive therapy).
<i>Surveillance</i>	Monitor for symptoms and test using serology.
<i>Emory Requirements</i>	Report any accidents/exposures.
LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	There have been documented occupational exposures to Old World hantaviruses by laboratory personnel.
SUPPLEMENTAL REFERENCES	
<i>NIH Guidelines</i>	https://osp.od.nih.gov/wp-content/uploads/NIH_Guidelines.pdf
<i>CDC</i>	Hantavirus
<i>CDC BMBL</i>	Biosafety in Microbiological and Biomedical Laboratories, 6th Edition
<i>World Health Organization (WHO)</i>	Hantavirus
<i>Government of Canada</i>	Pathogen Safety Data Sheets: Infectious Substances – Hantavirus spp.
CONTAINMENT	
<i>BSL-2</i>	Manipulation of sera from potentially infected humans.
<i>BSL-2+</i>	Manipulation of potentially infected tissue samples and rodent serum.

<i>BSL-3</i>	Manipulation of cell cultures.
<i>ABSL-2</i>	Animal studies involving infected rodents that cannot excrete the virus.
<i>ABSL-4</i>	Viral inoculation of rodents susceptible to chronic infection.
SPILL PROCEDURES	
<i>Small</i>	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply an EPA approved disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.
<i>Large</i>	Contain the spill, notify and evacuate others in the area, then contact Emory's Biosafety Officer (404-357-1821) or the EHSO Spill Response Team (404-727-2888).
EXPOSURE PROCEDURES	
<i>Mucous membrane</i>	Flush eyes, mouth, or nose for 15 minutes at an eyewash station.
<i>Other Exposures</i>	Wash area with soap and water for 15 minutes.
<i>Seek Medical Attention</i>	Occupational Health Services (OHS): 7:30 am - 4:00 pm 404-686-8587, Option 4 <u>OHS After Hours</u> APP On Call 404-686-5500, PIC# 50464 Emory National Primate Research Center (ENPRC/EPC): Contact EPC Safety Office cell: 470-966-8003
<i>Reporting</i>	Immediately report incidents to supervisor. Accidents/Exposures must be reported in H.O.M.E. via HR Self-Service portal. Emory HR website > Self-Service > Workplace Health > Report
VIABILITY	
<i>Disinfection</i>	Susceptible to 1% sodium hypochlorite, 70% ethanol, and 2% glutaraldehyde.
<i>Inactivation</i>	Inactivated by heat (1 hour at 60°C) and acidic conditions (pH≤5).
<i>Survival Outside Host</i>	Dried cell cultures (2 days), salt solutions with 1% bovine albumin at -60°C (5 years).
PERSONAL PROTECTIVE EQUIPMENT (PPE)	
<i>Minimum PPE Requirements</i>	At minimum, personnel are required to don gloves, lab coat/gown, eye/face protection, closed-toe shoes, long pants/skirt. Additional PPE may be required depending on lab-specific SOPs.
<i>Additional Precautions</i>	Wash hands before and after removing gloves. Due to the modes of transmission, respirators may be required when working with hantaviruses. Fit testing, medical evaluation, and training is required annually per Emory's Respiratory Protection Program .
PERMIT REQUIREMENTS	
<i>USDA</i>	Importing hantavirus requires an APHIS VS import permit. You should confirm import requirements with the USDA. USDA APHIS Permitting
<i>State (Georgia)</i>	You should confirm import requirements with the state of Georgia. Georgia Import Office and Ports of Entry
<i>FDA</i>	FDA Import Program
<i>CDC</i>	CDC Import Permit Program (IPP) "Do I Need An Import Permit?" e-Tool
<i>Emory Export Control Office</i>	Emory Research, Research Compliance and Regulatory Affairs (RCRA), Export Control and Research Cybersecurity