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| **Division:** Health and Safety | |
| **Chapter:** Tuberculosis Exposure Control Program | |
| **By Order of the Fire Chief:** Marc S. Bashoor | **Revision Date:** N/A |

## POLICY

This General Order shall govern the Tuberculosis Exposure Control Program.

During emergency response and transport situations employees/members may provide emergency services to patients with suspected or confirmed Tuberculosis (TB). The Prince George's County Fire/Emergency Medical Services (EMS) Department recognizes its employees/members are at risk for exposure to Mycobacterium tuberculosis (TB). In accordance with the Centers for Disease Control and Prevention (CDC) 1994 Guidelines for the Prevention of Mycobacterium Tuberculosis (TB) in Health Care Facilities, all employees/members who provide care to suspect or confirmed TB patients shall comply with the provisions of this TB Exposure Control Program. This TB Exposure Control Program outlines procedures for early detection, exposure prevention, use of respiratory protection, purified protein derivative (PPD) skin testing, post-exposure notification, and medical treatment.

## DEFINITIONS

**Acid-fast bacilli (AFB)** – Bacteria that retain certain dyes after being washed in an acid solution. Most acid-fast organisms are mycobacteria. When AFB is seen on a stained smear of sputum or other clinical specimen, a diagnosis of TB should be suspected. However, the diagnosis of TB is not confirmed until a culture is grown and identified as M. tuberculosis.

**Bacillus of Calmette and Guerin (BCG) Vaccine** - A TB vaccine used in many parts of the world.

**Human Immunodeficiency Virus (HIV)** - The virus that causes Acquired Immunodeficiency Syndrome (AIDS). HIV infection is the most important risk factor for the progression of latent TB infection to active TB disease.

**Induration** - An area of swelling produced by an immune response to an antigen. In PPD skin testing or anergy testing, the diameter of the induration is measured 48-72 hours after the injection and the results are recorded in millimeters.

**Infectious** - Capable of transmitting infection. For example, when persons who have clinically active pulmonary or laryngeal TB disease cough or sneeze, they can expel droplets containing Mycobacterium tuberculosis (M. TB) into the air.

**Multi-drug Resistant Tuberculosis (MDR-TB)** - Active TB caused by M. tuberculosis organisms that are resistant to more than one anti-TB drug (anti-tuberculosis antibiotics).

**Mycobacterium Tuberculosis (M. TB)** - A rod shaped bacterium that causes tuberculosis. Normal air currents can keep the particles (tubercle bacillus) airborne for hours.

**Purified Protein Derivative (PPD)/Tuberculin Test (Mantoux Test)** - A skin test used to evaluate the likelihood that a person is infected with M. tuberculosis. A small dose of tuberculin is injected just beneath the surface of the skin and the area is examined 48-72 hours after the injection. A reaction is measured according to the size of the induration. The classification of a reaction as positive or negative depends on the patient's medical history and various risk factors.

**Purified Protein Derivative (PPD)/Tuberculin Test Conversion** - A change in PPD skin test results from negative to positive. A conversion within a two-year period is usually interpreted as new M. tuberculosis infection, which carries an increased risk for progression to active disease.

**Risk Assessment** - The Center for Disease Control and Prevention (CDC) recommendation to: 1) evaluate the risk of transmission of M. TB in specific area or group; 2) develop and update the TB infection control plan based on the results; and 3) evaluate the infection control program's effectiveness.

**Suspected TB Case** - An individual experiencing symptoms consistent with TB. The patient may be diagnosed with a positive AFB smear and started on anti-TB therapy, or have a negative AFB smear with clinical or radiographic evidence of TB and have been started on anti-TB therapy.

**Tuberculosis (TB)** - A clinically active, symptomatic disease caused by an organism in the M. tuberculosis complex (usually M. tuberculosis or, rarely, M. bovis or M. africanum). TB is a bacterial infection that is spread through the air via contaminated droplets and is spread most easily in closed air spaces over prolonged time periods.

