

# **Tuberculosis Exposure Control Plan for Low Risk Dental Offices**

## **A. BACKGROUND**

According to the CDC, approximately one-third of the world's population, almost two billion people, are infected with tuberculosis. There are about eight million new cases annually, and approximately three million people die every year throughout the world.

In the United States, the number of cases has steadily declined in the past ten years, and it's estimated that there are about 15,000 cases of active tuberculosis every year.

Tuberculosis is a contagious disease that mainly causes infections of the lung but can also occur in other areas of the body. Some of the symptoms are fatigue, weight loss, fever, hoarseness, chest pain, night sweats, loss of appetite, persistent cough and shortness of breath, which may result in serious respiratory illness or death.

## **B. POLICY**

The goal of a TB infection control plan is to control occupational exposure to the TB bacteria.

Exposure control will be carried out through:

1. The identification and subsequent referral of suspected TB source cases;
2. Reporting of all exposure incidents and subsequent evaluations;
3. TB skin test screening or blood tests and/or radiological exams; and
4. Training.

This program will establish office policies regarding TB exposure and will help to protect the health and safety of employees that may come in contact with infected individuals.

## C. EXPOSURE CONTROL PLAN

### 1. Employees

#### a. New Employees

New employees should undergo TB skin tests or blood tests. Anyone who tests positive must submit to a chest ray and a medical evaluation to determine the status of the disease. If the chest X-ray reveals an active TB condition, the individual will be referred to their medical advisor for treatment. Any employees with active TB cannot return to work until they are cleared by the doctor.

#### b. Current Employees

Since we work in a low risk environment, as defined by the CDC (less than 3 patients with active TB are seen within the past year), we do not need to undergo annual testing. Instead, we generally only need to undergo testing in the event of an exposure incident.

However, if an employee begins to exhibit symptoms of infectious TB, she may be asked to undergo testing, and if the tests are positive, the individual will be referred to their medical advisor for evaluation and treatment. Any employees with active TB cannot return to work until they are cleared by their doctor .

### 2. Exposure Reporting

In the event of an exposure incident, either from an infected patient or infected employee, all employees and patients who may have been exposed must be notified so they may be tested and evaluated.

The CDC requires that all suspected cases of infectious TB be reported to the local health department.

### 3. Identifying patients who may have infectious TB

One of the most important methods of identifying patients who may have an active TB infection is regularly updating medical histories. All patients should be asked if they have ever had active TB or a latent/dormant TB infection, whether they have HIV or a compromised immune system, and whether they have any symptoms of active TB infection.

#### 4. Procedures to follow with a suspected or confirmed TB patient

If you encounter a patient with possible symptoms of active TB, the most important goal is to get the potentially infected patient out of your office as quickly as possible. Once they are out of your office, they should be reported to the CDC for followup and so that all individuals they may have exposed can be notified.

Put the patient in a separate area away from other patients and employees while evaluating him for possible infectiousness, put the patient in a mask and make sure he observes correct “cough etiquette”, including turning his head away from other people and coughing into a tissue or cloth. Postpone any non-urgent dental care, and refer any urgent care to a facility with the correct level of respiratory protection, which includes reverse airflow, well-fitting respirators for all personnel, and correct administrative controls and procedures. Once the patient has been cleared by his medical doctor, he can return for treatment at your office.

#### 5. Training

Tuberculosis awareness training shall be provided to all new employees. Training shall consist of the following subject matter:

- a. Factors that place individuals at risk;
  - b. How TB is transmitted and the difference between TB infection and active disease, including info on drug resistant forms of the disease;
  - c. Symptoms of TB
  - d. TB Exposure Control Plan
  - e. TB testing and procedures
- #### 6. Personal Protective Equipment (PPE) use.

We do not work in a facility that has adequate protection against airborne pathogens such as TB. (We don't have rooms with reverse airflow/negative pressure, we don't use respirators, etc.) Our masks are not respirators and do not offer the level of protection needed to protect us from TB disease; in order to safely treat a TB patient, you must have a respirator of at least N95 filtration efficiency. That is why it is so important that any suspected TB patients be removed immediately from the office environment.

## TB Information for Healthcare Workers

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*M. tuberculosis* is a bacterium carried in airborne infective droplet nuclei that can be generated when persons with pulmonary or laryngeal TB sneeze, cough, speak, or sing (439). These small particles (1--5  $\mu\text{m}$ ) can stay suspended in the air for hours (440). Infection occurs when a susceptible person inhales droplet nuclei containing *M. tuberculosis*, which then travel to the alveoli of the lungs. Usually within 2--12 weeks after initial infection with *M. tuberculosis*, immune response prevents further spread of the TB bacteria, although they can remain alive in the lungs for years, a condition termed latent TB infection. Persons with latent TB infection usually exhibit a reactive tuberculin skin test (TST), have no symptoms of active disease, and are not infectious. However, they can develop active disease later in life if they do not receive treatment for their latent infection.

Approximately 5% of persons who have been recently infected and not treated for latent TB infection will progress from infection to active disease during the first 1--2 years after infection; another 5% will develop active disease later in life. Thus, approximately 90% of U.S. persons with latent TB infection do not progress to active TB disease. Although both latent TB infection and active TB disease are described as TB, only the person with active disease is contagious and presents a risk of transmission. Symptoms of active TB disease include a productive cough, night sweats, fatigue, malaise, fever, and unexplained weight loss. Certain immunocompromising medical conditions (e.g., HIV) increase the risk that TB infection will progress to active disease at a faster rate (441).

Overall, the risk borne by DHCP for exposure to a patient with active TB disease is probably low (20,21). Only one report exists of TB transmission in a dental office (442), and TST conversions among DHCP are also low (443,444). However, in certain cases, DHCP or the community served by the dental facility might be at relatively high risk for exposure to TB.

