

## **Biological Agent Reference Sheet (BARS)**

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## BIOLOGICAL AGENT REFERENCE SHEET

### Hepatitis C Virus (HCV)

CHARACTERISTICS	
<i>Morphology</i>	Enveloped +ssRNA virus that is 50 nm in diameter, <i>Flavivirus</i> family, <i>Hepacivirus</i> genus
<i>Growth Conditions</i>	Cell culture

HEALTH HAZARDS	
<i>Host Range</i>	Humans, experimentally transmitted to chimpanzees
<i>Modes of Transmission</i>	Contact with infected blood through sharing needles, needle-stick injuries, sexual contact, and birth to an infected mother
<i>Signs and Symptoms</i>	75-80% of newly infected people develop chronic infection whereas 20-30% develops acute infection. <ul style="list-style-type: none"> <li>• <b>Acute Infection:</b> Fever, anorexia, nausea, vomiting, jaundice, no lasting liver damage</li> <li>• <b>Chronic Infection:</b> Chronic liver disease, cirrhosis of the liver, liver cancer, death</li> </ul>
<i>Infectious Dose</i>	Unknown
<i>Incubation Period</i>	14 – 180 days (45 day average)

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	None available
<i>Vaccines</i>	None available
<i>Treatment</i>	<ul style="list-style-type: none"> <li>• <b>Acute Infection:</b> Antiviral and supportive treatment</li> <li>• <b>Chronic Infection:</b> Monitoring for liver disease progression; antiviral therapy</li> </ul>
<i>Surveillance</i>	<ul style="list-style-type: none"> <li>• <b>Acute Infection:</b> No serological marker available, PCR test for HCV nucleic acid</li> <li>• <b>Chronic Infection:</b> Screening assay for HCV antibody (anti-HCV), PCR for HCV nucleic acid</li> </ul>
<i>Emory Requirements</i>	Report all exposures to human blood, OPIM or HCV infected material

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	Prevalence of anti-HCV is slightly higher in health care workers than the general population. Parenteral inoculation is the predominant cause of HCV in health care workers.
<i>Sources</i>	Human blood, other potentially infected material (OPIM), inadequately sterilized instruments, needles, syringes

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	<a href="http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hepc-eng.php">http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hepc-eng.php</a>
<i>BMBL: 5<sup>th</sup> Edition</i>	<a href="http://www.cdc.gov/OD/ohs/biosfty/bmb15/BMBL_5th_Edition.pdf">http://www.cdc.gov/OD/ohs/biosfty/bmb15/BMBL_5th_Edition.pdf</a>
<i>CDC Guidelines</i>	<a href="http://www.cdc.gov/hepatitis/chooseC.htm">http://www.cdc.gov/hepatitis/chooseC.htm</a>
<i>OSHA</i>	Bloodborne Pathogen Standard (29 CFR 1910.1030): <a href="http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&amp;p_id=10051">http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&amp;p_id=10051</a>
<i>Virology Journal</i>	Song et al: Thermal stability and inactivation of hepatitis C virus grown in cell culture. <i>Virology Journal</i> 2010, 7:40. <a href="http://www.virologyj.com/content/7/1/40">http://www.virologyj.com/content/7/1/40</a>

CONTAINMENT REQUIREMENTS	
<i>BSL-2</i>	Work with known or potentially infectious material
<i>BSL-3</i>	Procedures involving production quantities of infectious material (over 10L of culture) and activities with high potential for aerosol production
<i>ABSL-2</i>	Work with infected non-human primates

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 appropriate disinfectant, working from the perimeter towards the center. Allow appropriate amount 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"> <tr> <td><b>7am-4pm (OIM):</b> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)</td> <td><b>After Hours:</b> OIM NP On Call 404-686-5500 PIC# 50464</td> </tr> <tr> <td><b>Needle Stick (OIM):</b> EUH (404-686-8587) EUHM (404-686-2352)</td> <td><b>Yerkes:</b> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)</td> </tr> </table>	<b>7am-4pm (OIM):</b> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	<b>After Hours:</b> OIM NP On Call 404-686-5500 PIC# 50464	<b>Needle Stick (OIM):</b> EUH (404-686-8587) EUHM (404-686-2352)	<b>Yerkes:</b> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)
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VIABILITY	
<i>Disinfection</i>	Cell culture-derived HCV (HCVcc) susceptible to 4% formaldehyde, 2.5% glutaraldehyde, and detergents (ionic and non-ionic).
<i>Inactivation</i>	HCVcc inactivated when incubated at 60°C for 8 minutes and 65°C for 4 minutes
<i>Survival Outside Host</i>	HCVcc remains stable at 37°C for 2 days and at room temperature for 16 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 HCV. Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	Take precautions when handling sharps. Use respiratory protection if work will be performed outside the biosafety cabinet. Additional precautions should be considered with work involving animals or large scale activities.