

Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

West Nile Virus (WNV)

CHARACTERISTICS	
<i>Morphology</i>	An icosahedral, enveloped virus of 40 to 50 nm in diameter. It has a single stranded, positive-sense RNA genome.
<i>Growth Conditions</i>	Tissue culture.

HEALTH HAZARDS	
<i>Host Range</i>	Humans, mosquitoes, ticks, birds, horses, alligators, tree squirrels, eastern chipmunks, eastern cottontail rabbits, lake frogs; as well as a broad range of common North American wild and domestic mammals, such as dogs, deer, feral swine, coyotes, foxes, opossums, raccoons skunks, bats and other small rodents.
<i>Modes of Transmission</i>	Primarily from infected mosquitoes. Other possible routes include: blood transfusion, vertical transmission, breast milk, organ transplantation, contact of the conjunctiva with contaminated bodily secretions from infected birds, and laboratory accidents involving sharps.
<i>Signs and Symptoms</i>	<ul style="list-style-type: none"> Sudden onset fever with chills, headache, backache, malaise, arthralgia, myalgia and eye pain Nausea, vomiting, diarrhea, sore throat & cough Less than 1% of WNV infected individuals develop meningitis, encephalitis and/or acute flaccid paralysis
<i>Infectious Dose</i>	Unknown
<i>Incubation Period</i>	2-6 days, but could extend to 14 days.

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	None currently available.
<i>Vaccines</i>	None currently available.
<i>Treatment</i>	None currently available for WNV fever. Supportive therapy for encephalitis include: intravenous fluid, electrolyte management, assisted respiration, anticonvulsants, management of cerebral edema, and prevention of secondary bacterial infections.
<i>Surveillance</i>	Monitor for symptoms, confirm via virus isolation from blood or cerebrospinal fluid
<i>Emory Requirements</i>	Report all exposures. Emory EHSO provided medical alert card should be carried by researcher at all times.

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	Twenty cases have been reported of workers who acquired WNV following percutaneous inoculation while handling infected fluids and tissues with no deaths.
<i>Sources</i>	Blood, cerebrospinal fluid, tissues, infected arthropods, oral and cloacal swabs and feather pulp.

CONTAINMENT REQUIREMENTS	
<i>BSL-2+</i>	In vitro work with the virus or clinical samples.
<i>ABSL-3</i>	Manipulation of virus in animals.

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. Allow 30 minutes of contact time 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%;"><i>7am-4pm (OIM):</i> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)</td> <td style="width: 50%;"><i>After Hours:</i> OIM NP On Call 404-686-5500 PIC# 50464</td> </tr> <tr> <td><i>Needle Stick (OIM):</i> EUH (404-686-8587) EUHM (404-686-2352)</td> <td><i>Yerkes:</i> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)</td> </tr> </table>	<i>7am-4pm (OIM):</i> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	<i>After Hours:</i> OIM NP On Call 404-686-5500 PIC# 50464	<i>Needle Stick (OIM):</i> EUH (404-686-8587) EUHM (404-686-2352)	<i>Yerkes:</i> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)
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VIABILITY	
<i>Disinfection</i>	Susceptible to disinfectants such as 3 to 8% formaldehyde, 2% glutaraldehyde, 2 to 3% hydrogen peroxide, 500 to 5,000 ppm available chlorine, alcohol, 1% iodine, and phenol iodophors.
<i>Inactivation</i>	Inactivated by heat (50 to 60°C for at least 30 minutes), ultraviolet light, and gamma irradiation.
<i>Survival Outside Host</i>	Low temperatures preserve infectivity, with stability being greatest below -60°C. When added to ELISA wash buffer there is a 10-fold decrease in titer per 24 hour period at 28°C.

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 <i>West Nile Virus</i> . Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	Not applicable.

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/index-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/dvbid/westnile/index.htm