**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 ad-vice, 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
Research Administration

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

# BIOLOGICAL AGENT REFERENCE SHEET

*Hepatitis E Virus (HEV)*

| CHARACTERISTICS | |
|---|---|
| *Morphology* | *Hepatitis E virus* (*HEV*) is a non-enveloped, positive-sense, single-stranded RNA virus in *Hepeviridae* family, genus *Hepevirus*, 27–34 nm diameter. There are four *HEV* genotypes: Genotype 1 in Africa and Asia, Genotype 2 in Mexico and West Africa, Genotype 3 as isolated cases in developed countries, and Genotype 4 in China and Taiwan. |
| *Growth Conditions* | PLC/PRF/5 human hepatoma or A549 human lung adenocarcinoma cell lines |

| HEALTH HAZARDS | |
|---|---|
| *Host Range* | Genotypes 1 and 2: human; Genotypes 3 and 4: human, pig, boar, deer. NHPs, non-inbred white mice and Wistar rats can be experimentally infected. |
| *Modes of Transmission* | Fecal-oral (feces-contaminated drinking water); food-borne (consumption of uncooked/ undercooked shellfish, pork or deer meat); blood-borne (blood transfusions); mother to baby immediately before and after birth; person-to-person (uncommon) |
| *Signs and Symptoms* | *HEV* causes acute sporadic and epidemic viral hepatitis. The ratio of symptomatic to asymptomatic Hepatitis E (HE) ranges from 1:2 to 1:13. When symptoms occur, they last 1-2 weeks and include jaundice, anorexia, enlarged tender liver, abdominal pain, nausea and vomiting, and fever. Pregnant women are at greater risk of obstetrical complications and death, with 10-30% mortality rate among pregnant women in the third trimester. Sporadically, *HEV* Genotype 3 mainly affect older men (>40 years) and immunocompromised individuals. |
| *Infectious Dose* | Unknown |
| *Incubation Period* | 15-60 day (average 40 day). *HEV* has been detected in stool from one week prior to symptom onset up to 30 days after onset of jaundice. Chronically infected persons (exclusively HEV Genotype 3 infections of immunocompromised) shed virus as long as infected. |

| MEDICAL PRECAUTIONS / TREATMENT | |
|---|---|
| *Prophylaxis* | None |
| *Vaccines* | None |
| *Diagnosis & Treatment* | Infections of *HEV* are not clinically distinguishable from other types of acute viral hepatitis. No serologic tests have been approved by the FDA. Diagnosis of *HEV* infection is based on detection of IgM and IgG antibodies against the virus, or detection of *HEV* RNA in blood or stool.<br>Hepatitis E is self-limiting and usually resolves on its own without treatment. Patients are typically advised to rest and get adequate nutrition and fluids. Hospitalization is sometimes required in severe cases and should be considered for pregnant women. |
| *Surveillance* | Monitor for symptoms of disease. |
| *Emory Requirements* | Report all incidents using PeopleSoft |

| LABORATORY HAZARDS | |
|---|---|
| *Laboratory Acquired Infections* | No cases of laboratory-acquired infections have been reported to date. |
| *Sources* | Potential sources include feces and sera from infected NHPs or humans |

| SUPPLEMENTAL REFERENCES | |
|---|---|
| *CDC* | https://www.cdc.gov/hepatitis/hev/index.htm<br>https://www.cdc.gov/biosafety/publications/bmbl5/bmbl5_sect_viii_e.pdf#x2013; E: Viral Agents [PDF - 413 KB]</a> |
| *Public health Agency of Canada* | https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/hepatitis-e-virus.html |
| *World Health Organization* | http://www.who.int/mediacentre/factsheets/fs280_jun2014/en/ |

| CONTAINMENT | |
|---|---|
| *BSL2/ABSL2* | Follow biosafety level 2 practices and containment for activities utilizing *HEV*, or *HEV*-infected feces, blood, or other tissues.<br>Animal biosafety level 2 practices and containment are recommended for activities using naturally or experimentally infected NHPs or other animal models that may shed the virus. |

| SPILL PROCEDURES | |
|---|---|
| *Small* | Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. An EPA-registered disinfectant should be used to remove contaminating matter from surfaces (e.g., of bench tops and equipment). All decontamination litter and other disposable materials should be autoclaved. |
| *Large* | For assistance, contact Emory's Biosafety Officer (404-727-8863), or the EHSO Spill 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 using PeopleSoft. | |
| *Medical Follow-up* | 7am-4pm (OIM):<br>EUH (404-686-7941)<br>EUHM (404-686-7106)<br>WW (404-728-6431) | After Hours:<br>OIM NP On Call<br>404-686-5500<br>PIC# 50464 |
| | Needle Stick (OIM):<br>EUH (404-686-8587)<br>EUHM (404-686-2352) | Yerkes: Maureen Thompson<br>Office (404-727-8012)<br>Cell (404-275-0963) |

| VIABILITY | |
|---|---|
| *Disinfection* | Susceptible to 1% sodium hypochlorite, 2% glutaraldehyde, formaldehyde |
| *Inactivation* | Inactivated by heat (60°C for 30 minutes), UV and gamma irradiation. |
| *Survival Outside Host* | Does survive outside the host |

| 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 *HEV*-infected samples. Additional PPE may be required depending on lab specific SOPs. |
| *Additional Precautions* | All procedures that may produce aerosols, or involve high concentrations or large volumes should be done in a BSC. |