



INDIANA DEPARTMENT OF CORRECTION
TUBERCULOSIS: PREVENTION AND CONTROL

April 2022

PURPOSE STATEMENT

This document provides guidelines for the identification, prevention, and control of Tuberculosis (TB). Guidelines are consistent with CDC recommendations.

TUBERCULOSIS OVERVIEW

Tuberculosis (TB) is an infectious disease that is caused by a bacterium called *Mycobacterium tuberculosis* (MTB). MTB usually infects the lungs but MTB can attack any part of the body such as the kidney, spine, and brain. If not treated properly, TB disease can be fatal.

TB is transmitted from person to person through tiny airborne infectious droplets produced when a person with infectious TB coughs, sneezes, sings, or speaks. If one of these infectious droplets enters another's lungs, infection may result. Most droplets produced by infected individuals do not contain MTB, and those that do rarely penetrate into the lungs, even when inhaled.

TB develops in two stages. The first stage is referred to as latent TB infection or LTBI, and the second stage is TB disease. LTBI occurs when MTB has penetrated and survived inside a host; most people who are infected with MTB never develop TB disease unless their immune system is compromised. People with LTBI typically have no symptoms, do not feel sick, cannot spread TB to others, and usually have a history of a positive reaction to a TB skin test. These people are at a risk for developing TB disease if they do not complete treatment for LTBI. Individuals who are infected are most likely to develop TB disease in the months immediately following infection but infected individuals risk developing TB disease throughout the remainder of their lives. The lifetime probability of an infected person becoming ill with TB is approximately 10% (over the individual's life, without prophylactic treatment) and the risk is highest in the first two (2) years after infection. In certain immunosuppressed individuals, this likelihood may rise to 8-10% per year, a much higher risk. Treatment for LTBI can prevent the development of TB disease in persons who are infected with MTB.

TB in the lungs (pulmonary TB) is the most common type of TB. It is the form of TB that most likely to be infectious. Extra-pulmonary TB is TB that affects organs other than the lungs most frequently the pleura, lymph nodes, spine and other bones and joints, genitourinary tract, nervous system, or abdomen.

The presence of HIV infection increases the likelihood of TB infection and disease. The inability of an immune system partially destroyed by HIV to fight off MTB can lead to rapidly aggressive growth by MTB, and sometimes to very atypical illness presentations outside of the lungs.

The most common symptoms of pulmonary TB are:

- A cough that lasts for 3 weeks or longer
- A cough that produces bloody sputum or phlegm
- Night sweats
- Persistent fever

- Unexplained weight loss

Symptoms of extra-pulmonary TB depend on the organ involved.

A disproportionately high percentage of TB cases occur among individuals incarcerated in U.S. correctional facilities. Incarcerated individuals have an increased likelihood of being infected with MTB, due to their social determinants of health, and to the close quarters in which they live in prison. After being released from prison, disease infection and progression can result in spread to the population at large.

The Centers for Disease Control and Prevention (CDC) has provided recommendations regarding the prevention and control of TB in correctional settings. These recommendations address screening and prevention for both employees and patients and address treatment for patients. While treatment for staff shall be on a par with that provided to incarcerated individuals, treatment of staff is not the direct responsibility of the Health Services vendor. The Department will continue to monitor the TB status of volunteers who return to facilities on a regular basis, once per month or more frequently.

DEFINITIONS AND ABBREVIATIONS

Acid-Fast Bacilli (AFB) means bacteria that retain certain dyes after being washed in an acid solution. Most acid-fast bacilli are mycobacteria.

AFB isolation room or area includes, but is not limited to, rooms, areas, booths, tents, or other enclosures

- that are maintained at negative pressure relative to adjacent areas in order to avoid the spread of aerosolized MTB into adjacent indoor areas, or
- that rely upon high efficiency particulate air filtration to remove aerosolized MTB from the air in a manner that protects those not in the room from exposure to MTB.

AII means airborne infection isolation or negative pressure (the relative air pressure difference between two areas). An AII room that is under negative pressure has lower pressure than adjacent areas, which keeps air from flowing out of the room and into adjacent rooms or areas.

Anergy means the inability of a person to react to skin test antigens (even if the person is infected with the organisms tested) because of immunosuppression.

BCG (Bacille Calmett-Guerin) vaccine is a tuberculosis vaccine of limited efficacy. BCG is not employed in TB control within the United States.

Booster effect means the increased reaction to a second administration of the TB skin test (at least a week later) to an infected individual whose response to the TB protein has waned.

CDC means Centers for Disease Control and Prevention.

Department means Indiana Department of Correction. When responsibilities and activities defined in this Plan are assigned, those responsible for carrying them out will include actual State employees and the Health Services vendor.

Conversion means a change in tuberculin skin test results from negative to positive.

Employee means anyone assigned or permitted by the Department to perform a job, including offenders and non-offenders, whether paid or volunteer. This term also includes contract staff and Department staff who visit high risk facilities such as jails

High efficiency particulate air (HEPA) filter means a specialized filter that is capable of removing 99.97% of particles greater than or equal to 0.3 micrometer in diameter.

