

Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

Hantavirus

CHARACTERISTICS	
<i>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 Transmission</i>	Aerosol transmission from infected rodents via urine, feces, and saliva. 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>	<p>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.</p> <p>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.</p>
<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>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 exposures.

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	There have been documented occupational exposures to Old World hantaviruses by laboratory personnel.
<i>Sources</i>	Aerosol and droplet exposure from urine, respiratory secretions, saliva, and feces of mice and rats, parenteral inoculation, and rodent bites.

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hantavirus-eng.php
<i>BMBL: 5th Edition</i>	http://www.cdc.gov/OD/ohs/biosfty/bmb15/BMBL_5th_Edition.pdf
<i>CDC Guidelines</i>	http://www.cdc.gov/ncidod/diseases/hanta/hps/
<i>International Committee on Taxonomy of Viruses</i>	http://www.ncbi.nlm.nih.gov/ICTVdb/Ictv/index.htm

CONTAINMENT REQUIREMENTS	
<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 registered disinfectant, working from the perimeter towards the center. Follow the manufacturer's label instructions to determine the amount of contact time required before disposal and cleanup of spill materials.
<i>Large</i>	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES					
<i>Mucous membrane</i>	Flush eyes, mouth or nose for 15 minutes at eyewash station.				
<i>Other Exposures</i>	Wash area with soap and water for 15 minutes.				
<i>Reporting</i>	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.				
<i>Medical Follow-Up</i>	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> 7am-4pm (OIM): EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431) </td> <td style="width: 50%; vertical-align: top;"> After Hours: OIM NP On Call 404-686-5500 PIC# 50464 </td> </tr> <tr> <td style="vertical-align: top;"> Needle Stick (OIM): EUH (404-686-8587) EUHM (404-686-2352) </td> <td style="vertical-align: top;"> Yerkes: Maureen Thompson Office (404-727-8012) Cell (404-275-0963) </td> </tr> </table>	7am-4pm (OIM): EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	After Hours: OIM NP On Call 404-686-5500 PIC# 50464	Needle Stick (OIM): EUH (404-686-8587) EUHM (404-686-2352)	Yerkes: Maureen Thompson Office (404-727-8012) Cell (404-275-0963)
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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, closed toed shoes, lab coat, and appropriate face and eye protection prior to working with hantaviruses. 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 and training is required annually per Emory's Respiratory Program: http://www.ehso.emory.edu/content-manuals/RespiratoryProtectionProgram.pdf