**TB Disease** - A particular episode of clinically active TB. This term should be used only to refer to the disease itself, not the person with the disease. State laws mandate all TB cases be reported to the local health department.

**TB Exposure** - Contact with a patient or employee/member who has confirmed laryngeal or pulmonary TB, in the absence of respiratory protection or use of engineering controls.

**TB Infection** - A condition in which living tubercle bacilli are present in the body but the disease is not clinically active. Infected persons usually have positive tuberculin/PPD skin test reactions, but they have no symptoms related to the infection and are not infectious.

**Transmission** – The spread of infection from one person to another, the likelihood of transmission is directly related to the duration and intensity of exposure of M. tuberculosis.

**Two-Step Purified Protein Derivative (PPD)/Tuberculin Test (Mantoux Test)**- A procedure used for the baseline testing of persons, who will periodically receive tuberculin skin tests to reduce the likelihood of mistaking old infection (boosted reaction) for new infection.

## PROCEDURES / RESPONSIBILITIES

### 1. Administrative Controls

**Tuberculosis (TB) Risk Assessment**

The Infection Control Officer shall conduct the annual risk assessment.

The risk assessment determines the risk for transmission of TB during the provision of services by area or work group.

The risk assessment includes a review of the number of TB patients in the community, the number of infectious TB exposures, the number of employee/member PPD skin test conversions, and the rate of person-to-person transmission of TB.

The risk assessment results determine the frequency of PPD skin testing and assess the need for additional TB control measures such as respiratory protection.

### 2. Work Practice Controls

Employee/member shall wear the NIOSH approved N99 respirator when providing care to the following high-risk group of patients OR patients who exhibit signs and symptoms (persistent cough ≥ three weeks, bloody sputum, night sweats, weight loss, anorexia, and fever) suspicious of TB:

- Persons with HIV infection, close contacts of infectious TB cases, foreign-born persons from countries with a high prevalence of TB (e.g., Asia, Africa, Latin American and some Caribbean and European countries) or medically underserved low-income populations, including the homeless and residents of shelters.
- Alcoholics and intravenous drug users, persons currently incarcerated/history of incarceration or residents of mental institutions and long-term care facilities.
- Persons with medical conditions (silicosis, gastrectomy, jejunoileal bypass, chronic renal failure, diabetes mellitus, leukemia and lymphomas), conditions requiring prolonged high dose corticosteroid and other immunosuppressive therapy, and weight of 10% or more below ideal body weight.

Patients with suspected or confirmed TB shall be evaluated promptly to minimize the amount of time employee/member is exposed.

Patients shall be provided with tissues and instructed to cover their mouth and nose when coughing or sneezing. They shall be instructed to wear a standard surgical mask during transfer from the medical office, home, or hospital, as appropriate.

**3. Respiratory Protection Program**

Employee/member shall comply with the following criteria for use, maintenance, and disposal of the Department issued NIOSH-approved N99 respirators.

Employee/member who has not received the appropriate training/fit testing in the use and maintenance of the N99 respirator shall not wear the N99 respirators or enter rooms where patients with known or suspect TB are receiving care. (See General Order 08-17, Respiratory Protection Program.)

Employees/members shall wear the N99 respirator when transporting patients with suspected or confirmed pulmonary or laryngeal TB. If feasible, during transport, the windows of the vehicle shall be kept open and the heating or air conditioning system shall be placed on the non-recirculating cycle, as appropriate.

Employees/members entering the room of a patient with suspected or confirmed TB shall keep the door closed and wear the Moldex 2315N99 respirator, as appropriate.

Employees/members performing procedures or tasks or cough inducing procedures, such as endotracheal intubation, extubation, suctioning, or gastric lavage, shall wear the N99 respirator and eye protection.

N99 respirators may be worn as long as the employee/member is able to obtain a secure face fit, and the respirator is not visibly damaged or misshapen, and inhalation/exhalation is not impeded.

N99 respirators should be discarded after each use. If the mask becomes wet from an external source or is otherwise damaged, it must be replaced.