MDR TB means multi-drug resistant TB.

Latent TB infection, (LTBI), means a condition in which living MTB bacilli are present in the body without producing clinically active disease. Although the infected individual has a positive tuberculin skin test reaction, he or she may have no symptoms related to the infection and is not capable of transmitting the disease.

Mantoux test means a method used to evaluate the likelihood that a person is infected with MTB, utilizing an intradermal infection of tuberculin antigen with subsequent measurement of the resulting induration. It is also referred to as a TB skin test. In the IDOC only the Mantoux method is acceptable as a TB skin test.

MTB means *Mycobacterium tuberculosis*, the scientific name of the bacillus that causes tuberculosis.

MDR TB means multidrug-resistant tuberculosis; TB disease caused by *M. tuberculosis* organisms that are resistant to at least isoniazid and rifampin.

Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by the OSHA standard on respirators, 29 CFR 1910.134.

Interferon Gamma Release Essay (IGRA) means a laboratory test on whole blood used to determine *M. tuberculosis* infection.

Respirator means a device worn by an individual and intended to provide the wearer with respiratory protection against inhalation of airborne contaminants.

Suspected infectious tuberculosis means a potential disease state in which an individual is known, or with reasonable diligence should be known, to have one or more of the following conditions, unless the individual's condition has been medically determined to result from a cause other than TB:

- 1 to be infected with MTB and to have the signs or symptoms of TB;
- 2 to have a positive AFB smear; or
- 3 to have a persistent cough lasting 3 or more weeks and two or more symptoms of active TB (bloody sputum, night sweats, weight loss, fever, anorexia) without other identified causes for the signs and symptoms.

An individual with suspected infectious TB has neither confirmed infectious TB nor have they been medically determined to be noninfectious.

Symptom screen means questioning a person about the following:

1. Chronic (3 weeks or more) persistent cough productive of sputum and not responsive to medical treatment directed towards other causes of cough,
2. Cough productive of blood,
3. Unexplained weight loss, or
4. Night sweats.

TB or tuberculosis disease means a disease caused by MTB.

Two-step testing is a baseline skin testing procedure used to identify and distinguish a boosted skin test reaction from that of a new infection. The procedure involves placing a second skin test 1 to 3 weeks after an initial negative. A positive reaction only on the second test indicates a boosted reaction and prior (old) infection.

TST means tuberculin skin testing

SCREENING

For Previously Negative Individuals

In response to TB infection, a healthy body generates a relative immunity. This immunity results in activated white blood cells that can encapsulate but not kill MTB. Thus, the response to infection controls the infection at the expense of containing living MTB. The cells that are activated against MTB express, in a sense, an allergy to the MTB protein. By injecting a specific amount of purified MTB protein derivative (PPD) and measuring the response to the PPD, it is possible to judge whether or not prior infection has occurred.

Skin testing to determine whether the body has mounted an immune response to TB is the key intervention in screening for the presence of TB infection, including both active disease and LTBI. The other key intervention in initial TB screening is a review for the presence of TB symptoms.

Tuberculin skin testing using 0.1 mL of 5 tuberculin units (TU) of purified protein derivative (PPD) is the most common method of testing for TB infection. Multiple-puncture tests (e.g., the tine test) shall not be used to determine whether a person has TB disease. Persons who have a documented

history of a positive TST result (with a millimeter [mm] reading), a documented history of TB disease, or a reported history of a severe necrotic reaction to tuberculin shall not receive a TST. Pregnancy or previous vaccination with BCG vaccine are not contraindications for TST

Administration and Reading of TB Skin Test

The injection by syringe into the skin of tuberculin material with observation for development of induration (hardening and thickening) is called a Mantoux Skin Test (TST). Reddening of the skin is not relevant to the interpretation of the Mantoux test. This testing remains best practice for documenting prior infection with MTB. It will be positive no matter where in the body the MTB has settled and lived, provided the body's white blood cells are sensitized and capable of response. It is the most sensitive and specific test available. TST results shall always be interpreted in the context of the individual's health history, risk factors, and concomitant signs and symptoms.

Induration may last for many days but does not continue to increase in size after 48-72 hours. Therefore, it is sometimes possible to note a significant degree of induration even a week after the initial test placement.

To place a TST properly, these items are required:

1. A standardized PPD solution (Tubersol or Aplisol), containing 5 TU per 0.1 ml, stabilized by a detergent to avoid adsorption to the sides of the container,
2. Disposable sterile tuberculin syringes, graduated in 0.01 ml, with short, beveled needles attached,
3. Alcohol swabs, and
4. Small bandages ("band-aids").

