

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.

BIOLOGICAL AGENT REFERENCE SHEET

Norovirus (NoV)

CHARACTERISTICS	
<i>Morphology</i>	Family: <i>Caliciviridae</i> ; Genus: <i>Norovirus</i> ; Species: Norwalk. There are six genogroups (G). Single stranded RNA virus; Non-enveloped, 27-32 nm virion
<i>Growth Conditions</i>	Human norovirus cannot be cultured <i>in vitro</i> . Surrogate viruses that can be maintained <i>in vitro</i> : coliphage MS2, murine norovirus (MNV) and feline calicivirus (FCV).

HEALTH HAZARDS	
<i>Host Range</i>	GI, GII & GIV: human; GIII: bovine; GV: mice
<i>Modes of Transmission</i>	Norovirus must enter the digestive track in order to initiate infection. Frequent routes include: fecal-oral, contaminated food or water, person-to-person, contaminated fomites or body fluids, and aerosolized contaminated particles.
<i>Signs and Symptoms</i>	After exposure: vomiting, diarrhea, abdominal pain; symptoms may last for 24-72h. Usually it is self-limiting
<i>Infectious Dose</i>	18 to 10 ³ virus particles
<i>Incubation Period</i>	Incubation 12-48 h

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	Hand washing with soap and water, limiting contact with contaminated food, water, surfaces or body fluids. Note: Alcohol-based hand disinfectants are not effective
<i>Vaccines</i>	None
<i>Treatment</i>	No specific therapy other than electrolyte and fluid replacement.
<i>Surveillance</i>	Monitor for symptoms; confirm by detection of viral RNA.
<i>Emory Requirements</i>	Report all exposures.

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	None
<i>Sources</i>	Contaminated food, water, fomites, aerosol and body fluids (vomit and stool). Shedding of virus in stool occur before symptoms appear, during clinical symptoms and during recovery.

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds112e-eng.php
<i>BMBL: 5th Edition</i>	http://www.cdc.gov/biosafety/publications/bmb15/index.htm
<i>CDC NoV Guidelines</i>	http://www.cdc.gov/norovirus/about/overview.html

CONTAINMENT REQUIREMENTS	
<i>BSL-2</i>	BSL-2 practices and containment equipment for all activities involving the virus or any infectious or potentially infectious body fluids or tissues

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 with a label claim for norovirus, 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 Exposure</i>	Contaminated surfaces: allow aerosols to settle; wearing protective clothing, gently cover the spill with absorbent paper towel and apply 1% sodium hypochlorite starting at the perimeter and working towards the middle; allow sufficient contact time (30 min) before clean up. Wash hands thoroughly with soap and water after removing gloves. Alcohol-based hand disinfectants are NOT effective.				
<i>Reporting</i>	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.				
<i>Medical Follow up</i>	<table border="0"> <tr> <td>7am-4pm (OIM): EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)</td> <td>After Hours: OIM NP On Call 404-686-5500 PIC# 50464</td> </tr> <tr> <td>Needle Stick (OIM): EUH (404-686-8587) EUHM (404-686-2352)</td> <td>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)
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	
<i>Disinfection</i>	1000–5000 ppm of chlorine bleach; any other EPA registered disinfectant with a label claim for Norovirus
<i>Inactivation</i>	Steam sterilization, chemical disinfection, incineration.
<i>Survival Outside Host</i>	Highly stable, at least 61 days

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>Norovirus</i> . Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	None