 Exposure Response Plan for the Laboratory Handling of *Bordetella pertussis*

**Background Information**

*Bordetella pertussis* is a fastidious, gram-negative, encapsulated coccobaccilli. It is the causative agent of pertussis or whooping cough. It has a number of antigenic and biologically active components that include toxin and cytotoxins. The bacteria attach to respiratory epithelial cells and produce toxins that paralyze the cilia causing both inflammation and interference in clearing pulmonary secretions. Extensive secretions are not produced as *B. pertussis* inhibits the individual’s immune response.

The infectious dose for humans is unknown. Transmission in nature is usually through the inhalation of respiratory droplets. Disease is highly contagious in susceptible persons. Serious and potentially life-threatening complications occur in infants and young children who are not fully vaccinated. When adults and adolescents develop complications they are typically less severe. Persons with mild or asymptomatic disease are capable of transmitting infection. Vaccination does not confer lifelong immunity.

**Exposure Incident:** Laboratory acquired infections (LAIs) and occupationally acquired infections have been reported. Transmission through the aerosol route has been deemed most likely. Infections were found in persons who did not directly manipulate bacteria.

**Reporting Exposure Incidents:** Report all exposures to the Principal Investigator/lab supervisor and seek immediate medical guidance from Occupational Health or Occupational Medicine Clinic. Medical evaluations and help with clean up can be obtained by calling the Tufts police x6-6911. At the Medical Center, call 6-5100. Whenever there is an accident or incident involving *B. pertussis*, the Biosafety Officer must be immediately notified.

**Pre-exposure Health Screening:**

All persons will be educated about the risks of working with *B. pertussis* as well symptoms of exposure.

**Before an Exposure Incident Occurs:**

Vaccines are available and must be discussed with a Health Care Provider. Periodic boosters may be advisable. Vaccination of pregnant women helps protect infants as the mother won’t be a source of infection.

**After an Exposure Incident Occurs: Immediate Action by Route of Exposure**
• **Inhalation:** There is no action to reduce lower respiratory system exposure.

• **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 15 minutes, rinse mouth out with clean water and be sure not to swallow, wash down face being sure that the nasal cavities have been rinsed as much as possible.

• **Needle stick or Laceration:** Wash the area with soap and running water for at least 15 min. Do not apply bleach, alcohol or other disinfectant to the skin.

• **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. Organism can survive on clothing for up to 5 days. Wash contaminated skin with soap and water for 15 minutes.

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

Following immediate post-exposure actions, the exposure incident must be reported to the Supervisor/Principal Investigator and the Biosafety Officer. The exposed person must contact the Occupation Health or Occupational Medical Clinic which will arrange for medical evaluation, diagnosis, and treatment if indicated.

**Signs and Symptoms of Disease:**

The clinical course of the illness is divided into three stages: catarrhal, paroxysmal and convalescent. Identification of lab acquired infections during the catarrhal stage is ideal. Atypical presentation is common in adults who were previously vaccinated. The incubation period is typically 7-10 days although it may be as short as 4 and as long as 42. The characteristic cough is a symptom of the paroxysmal stage.

**Catarrhal**

- Runny nose
- Low grade fever
- Mild, occasional cough which gradually becomes more severe

**Post-exposure prophylaxis:**

The healthcare provider will determine the course of treatment. Disease usually requires supportive care.

The infection will not be considered laboratory-acquired until proven otherwise. Adolescents and adults are reservoirs.

Massachusetts regulation classifies pertussis as a reportable disease and infections will be reported to the Local Board of Health and to the Massachusetts Department of Public Health by the attending physician or the clinical laboratory diagnosing or identifying the infection.