The TST shall be administered only by properly licensed or certified health care personnel trained in its provision. The TST, is placed (or "planted") in the following sequence and manner:

1. The tester shall select the volar surface of the forearm and skin shall be free of lesions. If no scar-free site is available, the dorsal surface or even a spot on the back may be used (tattoos without inflammation do not affect the test result). A TST shall not be placed immediately adjacent to another TST that has not yet completely disappeared.
2. The tester shall clean the site with an alcohol wipe and allow it to air dry. Alcohol will destroy the tuberculin protein.
3. Using sterile technique, 0.1 ml of the solution shall be drawn into the syringe. Using an extremely shallow entry angle and with the needle bevel upwards or downwards, the solution shall be injected into the skin itself. Intradermal injection

can be assured by the production of a discrete (sometimes pale) wheal, 5 to 10 mm across. If the injection does not produce a wheal, intradermal injection was not achieved. The process shall be repeated at another site at least a few centimeters away from the first injection.

4. Universal precautions must be observed at all times, regardless of the location in which the testing takes place. CDC and OSHA guidelines do not require the use of gloves when placing TB skin tests; rather they recommend the use of gloves if contact with blood is a possibility when performing this procedure. In Department settings, gloves during TST placement are required. Proper disposal of needles requires that needles not be recapped, purposely bent, broken, or otherwise manipulated by hand. Puncture resistant containers for sharps disposal must be provided and located in the immediate area in which testing is being performed.
5. Personnel administering the TST shall document the date and time when the test was placed and shall indicate on the TB recording form the site where the TST was placed on the patient's body.
6. The TST must be read between 48 and 72 hours after its planting. The examiner determines the site of injection and searches for induration of the skin. The greatest extent of induration, transversely to the long axis of the forearm, is measured and the measurement results recorded in millimeters. Erythema (i.e., the redness of the skin) shall not be measured. All reactions, even those classified as negative, shall be recorded in millimeters of induration. The absence of induration shall be recorded as "0 mm" and not "negative"

There are several situations in which a properly performed TST is less than fully accurate:

1. When MTB infection occurs, it takes several weeks before the skin test becomes positive. The absence of a positive TST when TB disease is strongly suspected on clinical grounds shall not, alone, be grounds for eliminating TB from the differential diagnosis.
2. When the body's immune system is overwhelmed (whether by chronic illness, specific infection (HIV), by MTB, or other cause), the white cells may not be able to mount enough of a response to cause the TST to become positive. This condition, termed "anergy," must be considered when the TB skin is used.
3. When the body has a boosted reaction. This happens occasionally in persons that have had previous infection and now have a delayed-type hypersensitivity to TST testing. A person tested several years after previous infection may have a negative TST result but report being a previous positive, however, this test may stimulate the person's response to react to subsequent TST testing. This would not be considered a new infection. For this reason, all new employees and new intakes into the Department shall be two-step tested as described later in this section.

In most cases, a TST reaction of >10 mm induration is considered a positive result for most incarcerated individuals and correctional facility employees. However, an induration of >5 mm is considered a positive result in the following persons:

- Persons living with HIV,
- Persons who are recent contacts of individuals with TB disease,
- Persons with fibrotic changes on chest radiograph consistent with previous TB disease,
- Organ transplant recipients and individuals with other immunocompromising conditions (e.g., persons receiving >15 mg/day of prednisone for >1 month), and
- Persons suspected of having TB disease.

Persons who have a positive TST result and no symptoms suggestive of TB disease shall be evaluated with a chest radiograph within seven (7) days after the skin test is interpreted.

Persons who have symptoms suggestive of TB disease shall be evaluated immediately by a practitioner and placed in a negative air flow or respiratory isolation room until TB is ruled out. If deemed infectious, the patient shall remain in respiratory isolation until treatment has rendered them noninfectious. Facilities without an on-site negative air flow room shall have a plan for referring individuals with confirmed or suspected TB disease to a facility with appropriate isolation or to an offsite hospital.

It is tempting to substitute chest x-ray and sputum examination for the TST when patients or employees refuse to permit a skin test. While the chest x-ray is a reasonable approach to quickly ruling out pulmonary tuberculosis disease, it does not detect the presence of MTB in less obvious pulmonary sites or in other sites and does not detect and signal the occurrence of active transmission within a facility. X-ray screening will not adequately identify transmission of TB within the prison population unless full blown infection with pulmonary scarring results. It does not identify patients with LTBI carriers for the purpose of protecting the rest of the prison population.

IGRA shall not be a routine test utilized by the Department. Providers may consider the IGRA tests in place of TST for patients who report a history of severe necrotic reactions and without a documented positive result with a millimeter reading or for those who refused TST on religious ground. If a laboratory capable of processing this test is located, the blood specimen can be processed within 12 hours and the provider shall interpret test results. With a TST, IGRA cannot distinguish between LTBI and TB disease and shall be used in conjunction with risk assessment, x-ray, and other diagnostic evaluations. Individuals with a positive IGRA result shall be referred for a medical and diagnostic evaluation.

