**Biohazardous Agent Reference Document (BARD) and**

**Information for Healthcare Providers in the Event of an Exposure**

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| The BARD is an additional guidance tool. It is not a substitute for a risk assessment, biosafety training, lab-specific training, SOP as required by the IBC or a formal [IBC master protocol registration](https://www.uvm.edu/rpo/biosafety-oversight). This document must 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 and understood the information. The BARD is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Please bring this IBC-approved BARD with you to the UVMMC Emergency Department if there has been an exposure and someone requires medical assistance. INSTRUCTIONS for BARD Preparation1. Complete the blue Information for Healthcare Providers section.
2. Review the standard information contained in the green section of this document.
3. Add/revise 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.
4. Submit the BARD along with your IBC master protocol registration or amendment.
5. Once approved by the IBC, all personnel must review this BARD. The PI will attest during the submission of the registration or amendment to add new personnel that each lab member has read and understands the material.
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| **Information for Healthcare Providers**Dear Healthcare Provider, This individual works in a UVM research laboratory and has been exposed to a pathogen or toxin. Information about the materials this person may have been exposed to is listed below. You may also find useful additional information in subsequent pages of this reference document. |
| **Pathogen Name:** | Salmonella enterica Typhi |
| **Pathogen/Toxin Classification:** |  |
| **List All Strains Used in the Laboratory:** |  |
| **List Resistant Genes Known to be Encoded:** |  |
| **Modes of Transmission *(mucous membranes, needle stick, inhalation)*:** | Ingestion, contact with non-intact skin, mucous membrane contact. Aerosol transmission unknown. |
| **Known Medical Precautions and Treatment** |

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| **Prophylaxis** | None |
| **Vaccines** | Vaccines available in the US. The oral typhoid vaccine (live) is not given to pregnant women or immunosuppressed people. A capsular polysaccharide IM vaccine (Vi vaccine) is available for these groups. |
| **Treatment and/or Post-exposure Intervention** | Fluid and electrolyte replacement, antibiotics. Chloramphenicol is the most commonly used. |
| **Surveillance** | Monitor for symptoms and test using serology, PCR, or microbiological isolation |
| **Additional Medical Precautions (immunosuppression, pregnancy, allergies)** | Very young, very old, and immunocompromised individuals are at an increased risk |

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| **Health Hazards** |
| **Host Range** | Humans |
| **Signs and Symptoms** | Fever (within 72 hours after onset of illness), headache, slow heart rate, faint rash on chest or abdomen, anorexia, abdominal pain, muscle pain, malaise, diarrhea or constipation |
| **Infectious Dose** | 100,000 organisms via ingestion |
| **Incubation Period** | 3 – 60 days with most infections occurring 7 – 14 days after exposure |
| **Exposure Procedures** |
| **Mucous membranes** | Flush eyes, mouth or nose for 15 minutes at eyewash station. |
| **Other exposures** | Wash area with soap and water for 15 minutes.  |
| **Medical Follow-Up** | Contact UVMMC 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:1. Your immediate Supervisor
2. SOS at 802-656-2560 and ask to have the EH&S team paged
3. Risk Management: <https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures>
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| **Laboratory Hazards** |
| **Laboratory Acquired Infections** | Until 1974, 258 cases and 20 deaths due to laboratory-acquired typhoid fever were reported. 64 cases and 2 deaths due to *Salmonella* spp. infections were reported between 1979 and 2004, most of them associated with *S.*Typhi  |
| **Sources** | Blood, urine, feces, and bile from infected humans, laboratory cultures, contaminated food & water |
| **Characteristics** |
| **Morphology** | Gram-negative, non- spore forming, motile, rod-shaped bacterium. Member of the family Enterobacteriaceae. |
| **Strain Specific Characteristics**  | Typhi serotype is the causative agent of typhoid fever |
| **Containment Requirements** |
| **BSL - 2** | Manipulation of known or potentially infected clinical samples and 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, animal surgeries, cell sorting, pipetting, pouring liquids, sonicating, loading syringes |
| **Primary containment device (BSC)** | Use for aerosol-generating activities, high concentrations, animal manipulations, or large volumes |
| **Personal Protective Equipment (PPE)** |
| ***Minimum PPE Requirements*** | Nitrile gloves, lab coat, appropriate eye/face protection. Wash hands after removing gloves. |
| ***Additional Precautions*** ***(Risk assessment dependent)*** | Risk assessment dependent |
| **Viability** |
| **Disinfection** | Susceptible to 1% sodium hypochlorite, 70% ethanol, 2-5% phenol, 4% formaldehyde, 2% glutaraldehyde, 3-6% hydrogen peroxide, quaternary ammonium compounds, iodophors. Contact time of 10 minutes. |
| **Inactivation** | Inactivated by autoclaving at 121°C for 15+ minutes, dry heat above 170°C for 1+ hour |
| **Survival Outside Host** | May survive for several months, can survive in soil for up to 231 days, in water for up to 152 days  |
| **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** | **Inside of a lab:** Call UVM Service Operations at 656-2560 and ask to speak to a dispatcher. Ask them to page Risk Management and Safety. **Outside of the lab:** Pull the nearest fire alarm and evacuate the building. Wait out front of the building for emergency responders to arrive. |
| **References** |
| **Canadian PSDS** | <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/salmonella-enterica.html> |
| **BMBL** | <https://www.cdc.gov/biosafety/publications/bmbl5/> |
| **CDC Guidelines**  | <https://www.cdc.gov/typhoid-fever/index.html> |