N99 respirators are discarded in the general waste. Respirators visibly soiled and dripping with blood, or other potentially infectious materials, are disposed of in the infectious (red-bagged) waste stream.

**4. PPD Skin Testing Program**

During the pre-employment, scheduled physical examinations and annual training programs, employee/member at risk for exposure to TB, including those with a history of Bacillus Calmette Guerin (BCG) vaccination, are required to receive a PPD skin test unless a previously positive skin test can be documented.

**Two-Step PPD Testing Program**

Employee/member who has not had a documented negative PPD skin test result within one year of employment shall have a two-step PPD skin test. The two-step PPD skin test procedure is outlined below:

- Step 1 - An initial PPD skin test will be placed and read within 48-72 hours. If the initial test is positive, the person is considered infected.
- Step 2 - If the initial PPD skin test is negative, a second PPD skin test will be placed one to three weeks later and read within 48-72 hours of placement. If the second PPD skin test is positive, the person is considered infected. If the second PPD skin test is negative, the person is considered uninfected.

**Negative PPD Skin Tests**

PPD skin test negative employee/member shall undergo PPD skin testing annually/periodically as determined by the TB risk assessment.

PPD skin test negative employee/member shall undergo PPD skin testing whenever they are exposed to a confirmed TB patient and appropriate precautions were not observed at the time of exposure.

PPD skin test negative employee/member who has had a PPD skin test performed at another medical facility within three (3) months may provide (written) medical documentation of the test results. The documentation must include the date the PPD skin test was administered, the PPD skin test results with the induration measured in millimeters (readings of "negative" will not be accepted), and signature of the licensed provider.

**Positive PPD Skin Tests**

Employee/member with a documented history of a positive PPD skin test, adequate treatment for disease, or preventive therapy for infection is exempt from further screening. These employees must promptly report the development of any prolonged pulmonary symptoms to the Infection Control Officer for an immediate medical evaluation, as appropriate.

All new hires with a history of a positive PPD skin test shall complete a questionnaire regarding symptoms of TB at the time of hire and on an annual basis. The physician shall evaluate anyone who reports symptoms suggestive of TB.

**PPD Skin Test Conversions**

Employee/member with a newly recognized positive PPD skin test result or PPD skin test conversion should be evaluated promptly for active TB. The health assessment shall include a clinical examination and a chest x-ray.

Employee/member shall be excluded from work if the medical history, clinical examination, or chest x-ray is compatible with active TB.

Employee/member cannot return to work until the following criteria are met:

- A diagnosis of active TB is ruled out.

- A diagnosis of active TB is established, is being treated, and a determination has been made by a physician that the employee/member is not infectious.

**PPD Skin Test Interpretation**

An authorized medical professional with the appropriate training must interpret and document all PPD skin test results.

Employee/member with TB at sites other than the respiratory system (for example bone or kidney) need not be excluded from work if pulmonary or laryngeal TB has been ruled out.

Employee/member, who is without evidence of active TB, may refuse prophylactic treatment for positive PPD skin test results.

**TB Exposure and Follow-up Procedures**

TB exposure is defined as contact with a patient or employee/member who has confirmed laryngeal or pulmonary TB, in the absence of respiratory protection or use of engineering controls.

Employee/member with previously known positive PPD skin test reactions does not require repeat PPD skin test or chest x-ray unless they have symptoms suggestive of TB (e.g., cough or fever). If symptoms develop, the employee/member shall be referred to the physician, as appropriate.

Employee/member with a history of a negative PPD skin test reaction shall have a PPD skin test immediately after an exposure.

Employee/member with documentation of a negative PPD skin test performed within 3 months preceding exposure shall be exempt from the baseline PPD skin testing. If the initial PPD skin test results are negative, the PPD skin test shall be repeated at 12 weeks after the exposure to assure the employee/member has not converted to PPD skin test positive. If any employee/member converts during the 12-week check, the employee/member shall be referred to the physician and must complete a Career/Volunteer Injury Packet.