Two-Step Testing and the Boosted Reaction

Delayed-type hypersensitivity may wane over time in some infected individuals. When the individual is tested years after infection, the initial TST is often negative. However, this test may

stimulate the ability of the individual to react to subsequent tests and this "boosted" effect could be misinterpreted wrongly as new infection. This boosted reaction may occur at any age but the incidence is highest among older adults. Two-step testing will be conducted on all individuals at their initial or baseline screening, with the second TB skin test administered at least 7 days but no more than 30 days after the first test. Any increase in B reaction of ≥ 10 mm on the second test will be considered to have a boosted reaction and the individual will be managed as previously positive. (In certain immunosuppressed persons an increase of ≥ 5 mm is large enough to be considered a positive reactor.) If the second test is also negative the individual shall be considered uninfected.

Two step testing will be initiated in adult Intake settings, however, depending on the time a patient remains in the Intake setting, the second test may be administered either prior to or following transfer to the "permanent" facility.

Youths in Division of Youth Services facilities shall not be two step tested.

All new employees shall be screened with two step testing unless the new employee reports a history of a positive TST.

Pregnancy

Pregnancy is not a contraindication against a TST. In the Department, skin testing shall be completed for pregnant incarcerated individuals and pregnant employees. Pregnant employees who object to being tested must provide a letter from the physician managing the pregnancy requesting that the testing be deferred until after the pregnancy is completed, or testing will be required.

A pregnant individual who has a positive TST or who is suspected of having TB disease shall receive a chest radiograph (with shielding consistent with safety guidelines) as soon as feasible. If symptoms or other high-risk conditions (e.g., HIV infection) are identified, a chest radiograph might have to be performed during the first trimester of pregnancy. Chest x-rays and any subsequent treatment shall be provided after consultation with the OB specialist.

Interpretation of Repeated Testing

Skin test conversion will be considered an increase of ≥ 10 mm induration (in highest risk individuals, ≥ 5 mm) with repeated skin tests other than the initial two step testing.

A baseline screening TST result of > 10 mm induration is considered positive for the majority of incarcerated individuals and correctional staff and these persons shall be referred for medical and diagnostic evaluation. However, for patients and correctional staff who have had a known exposure in a correctional facility (i.e., close contact with patient or employee with infectious TB disease) after having a previous (baseline) TST value of 0 mm, TST results of > 5 mm shall be considered positive and interpreted as a new infection. Patients and correctional staff with a screening baseline TST result of > 1 mm, but < 10 mm, who are subsequently exposed to TB

disease, shall be considered newly infected if they have TST values increase by >10 mm on retest. For example, a baseline TST result with 8 mm induration and a repeat TST result 1 year later with 18 mm induration would indicate a new infection. However, a repeat TST result with 12 mm induration would not indicate a new infection.

Occasionally returning patients or re-employed staff receive a repeat TST despite a previously recorded positive test and the test result is negative. Possible reasons include incorrect administration or interpretation of one or both tests, differences in potency of tuberculin solution, and false positive or negative reactions. Clinical management shall depend upon the size of the previous reaction (the larger the reaction the greater the likelihood it is due to MTB), the individual's risk factors and health and exposure history, and so on, and management shall be individualized by the practitioner.

Previously Positive Individuals

Individuals who previously skin test positive should not have another skin test placed unless there is suspicion that the history is unreliable or that testing may have been inaccurate.

Previously Positive Patients

Patients who have a history of a positive TST (credible verbal or written history) should be screened with a symptom screen and a chest x-ray (single view). Any positive findings on this screening intervention must be followed by review with a practitioner. Patients who have current symptoms require urgent review by a practitioner because they may require immediate separation from open population.

Patients who refuse required screening should be separated (not placed in isolation) from the general population to preclude "household contact," and should be strictly separated (including isolation and diagnostic work up) if symptoms of TB are present. This separation is not punitive although it may require administrative segregation for its accomplishment.

Previously Positive Employees

Employees who have a history of a positive tuberculosis skin test (credible verbal or written history) should be screened with a symptom screen.

Employees have a previous positive should be encouraged to consult a personal physician or a local health department if they have not done so in the past. Employees with current symptoms may be precluded from the workplace until infectious TB disease is ruled out.

INITIAL SCREENING OF ARRIVING INCARCERATED INDIVIDUALS

During the first 24 hours of incarceration, patients admitted to the Department are to be screened for the presence of TB. For those who do not have a credible history of a positive TB skin test, this shall consist of a symptom screen and a skin test. Patients should be asked if they have a

history of TB disease or if they have been previously treated for LTBI or TB disease. For those who have a credible history of a positive TST this will consist of a symptom screen and a chest x-ray. The index of suspicion of TB disease should be high when pulmonary symptoms are accompanied by general, systemic symptoms of TB (e.g., fever, chills, night sweats, easy fatigability, loss of appetite, and weight loss).

Arriving patients who give a history of current TB symptoms must be masked and evaluated immediately by a practitioner. Arriving incarcerated individuals who give a history of TB symptoms during the past year but not currently may be evaluated routinely with the single view chest x-ray.

Arriving patients living with HIV infection or other severe immune suppression must have a chest radiograph taken as part of the initial screening. Patients who have an abnormal chest radiograph shall be further evaluated to rule out TB disease; if TB disease is excluded as a diagnosis, LTBI therapy should be considered if the TST is positive.

