Tufts University / Tufts Medical Center

Exposure Response Plan for the Laboratory Handling of Cryptosporidium

Background Information

Cryptosporidium is a ubiquitous water borne parasite that causes diarrheal disease worldwide. There is no vaccine and limited treatment for this parasite. The ID50 for an immune competent individual is approximately 132 organisms. The infectious dose varies by strain and has been reported to be as low as 9 oocysts. Mode of transmission is primarily through the fecal-oral route. Oocysts must be ingested, or inhaled, in order for infection to occur.

Exposure Incident: Any exposure of the agent to the eyes, nose or mouth, or inhalation of aerosols.

Reporting Exposure Incidents: All exposure incidents must be reported immediately to the supervisor.

Pre-exposure Health Screening:

All employees will be educated by the PI or Occupational Health Professional of the risks of working with Cryptosporidium and symptoms of exposure prior to any individual beginning work with or around this agent.

All immunocompromised employees who might potentially be exposed to Cryptosporidium during routine work should be advised to self identify to Employee Health Clinic (Boston) or Occupational Medical Clinics (Grafton/Medford) for further evaluation and discussion of the specific risks associated with immunodeficiency and exposure to Cryptosporidium.

Before an Exposure Incident Occurs:

Immunization for Cryptosporidium is currently not available.

After an Exposure Incident Occurs: Immediate Action by Route of Exposure

Needle stick, Animal Bite or Laceration: Wash the area with soap and running water. Do not apply bleach, alcohol or other disinfectant to the skin. For infection to occur due to this type of exposure, oocysts must, in some way, be ingested or inhaled.

Mucous membranes (eye, nose, mouth): If contaminated material is splashed or sprayed into the faces contaminating the eyes, nose or mouth: flush the eyes for 10-15 minutes, rinse mouth out with clean water. Be sure not to swallow. Wash down the face being sure that the nasal cavities have been rinsed as much as possible.

Inhalation: If contaminated materials are aerosolized outside of primary containment and potentially inhaled, rinse mouth twice expelling the rinsate. Do not swallow.

Contact with intact skin and clothing: Remove contaminated clothing using gloves and place objects in plastic bags and dispose of as biological or medical waste. Wash contaminated skin with soap and water.
Again, for infection to occur due to this type of exposure, oocysts must, in some way, be ingested or inhaled.

After an exposure incident occurs: medical evaluation and follow-up:

Following immediate post exposure actions contact the Tufts Medical Center Employee Health Clinic (Boston), TCSVM Occupational Medical Clinic (Grafton) or the Mt. Auburn Occupational Health Services (Medford) and arrange for medical evaluation, diagnosis and treatment if needed.

During this medical evaluation, the exposed individual may be educated on the signs or symptoms of cryptosporidiosis, and instructed to watch for the development of these signs and symptoms.

Signs and Symptoms of Cryptosporidiosis include:

In the immunocompetent individual: Mild to moderate diarrhea, abdominal pain, nausea, vomiting, fever, leading to metabolic abnormalities and dehydration, sometimes requiring medical care.

In the immunocompromised individual: Prolonged and more severe symptoms as described above. Severe diarrhea may be difficult to treat, unrelenting, and/or ultimately fatal, if immune system is not reconstituted.

Confirmation of infection is done by microscopic examination of feces and the identification of oocysts by a clinical laboratory.

Post-exposure prophylaxis:

There is currently no post exposure pre-symptom prophylaxis for cryptosporidiosis. If any individual working with or around Cryptosporidium develops signs or symptoms suggestive of exposure to Cryptosporidium, they must inform their PI and Biosafety Officer immediately. Signs and symptoms usually develop within 5-7 days of exposure. The individual must be evaluated at Tufts Medical Center Employee Health (Boston), must notify the TCSVM Occupational Health Nurse who will refer the individual to an Infectious Disease specialist (Grafton), or a physician at Mt. Auburn Hospital Occupational Health Group (Medford).

Massachusetts Department of Public Health classifies cryptosporidiosis as a reportable disease and must be reported to the Local Board of Health immediately by the attending physician. In accordance with Massachusetts regulation, any clinical laboratory identifying an infection caused by Cryptosporidium may be reported to the Massachusetts Department of Public Health in accordance with disease-reporting regulations.

If an employee develops signs and symptoms associated with Cryptosporidium exposure in the absence of an exposure incident, the PI and Biosafety Officer should be notified immediately and the infection will be considered laboratory-acquired until proven otherwise.