Employee/member without documentation of a negative PPD skin test performed within three months preceding exposure should have a PPD skin test immediately after the exposure. If the initial skin test is negative, the PPD skin test shall be repeated in 12 weeks post-exposure to assure the employee/member has not converted to PPD skin test positive. If any employee/member converts during the 12-week check, they shall be referred to the physician and must complete a Career/Volunteer Injury Packet.

Medical care is provided free of charge for all work-related PPD skin test conversions. If exposure is not work-related, the employee will be referred to their private physician and/or local health department, as appropriate.

## 5. Education and Training

Formal training programs are provided for employee/member at risk for exposure to suspected or confirmed TB persons. The TB educational programs are: 1) required prior to riding apparatus and/or providing patient care; 2) coordinated by the Infection Control Officer in conjunction with the Fire/EMS Training Academy; and 3) mandatory annual refresher training.

The following topics are covered:

- Potential for occupational exposure to persons who have suspected or confirmed infectious TB. Information concerning the prevalence of TB in the community and work environment and the ability of the employee/member to properly isolate patients who have active TB.
- Principles and practices of infection control that reduce the risk for transmission. This includes information concerning infection control measures, policies and procedures, and criteria for use and disposal of respirators.
- Purpose of PPD skin testing, the significance of a positive PPD skin test result, and the importance of participating in the PPD skin test program.
- Principles of preventive therapy for latent TB infection and drug therapy for active TB, including the indications, use, effectiveness, and the potential adverse effects of the drugs.
- Employee/member responsibility to seek prompt medical evaluation if a PPD skin test conversion occurs, or if clinical symptoms develop that could be caused by TB.
- Risks of TB infection in persons with HIV infection or other cases of severely impaired cell-mediated immunity. The differences in the clinical presentation of disease and the high mortality rate associated with Multi-Drug Resistant Tuberculosis (MDR-TB) in such persons.
- Importance of notifying the Infection Control Officer if the employee/member or patient is diagnosed with active TB.
- Responsibilities of the facility to maintain confidentiality of the medical record ensure the employee/member receives appropriate treatment, and that the employee/member is non-infectious before returning to duty.

## 6. Education and Training Records

Education and training records for employee/member will be maintained in the Infection Control Office.

Education and training records include the date of the training, station, name, and ID number of the attendees, and the name and qualifications of the instructor.

Education and training records shall be maintained for a minimum of three years from the date on which the training occurred.

**7. Infection Control Exposure Records**

All files shall include employee/member name, and ID number, a record of PPD skin test status, documentation on the routes of exposure and circumstances under which the exposure occurred.

All files shall include records related to TB exposure incidents, including results of examination, medical testing, follow-up procedures, and health care professional's written opinion.

All files shall include results of the source patient's test results/infectivity, if feasible and not prohibited by state or local law.

All employee/member medical records regarding exposure shall be kept confidential and are not disclosed without written consent. (See General Order 5-16, Authorization for Release of Employee Medical Record, Form Number 4558.)

All medical records shall be provided upon request for examination and copying to the employee/member, employee/member representatives, and OSHA representatives, where required by law.

All medical records shall be maintained for the duration of employment plus thirty (30) years.

**8. Public Health Department Reporting**

The Infection Control Officer shall report all patients and employees/members with confirmed TB, positive AFB smears, cultures, and sensitivities to the appropriate health department.

**9. Responsibilities**

**The Infection Control Officer**

The Infection Control Officer is responsible for the following:

- Coordination and implementation of the TB program.
- Conducting an annual risk assessment and review of the program's effectiveness.
- Coordinating initial and annual educational programs limited to annual employee/member PPD skin test placement, as appropriate.
- Coordination and administration of new hire, annual and periodic PPD skin tests, pre- and post-exposure counseling, prophylaxis, treatment and referral, as appropriate.
- Providing employee/member 24-hour advice, post-exposure notification and referral to the physician or nearest medical center, as appropriate.
- The Infection Control Officer will be responsible for notifying employee/member involved in an exposure incident to determine the extent of the exposure, if any.
- Maintaining medical records for documentation of PPD skin test administration and interpretation, prophylaxis and/or treatment and pre- and post-test counseling records.