Arriving patients who are TB skin test positive whose screening chest x-rays are negative for active disease shall be considered by a practitioner for treatment of LTBI. This evaluation may occur either at the intake center or in the “permanent” facility.

Arriving patients who provide a history TB disease require special evaluation. Outside records must be obtained and steps taken to make certain that adequate treatment was received. If there is anything suspicious about the presentation, immediate telephone inquiry shall be made.

Patients living with HIV might be anergic and consequently might have false-negative TST results. However, routine anergy panel testing is not recommended because it has not been demonstrated to assist in diagnosing or excluding LTBI. Patients living with HIV who present with symptoms of TB shall be managed as having infectious TB until proven otherwise; admission to a properly designed and equipped facility in order to rule out TB shall be arranged.

PERIODIC RE-SCREENING OF INCARCERATED INDIVIDUALS

Patients who have a negative TST will have follow-up testing once each year at the time of the annual health screen. Patients who have a history of a positive test result will be screened for symptoms of TB disease at the time of the annual health screen. Chest x-rays are unnecessary for the follow-up evaluation of previously positive patients unless they report symptoms of TB disease.

Practitioners managing patients with positive TB skin tests shall maintain a high index of suspicion if signs or symptoms are present.

Patients who convert from negative to positive who do not have TB disease shall be evaluated for treatment against LTBI.

MANAGEMENT OF SUSPECTED CASES OF INFECTIOUS TB IN PATIENTS

In managing patients suspected of having TB disease, it is imperative to consider both the individual and those around them. A rapid response to the presence of TB disease, including isolation and subsequent containment activities, is crucial.

The full spectrum of typical TB symptoms includes:

1. Prolonged productive cough of over 3 weeks duration, with or without the presence of blood in the sputum, unresponsive to medical treatment directed at typical causes of cough,
2. Fever,
3. Chills,
4. Night sweats,
5. Easy fatigability,
6. Loss of appetite, and
7. Weight loss.

Depending upon the individual, TB disease can present with all these symptoms, none of them, or various combinations of them.

When TB disease is suspected, historical data supportive of the clinician's suspicions shall be sought. Relevant history includes childhood or more recent exposure to an infectious case of tuberculosis, history of chronic illnesses in which TB incidence or prevalence is elevated, the presence of HIV infection, etc. The presence of extra-pulmonary disease, especially in immunosuppressed individuals, shall be sought.

If the clinician's index of suspicion makes TB a reasonably likely diagnostic choice, isolation shall be implemented. (Please note that the mere presence of TB in a differential diagnosis does not make isolation a necessary intervention.) Once implemented, isolation in a negative pressure environment shall be continued until infectious TB is ruled out with three (3) consecutive negative sputum smears, **or** until appropriate anti-TB therapy (with four or more anti-TB drugs) has been provided for two (2) weeks, symptomatic response is documented, and three (3) consecutive sputum smears, obtained on different days, are negative for acid fast bacilli.

Physical examination is generally of little utility in the diagnosis of TB, unless the illness is advanced or atypical in presentation. It is especially limited in ruling out the disease. The demonstration of MTB on smear or culture (whether through direct observation or more technologically advanced techniques) is critical for diagnosis.

Radiological demonstration of lung infection, especially on the routine posterior-anterior chest x-ray, supplemented by lateral and/or apical films or by computerized axial tomographic examinations, is also a part of the diagnostic work up. Multiple types of abnormalities demonstrated on chest radiographs are strongly suggestive of pulmonary TB disease, including upper-lobe infiltration, cavitation, and pleural effusion. Infiltrates can be patchy or nodular and

observed in the apical or subapical posterior upper lobes or superior segment of the lower lobes. If x-ray or clinical findings are consistent with TB disease, further studies (e.g., medical evaluation, mycobacteriologic examinations of sputa or tissue, and comparison of current and prior chest radiographs) shall be performed. Persons with TB pleural effusions might have concurrent unsuspected pulmonary or laryngeal TB disease. These individuals shall be considered infectious until pulmonary and laryngeal TB disease is excluded.

Sputum examination is a key diagnostic procedure for pulmonary TB disease and is indicated for the following incarcerated offenders:

- Persons suspected of having pulmonary TB disease because of a chest radiograph consistent with TB disease, particularly those with any respiratory symptoms suggestive of TB disease;
- Persons with chest radiographic findings suggestive of previous, healed TB disease;
- HIV-infected persons with any pulmonary symptoms (regardless of chest radiograph findings); or
- Persons suspected of having pulmonary TB disease for which bronchoscopy is planned (all sputum specimens shall be collected and results of staining for AFB should have been reviewed before proceeding with bronchoscopy)

A patient requiring smear- and culture-sputum examination shall submit at least three sputum specimens collected 8–24 hours apart, with at least one specimen collected in the early morning. Specimens shall be collected in a negative air flow or respiratory isolation room. Individuals shall be coached regarding proper production of sputum. If the patient is unable to produce an adequate sputum specimen, expectoration might be induced by inhalation of an aerosol of warm, hypertonic saline.

