

BIOHAZARDOUS AGENT REFERENCE DOCUMENT

Poliovirus – vaccine strain

The Biohazardous Agent Reference Document (BARD) is a general guidance resource that reviews and summarizes the nature of a pathogen or biotoxin, and offers safety requirements for work with the agent in the laboratory. The BARD may replace the formal SOPs used in conjunction with some IBC registrations.

The BARD is provided as an additional guidance tool, and is not a substitute for a risk assessment, biosafety training, lab-specific training, or a formal [IBC master protocol registration](#). This document should be readily available in the laboratory, and it is the responsibility of the Laboratory Supervisor or Principal Investigator to ensure that all personnel have read, understood, and signed the document. The BARD is for informational purposes only, and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Please consult a health care provider for any medical questions or concerns.

INSTRUCTIONS

- 1. Review the information contained in this document.**
- 2. Add any necessary information that is specific to your work in the laboratory (such as strain-specific information). Please be sure that the track changes function is turned on to indicate any changes that you make.**
- 3. Instruct all personnel to review the BARD and sign the last page, indicating that they have read and understood the information.**
- 4. Submit the BARD along with your IBC master protocol registration, amendment, or continuing review.**

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CHARACTERISTICS

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| Morphology | Member of the Picornaviridae family. Small non-enveloped viruses with single strand RNA genome. |
| Strain Specific Characteristics | Three serotypes exist (Polio 1 – 3), wild type and attenuated strains, Oral Polio Vaccine (OPV), Inactivated Polio Vaccine (IPV) |

HEALTH HAZARDS

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| Host Range | Humans are the only known host and reservoir. |
| Modes of Transmission | Poliovirus is transmitted fecal orally (through ingestion of the virus). |
| Signs and Symptoms | Exposure to wild-type polio (in nature) causes asymptomatic infection in 90-95% of unvaccinated individuals. Ingestion of OPV can rarely cause vaccine-associated paralytic polio (VAPP), which occurs only in unvaccinated persons (usually children) or those with B-cell immunodeficiencies. The risk is 1/900,000. Paralytic polio manifests as a spectrum of weakness and asymmetric loss of muscle tone, which may progress over 3-5 days to paralysis and may include encephalitis. Major muscle groups including respiratory muscles may be involved. |
| Infectious Dose | |
| Incubation Period | For non-paralytic polio: 3-6 days For paralytic polio: 7 – 21 days. |

MEDICAL PRECAUTIONS / TREATMENT

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| Prophylaxis | Only symptomatic treatment is available. |
| Vaccines | Oral Polio Vaccine (OPV), and Inactivated Polio Vaccine (IPV) |
| Treatment | Only symptomatic treatment is available. |
| Surveillance | Monitor for symptoms and testing using serology or PCR. |
| UVM IBC Requirements | Report any exposures or signs and symptoms to your supervisor |
| Additional Medical Precautions | Unvaccinated children or persons with B cell immunodeficiencies are at higher risk of becoming infected if exposed. All individuals working with OPV are required to receive full Polio vaccination. |

LABORATORY HAZARDS

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| Laboratory Acquired Infections | Wild type and vaccine strain polio has minimal or no risk to the immunized laboratory worker, but is a potential threat to the eradication effort. There is potential risk to members of the household who are immunocompromised. Most vaccine-related polio has occurred when a person shedding the vaccine virus infected a household member with a predisposing immune defect. |
| Sources | |

CONTAINMENT REQUIREMENTS

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| BSL - 2 | Manipulation of known or potentially infected clinical samples and cell cultures of laboratory adapted strains (RG2) |
| BSL - 3 | |
| ABSL - 2 | Work with animals infected with risk group 2 strains |
| ABSL - 3 | |
| Aerosol generating activities | Centrifugation, homogenizing, vortexing or stirring, changing of animal cages, cell sorting, pipetting, pouring liquids, sonicating, loading syringes. |
| Primary containment device (BSC) | Use for aerosol-generating activities, high concentrations, or large volumes. |

EXPOSURE PROCEDURES

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| Mucous membranes | Flush eyes, mouth or nose for 15 minutes at eyewash station. |
| Other exposures | Wash area with soap and water. |
| Medical Follow-Up | Contact UVMHC Infectious Disease Dept. directly at (802) 847-2700 for immediate assistance. Bring this document with you if seeking medical care. |
| Reporting | Report all exposures or near misses to: <ol style="list-style-type: none"> Your immediate Supervisor The UVM Biosafety Officer at (802) 777-9471 and Risk Management at 6-3242 Risk Management and Safety; https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures |

PERSONAL PROTECTIVE EQUIPMENT (PPE)

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| Minimum PPE Requirements | Nitrile gloves, lab coat, appropriate eye/face protection. Wash hands after removing gloves. |
| Additional Precautions | Risk assessment dependent |

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| VIABILITY | |
|---------------------------------|--|
| Disinfection | Susceptible to 1% sodium hypochlorite, 2% glutaraldehyde, 70% ethanol and formaldehyde |
| Inactivation | Inactivated by heat |
| Stability in Environment | Capable of surviving outside of the host in feces, water, and food. |

| SPILL CLEAN UP PROCEDURES | |
|---------------------------|--|
| Small Spill | Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply approved disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before clean up and disposal. Dispose in double biowaste bags and biobox. |
| Large Spill | <p>Inside of a lab: Call UVM Service Operations at 656-2560 and press option 1 to speak to a dispatcher. Ask them to page Risk Management and Safety.</p> <p>Outside of a lab: Pull the nearest fire alarm and evacuate the building. Wait out front of the building for emergency responders to arrive.</p> |

| REFERENCES | |
|------------|---|
| WHO | Polio Laboratory Manual 4 th Edition. 2004 http://polioeradication.org/wp-content/uploads/2017/05/Polio_Lab_Manual04.pdf |
| CDC | Travelers Health: The Yellow Book- Chapter 3 Poliomyelitis https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/poliomyelitis |
| CDC | The Pink Book: Epidemiology and prevention of vaccine preventable diseases – Chapter 18 Poliomyelitis https://www.cdc.gov/vaccines/pubs/pinkbook/polio.html |
| BMBL | https://www.cdc.gov/biosafety/publications/bmbl5/ |

| STUDENT / EMPLOYEE NAME | SIGNATURE | DATE |
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Biosafety Review:

Jeff LaBossiere, Biological Safety Officer

Date

Principal Investigator: _____

IBC Registration #: _____