Biological Agent Reference Sheet (BARS)

This content of this document is for Emory University USE ONLY.

The information and contents of this Biological Agent Reference Sheet (including all text and graphics), whether available in print or electronic format (including any digital format, e-mail transmissions, or download from the website), shall be known hereinafter as “Reference Sheet Content”. The Reference Sheet Content is provided as a courtesy and is not intended as a sole source of guidance in the evaluation of Biological Agents. The Reference Sheet Content is not intended to substitute for medical advice, medical care, diagnosis or treatment obtained from a physician or health care provider. Please seek the advice of a physician or other qualified health provider with any questions you may have regarding a medical condition. Do not rely on the Reference Sheet Content for diagnosis, treatment, or medical advice. This Reference Sheet Content is for informational purposes and does not provide individualized medical care or treatment. No endorsement of any specific tests, products, or procedures is made by Reference Sheet Content or affiliated party, member, agent or employee of the Emory University Environmental Health and Safety Office.

EMORY UNIVERSITY | Environmental Health and Safety Office

1762 Clifton Road, Suite 1200
Atlanta, Georgia 30322
(404) 727-5922
FAX: (404) 727-9778

BIOLOGICAL AGENT REFERENCE SHEET

Hantavirus

CHARACTERISTICS	
Morphology	Member of the Bunyavirus family, enveloped virus with three, spherical -ssRNA segments.
Growth Conditions	Cell culture

HEALTH HAZARDS	
Host Range	Field rodents (mice, rats, voles, lemmings) and mammals including humans.
Modes of Transmission	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.
Signs and Symptoms	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.
Infectious Dose	Unknown.
Incubation Period	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	
Prophylaxis	None available.
Vaccines	None available.
Treatment	Ribavirin givin IV may be effective for HFRS. No treatment available for HPS (only supportive therapy).
Surveillance	Monitor for symptoms and test using serology.
Emory Requirements	Report any exposures.

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

SUPPLEMENTAL REFERENCES	
Canadian MSDS	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hantavirus-eng.php
BMBL: 5th Edition	http://www.cdc.gov/OD/ohs/biosfty/bmbl5/BMBL_5th_Edition.pdf
CDC Guidelines	http://www.cdc.gov/ncidod/diseases/hanta/hps/
International Committee on Taxonomy of Viruses	http://www.ncbi.nlm.nih.gov/ICTVdb/Ictv/index.htm

CONTAINMENT REQUIREMENTS	
BSL-2	Manipulation of sera from potentially infected humans.
BSL-2+	Manipulation of potentially infected tissue samples and rodent serum.
BSL-3	Manipulation of cell cultures.
ABSL-2	Animal studies involving infected rodents that cannot excrete the virus.
ABSL-4	Viral inoculation of rodents susceptible to chronic infection.

SPILL PROCEDURES	
Small	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.
Large	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES		
Mucous membrane	Flush eyes, mouth or nose for 15 minutes at eyewash station.	
Other Exposures	Wash area with soap and water for 15 minutes.	
Reporting	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.	
Medical Follow-Up	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)

VIABILITY	
Disinfection	Susceptible to 1% sodium hypochlorite, 70% ethanol, and 2% gluteraldehyde.
Inactivation	Inactivated by heat (1 hour at 60°C) and acidic conditions (pH≤5).
Survival Outside Host	Dried cell cultures (2 days), salt solutions with 1% bovine albumin at -60°C (5 years).

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Minimum PPE Requirements	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.
Additional Precautions	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