Cultures shall be sent to the State laboratory at the Indiana Department of Health (IDOH), which has proper facilities for evaluating smears and for obtaining sensitivity testing on all positive cultures. Contract laboratories shall not be used for TB culture or evaluation of sputum smears for acid fast bacilli.

Detection of AFB in stained smears can provide the first mycobacteriologic indication of TB disease. A positive result for AFB in a sputum smear is predictive of increased infectiousness; however, negative AFB sputum-smear results do not exclude a diagnosis of TB disease if clinical suspicion is high. A culture of sputum or other clinical specimen that contains MTB provides a definitive diagnosis of TB disease.

TB skin testing shall also be part of the examination if the diagnostic evaluation is being carried out on behalf of an offender not known already to be skin test positive.

If TB disease is suspected or diagnosed and the individual is not properly placed in a negative pressure or other appropriate setting, the individual shall be masked immediately (with a standard surgical mask) and placed in a temporary isolation setting. All who share air space with the individual must be provided with HEPA masks and as few as possible should enter this space. The

individual must be moved to a negative air flow room as soon as possible, generally within five (5) hours. It may be necessary on occasion to extend this time period beyond five (5) hours, but this is only acceptable if the masking described above is carried out and the individual is placed in a temporary separate isolation. Weather permitting, it is permissible to manage outdoors masked individuals who are waiting for proper isolation.

Initial Treatment

A decision to initiate treatment (i.e., combination anti-TB chemotherapy) shall be made based on epidemiologic information; clinical, pathological, and radiographic findings; and the results of microscopic examination of AFB-stained sputum smears and cultures for mycobacteria. A positive AFB smear result provides strong inferential evidence for the diagnosis of TB, and combination chemotherapy shall be initiated promptly unless other strong evidence against the diagnosis of TB disease is present

Initial treatment of TB includes at least four (4) drugs active against MTB. (If drug resistant strains are suspected, the initial choice of medication shall be guided by culture results if a related index case can be identified. If drug resistant TB is confirmed and specific therapy cannot be determined, it may be necessary to isolate for an indefinite period. Whenever drug resistance is confirmed, consultation with a specialist familiar with the treatment of drug resistant TB is mandatory.) Please note that four (4) drug therapy is mandatory for initial treatment of TB disease.

For most individuals, the preferred regimen for treating TB disease consists of an initial 2-month phase of isoniazid, rifampin, pyrazinamide, and ethambutol, followed by a continuation phase of isoniazid and rifampin lasting >4 months, for a minimum total treatment period of 6 months. TB treatments shall follow guidelines as put forth by the Centers for Disease Control and Prevention (CDC) and in conjunction with the IDOH TB Director.

For patients living with HIV and are receiving antiretroviral therapy, TB treatment regimens might need to be altered. The care of a patient with concomitant TB and HIV shall be provided by or in consultation with a specialist with expertise in the management of both TB and HIV related disease

Because inconsistent ineffective therapy leads to treatment failure and to drug resistance, it is critical to ensure adherence to medication regimens. Assurance of acceptable individual adherence requires Directly Observed Therapy (DOT) as per CDC guidelines.

If TB is suspected and confirmed by chest x-ray but cultures and smears are negative for MTB and therapy with medications has begun, an additional chest x-ray should be obtained three (3) months into therapy. If the individual is responding clinically and the chest x-ray demonstrates improvement, the treatment shall be continued for a full course of therapy, minimally six (6) months. Complicating factors may dictate longer therapeutic courses.

If the chest x-ray is unchanged, additional diagnostic work up is indicated, and medications shall be continued. Consultation with a pulmonary or infectious disease consultant conversant with TB treatment is necessary at this point.

Drug-susceptibility testing will be performed by IDOH on all initial isolates from individuals with TB disease. When results from drug susceptibility tests become available, the treatment regimen should be adjusted accordingly. Medical providers treating individuals with drug resistant TB disease should seek expert consultation and collaborate with the state and local health department for treatment decisions.

Finally, whenever a case of TB disease is suspected, immediate precautions against transmission must be taken. The suspected ill individual must be required to wear a surgical mask at all times until he or she is in an appropriate isolation setting, the presence of TB is ruled out, or they are considered to be noninfectious. A surgical mask, which does not seal, will reduce the production of potentially infectious droplets. Health Services staff caring for and officers transporting a suspected case must utilize HEPA masks to protect against becoming infected. Use of HEPA masks does not obviate the need to employ proper respiratory isolation in a negative pressure environment when suspicion of TB disease is high on a diagnostic list.

Disposable HEPA masks may be reused by a single user for as long as the mask remains functional. The CDC recommends that before each use, the outside of the filter material should be inspected. If the filter material is physically damaged or soiled, the filter should be changed (in the case of respirators with replaceable filters) or the respirator discarded (in the case of disposable respirators). HEPA masks should not be thrown away until they are either unusable or the need to use this personal protective device is past.