Surgical masks do not prevent inhalation of *M. tuberculosis* droplet nuclei, and therefore, standard precautions are not sufficient to prevent transmission of this organism. Recommendations for expanded precautions to prevent transmission of *M. tuberculosis* and other organisms that can be spread by airborne, droplet, or contact routes have been detailed in other guidelines (5,11,20).

TB transmission is controlled through a hierarchy of measures, including administrative controls, environmental controls, and personal respiratory protection. The main administrative goals of a TB infection-control program are early detection of a person with active TB disease and prompt isolation from susceptible persons to reduce the risk of transmission. Although DHCP are not responsible for diagnosis and treatment of TB, they should be trained to recognize signs and symptoms to help with prompt detection.

Because potential for transmission of *M. tuberculosis* exists in outpatient settings, dental practices should develop a TB control program appropriate for their level of risk (20,21).

- A community risk assessment should be conducted periodically, and TB infection-control policies for each dental setting should be based on the risk assessment. The policies should include provisions for detection and referral of patients who might have undiagnosed active TB; management of patients with active TB who require urgent dental care; and DHCP education, counseling, and TST screening.
- DHCP who have contact with patients should have a baseline TST, preferably by using a two-step test at the beginning of employment. The facility's level of TB risk will determine the need for routine follow-up TST.
- While taking patients' initial medical histories and at periodic updates, dental DHCP should routinely ask all patients whether they have a history of TB disease or symptoms indicative of TB.
- Patients with a medical history or symptoms indicative of undiagnosed active TB should be referred promptly for medical evaluation to determine possible infectiousness. Such patients should not remain in the dental-care facility any longer than required to evaluate their dental condition and arrange a referral. While in the dental health-care facility, the patient should be isolated from other patients and DHCP, wear a surgical mask when not being evaluated, or be instructed to cover their mouth and nose when coughing or sneezing.
- Elective dental treatment should be deferred until a physician confirms that a patient does not have infectious TB, or if the patient is diagnosed with active TB disease, until confirmed the patient is no longer infectious.
- If urgent dental care is provided for a patient who has, or is suspected of having active TB disease, the care should be provided in a facility (e.g., hospital) that provides airborne infection isolation (i.e., using such engineering controls as TB isolation rooms, negatively pressured relative to the corridors, with air either exhausted to the outside or HEPA-filtered if recirculation is necessary). Standard surgical face masks do not protect against TB transmission; DHCP should use respiratory protection (e.g., fit-tested, disposable N-95 respirators).
- **Settings that do not require use of respiratory protection because they do not treat active TB patients and do not perform cough-inducing procedures on potential active TB patients do not need to develop a written respiratory protection program.**
- Any DHCP with a persistent cough (i.e., lasting >3 weeks), especially in the presence of other signs or symptoms compatible with active TB (e.g., weight loss, night sweats, fatigue, bloody sputum, anorexia, or fever), should be evaluated promptly. The DHCP should not return to the workplace until a diagnosis of TB has been excluded or the DHCP is on therapy and a physician has determined that the DHCP is noninfectious.

## Infection Control Measures

**The spread of TB in health care settings can be minimized by implementing CDC recommendations for preventing TB transmission in these settings.** The early detection, airborne infection isolation, and treatment of disease in persons with infectious TB are essential to controlling transmission. TB should be suspected in all persons with symptoms consistent with TB (e.g., cough, fever, night sweats, chills, fatigue, weight loss, or loss of appetite), especially those with confirmed or suspected HIV infection and undiagnosed pulmonary disease. Precautions should be taken to prevent airborne transmission of *M. tuberculosis* until TB is diagnosed and treated or ruled out.

In general, patients who have suspected or confirmed TB disease should be considered infectious if (a) they are coughing, undergoing cough-inducing procedures, or have positive sputum smear results for acid-fast bacilli (AFB); and (b) they are not receiving adequate antituberculosis therapy, have just started therapy, or have a poor clinical or bacteriologic response to therapy.

For patients placed under airborne precautions because of suspected infectious TB disease of the lungs, airway, or larynx, airborne precautions can be discontinued when infectious TB disease is considered unlikely and either

- Another diagnosis is made that explains the clinical syndrome, or
- The patient produces three consecutive negative sputum smears collected in 8- to 24-hour intervals (one should be an early morning specimen).

Patients for whom the suspicion of infectious TB disease remains after the collection of three negative sputum smear results should not be released from airborne precautions until they

- Receive standard multidrug antituberculosis treatment (minimum of 2 weeks) and
- Demonstrate clinical improvement.

For these patients, additional diagnostic approaches (e.g., sputum induction) and, after sufficient time on treatment, bronchoscopy may need to be considered.

Patients who have drug-susceptible TB of the lung, airway, or larynx, should remain under airborne precautions until they

- Produce three consecutive negative sputum smears collected in 8- to 24-hour intervals (one should be an early morning specimen), and
- Receive standard multidrug antituberculosis treatment (minimum of 2 weeks), and
- Demonstrate clinical improvement.

Precautions should be taken during and immediately after procedures that may induce coughing, such as bronchoscopy, sputum collection, the aerosol induction of sputum, and the administration of aerosolized medication, such as pentamidine.

Antituberculosis drug treatment should be promptly initiated for persons with TB disease to render them noninfectious. Persons at high risk for LTBI should be tested and, if infected, evaluated for LTBI treatment. Ongoing TB testing should be provided to health care workers who have regular contact with persons with TB or HIV infection.

Remember! The key to preventing LTBI and death and disability from TB disease is to consider the possibility of TB in high-risk groups, make the diagnosis as quickly as possible, and initiate effective, directly observed drug therapy for persons found to have TB. Think TB!