**Supervisors**

Supervisors at all levels are responsible for the following:

- Ensuring employee/member reviews and complies with the provision of this General Order.
- Conducting the initial and annual reviews of this General Order and ensure that employee/member attends mandatory annual educational; training sessions.
- **Immediately** notifying the Operations Center Supervisor or Infection Control Officer upon being notified of a possible exposure to a suspected or confirmed TB patient.
- Assisting the Infection Control Officer with notification and tracking of employee/member exposed to patients with active TB, as appropriate.
- Instructing employee/member to complete the Infection Control Exposure Report and forwarding the completed form to the Infection Control Officer no later than 24 hours post-incident. (See General Order 08-09, Infection Control Program, Attachment #3, Infection Control Exposure Report, Form Number 4538.)
- Completing the Career Injury Packet or Volunteer Injury Packet for work-related PPD skin test conversions or illness as the result of a confirmed TB exposure and forwarding the completed packet to the Occupational Safety and Health office.
- Monitoring the condition and availability of personal protective equipment (PPE) and ensuring that minimum equipment requirements are maintained at all times. (See General Order 08-09, Infection Control Program, Attachment #2, Infection Control Mandatory Equipment Requirements, Form Numbers 4561, 4562, 4563.)

**Employees/Members**

Employees/members are responsible for the following:

- Demonstrating compliance with the provisions of this General Order and General Order 08-17, Respiratory Protection Program. (See General Order 08-17, Respiratory Protection Program.)
- Attending mandatory education and training programs, wearing the
- Department issued, NIOSH-approved N99 respirator and complying with the PPD skin-testing program, as appropriate.
- Immediately notifying the Operations Center Supervisor or Infection Control Officer and Immediate Supervisor upon being notified of a possible exposure to a suspect or confirmed TB patient.
- Completing the Infection Control Exposure Report and forwarding to the Infection Control Officer no later than 24 hours post-incident for documentation of counseling session and follow-up recommendations. (See General Order 08-09, Infection Control Program, Attachment #3, Infection Control Exposure Report, Form Number 4538.)
- Scheduling and maintaining appointments with the physician or designated medical facility regarding post-exposure follow up, PPD skin tests, prophylaxis, and medical treatment, as recommended.

- Completing the Career Injury Packet or Volunteer Injury Packet for work-related PPD skin test conversions or illness as the result of a confirmed TB exposure. Forwarding the completed
- packet to Occupational Safety and Health. Remember that failure to seek follow-up care regarding TB exposure may jeopardize Workers' Compensation claims!
- Maintaining confidentiality of all source patients regardless of exposure to TB. For example, do not provide source patient's identity or medical diagnosis such as TB over the Department radio system.
- Minimizing the risk of exposure/transmission of TB to other employee/member and the public by utilizing sick leave when experiencing non-work related signs and symptoms consistent with TB, i.e., fever flu-like symptoms, vomiting, chills, and/or productive cough (bloody sputum).
- Manager of the RMO is responsible for ensuring compliance with the OSHA Standard 29CFR. 1910.134 "Respiratory Protection Standard." (See General Order 08-17, Respiratory Protection Program.)

**Other Personnel/Duty Officers**

The Operations Center Supervisor and the exposed employee are responsible for notifying the Infection Control Officer, as appropriate.

801 or the Departmental Duty Officer shall provide the names and identification numbers of all personnel who responded to the above incident to the Infection Control Officer, as appropriate.

Medical Centers are responsible for notifying the Infection Control Officer of employee/ member exposure to TB, and providing written notice to the Infection Control Officer within 48 hours post-exposure, identifying the employee/member who transported the patient to the facility. (For a copy of the 1994, Ryan White Comprehensive AIDS Resources and Emergency Act Regarding Emergency Response, employees should contact the Infection Control Officer.)

## REFERENCES

N/A

## FORMS / ATTACHMENTS

N/A