When individuals already undergoing treatment for TB disease are received (whether that be from the community, from another prison, or from a medical facility), the treatment must be reviewed in detail. It is often helpful to examine the treatment records and discuss the case with the attending physician. When the regimen on which the individual was previously placed is not adequate (consistent with the CDC recommendations) the individual shall be screened immediately for symptoms suggestive of infectious disease. If such symptoms are present, a return to isolation status is mandatory. If such symptoms are not present, an acceptable treatment regimen shall be implemented and consultation with an experienced pulmonary physician or infectious disease specialist sought to help determine what should be the future treatment regimen. Generally speaking, such individuals shall receive an additional complete course of therapy unless it can be documented that this is not necessary.

ISOLATION IN A NEGATIVE AIR FLOW OR RESPIRATORY ROOM

Initiation

TB airborne precautions must be initiated for any patient who has signs or symptoms of TB disease or who has documented TB disease and has not completed treatment or not been determined previously to be noninfectious.

A patient who needs respiratory isolation must be placed in one of the Department's functional negative air pressure rooms or must be sent to a hospital with a proper negative pressure room.

Pending arrival to an appropriate isolation setting, the individual shall be placed away from others, masked and preferably outdoors. If outdoor placement is not practical, individual shall be masked and placed in an individual cell or alone in a secure room pending identification of a target destination.

There is no substitute for proper isolation techniques

Discontinuation

Respiratory isolation can be discontinued when infectious TB disease is considered unlikely and either 1) another diagnosis is made that explains the clinical syndrome or 2) the individual has three negative acid-fast bacilli (AFB) sputum-smear results. A patient for whom the suspicion of TB disease remains after the collection of three (3) negative AFB sputum-smear results shall not be released from an AII room until the patient is on a standard multidrug anti-TB treatment and is clinically improving. Because a patient with a negative AFB sputum-smear can still have TB disease and still be infectious, a patient with suspected disease who meets the above criteria for release from airborne precautions shall not be housed with another patient with an immunocompromising condition until culture results are available. An individual who has drug-susceptible TB of the lung, airways, or larynx, is on standard multidrug anti-TB treatment, and has had a significant clinical and bacteriologic response to therapy (i.e., reduction in cough, resolution of fever, and progressively decreasing quantity of AFB on smear result) is probably no longer infectious. However, because culture and drug-susceptibility results are not typically known when the decision to discontinue airborne precautions is made, a patient with confirmed TB disease shall remain in an AII room until they have

- Had three (3) consecutive negative AFB sputum-smear results collected 8–24 hours apart, with at least one being an early morning specimen,
- Received standard multidrug anti-TB treatment, and
- Demonstrated clinical improvement.

Because the consequences of transmission of MDR TB are severe, a patient with suspected or confirmed MDR TB disease must be kept in an AII room until negative sputum-culture results have been documented in addition to negative AFB sputum-smear results.

RESPIRATORY PROTECTION

Respiratory protection shall be used when employees enter a respiratory isolation room, transport infectious patients, and participate in cough-inducing procedures. A CDC/NIOSH-approved N95 air-purifying respirator will provide adequate respiratory protection in most situations that require the use of respirators.

All employees who use respirators for protection against infection with MTB must participate in the facility's respiratory protection program (e.g., understand their responsibilities, receive training, receive medical clearance, and engage in fit testing). Respirators, training, and medical evaluations shall be provided at no cost to the employee.

The facility Safety Hazard Managers are responsible for establishing a fit testing program and maintaining fit testing records for all staff who are expected to utilize a CDC/NIOSH-approved N95 air-purifying respirator. The OSHA standard on respirators, 29 CFR 1910.134, is applicable to TB protection. These masks must be individually fitted and tested, and staff utilizing them must be trained in their use.

The contracted medical vendor shall work with the facility safety hazard manager to ensure that all staff are properly fitted for the N95 air-purifying respirator. The Health Services vendor's staff will be responsible for the required medical evaluation forms for all Health Services staff.

Employees who are required to wear respirators must have a confidential medical evaluation to ensure their health and safety is not at risk. The medical evaluation must be completed by a PLHCP. Employees shall not be permitted to wear respirators until a PLHCP has determined the employee is medically able to do so. The PLHCP will determine the employee's medical clearance by medical questionnaire and, if indicated, medical exam. The medical evaluation will be conducted using the questionnaire provided in Appendix C of the OSHA Respiratory Protection Standard and the Medical Approval Form for Respirators.

All examinations and questionnaires are to remain confidential between the employee and the physician or other licensed health care professional who conducted the medical clearance. All affected employees will be given a copy of the medical questionnaire to complete, along with an envelope for forwarding the questionnaire to the physician or other licensed health care professional. Employees will be permitted to complete the questionnaire during the employee's normal work hours.

The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:

- The type and weight of the respirator to be used by the employee
- The duration and frequency of respirator use
- The expected physical work effort
- Additional protective clothing and equipment to be worn; and
- Temperature and humidity extremes that may be encountered.

In determining the employee's ability to use a respirator, the employer shall obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;
- The need, if any, for follow-up medical evaluations; and
- A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

The employee shall be given an opportunity to discuss the questionnaire and examination results with the PLHCP.

The employer shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions 1 through 8 in Section 2, Part A of Appendix C or whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of this section if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator;
- A PLHCP, supervisor, or the Safety Hazard Manager informs the employer that an employee needs to be reevaluated;
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.

Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.

Employees shall be fit tested with the make, model, and size of respirator that they will actually wear. The mask which is used during the fit testing must be the same model and size of mask that is stocked and available for the employee to use when respiratory protection when needed.

The employer shall conduct an additional fit test whenever the employee reports, or the employer, PLHCP, supervisor, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

TRANSPORTING INDIVIDUALS BETWEEN FACILITIES

A patient with suspected or confirmed infectious TB disease shall be transported in an ambulance whenever possible. The ambulance ventilation system should be operated in the non-recirculating mode and the maximum amount of outdoor air be provided to facilitate dilution. If the vehicle has a rear exhaust fan, it should be used during transport. If the vehicle is equipped with a supplemental recirculating ventilation unit that passes air through HEPA filters before returning it to the vehicle, this unit should be used to increase the number of ACH. Airflow should be from the cab (i.e., front of vehicle) over the patient and out the rear exhaust fan. If an ambulance is not used, the ventilation

system for the vehicle should bring in as much outdoor air as possible. If possible, the cab should be physically isolated from the rest of the vehicle, and the individual should be placed in the rear seat. Transport staff should wear at least an N95 disposable respirator. The patient should be given a surgical mask.

PROVISION OF TREATMENT OF LATENT TUBERCULOSIS INFECTION

Patients in the following high risk groups shall be given treatment for LTBI if their reaction to the TST is >5 mm, regardless of age:

- Persons living with HIV,
- Recent contacts of a TB individual,
- Persons with fibrotic changes on chest radiograph consistent with previous TB disease, and
- Persons with organ transplants and other immunocompromising conditions who receive the equivalent of >15 mg/day of prednisone for >1 month.

All other patients shall be considered for treatment of LTBI if their TST results are >10 mm induration. Decisions regarding initiation of LTBI treatment shall include consideration of the likelihood of the individual continuing and completing LTBI treatment under supervision if released from the facility before the treatment regimen is completed.

The preferred treatment for LTBI is twelve (12) weeks of Isoniazid and Rifapentine (INH/RPT) administered by DOT. Although regimens are broadly applicable, modifications shall be considered for certain populations (e.g., persons living with HIV) and when drug resistance is suspected.

The Center for Disease Control and Prevention (CDC) lists several options for treatment of LTBI and the contracted medical vendor shall be responsible for treatment prescriptions and monitoring.

Relative contraindications to the use of isoniazid for treatment of LTBI include incarcerated individuals with the following conditions:

- A previous history of liver injury
- History of excessive alcohol consumption;
- Active hepatitis and
- End-stage liver disease of LTBI (64,103).

If the decision is made to treat such patients with these conditions, baseline and follow-up monitoring of serum amino transaminases are recommended.

If a TST positive pregnant woman is a candidate for treatment of LTBI, the treatment can be postponed until after the pregnancy is over, unless the pregnant woman is likely to have been infected recently, especially during pregnancy, in which case prophylaxis shall be deferred only

until after the first trimester.

Treatment of LTBI is not a mandatory treatment. While it should be encouraged, incarcerated individuals should not begin a course of treatment of LTBI unless they understand the need to complete it and intend upon complying.

Prior to initiating treatment of LTBI it is important to rule out the presence of TB disease, which is a contraindication to treatment of LTBI. The exclusion must be based upon historical review (for symptoms) and chest x-ray, supplemented by other studies if signs or symptoms suggest the presence of active illness.

Prior to initiation of treatment of LTBI the incarcerated individuals expected release date shall be considered. The contracted medical vendor shall work on wrap around services to ensure care is continued post release.

All individuals provided with treatment for LTBI must be instructed regarding signs and symptoms of liver disease, symptoms of neurotoxicity (especially in the hands or feet), or the development of other unusual symptoms. On a monthly basis each of these individuals shall be seen by Health Services staff and an inquiry for these signs and symptoms made. The presence of signs or symptoms of liver disease, peripheral neuropathy, or other treatment associated clinical condition is usually grounds for termination of treatment of LTBI. If elevated liver enzymes are noted in the absence of signs or symptoms of liver disease, elevations up to approximately three times the upper limits of normal may be tolerated, but continued monitoring is required. All documentation shall be in the EMR.

Routine laboratory monitoring during treatment of LTBI is indicated only for individuals with abnormal baseline tests and for persons at risk for hepatic disease. Baseline laboratory testing is indicated only for persons living with HIV, pregnant women, women in the immediate postpartum period (typically within 3 months of delivery), persons with a history of liver disease, persons who use alcohol regularly, and persons who have or who are at risk for chronic liver disease

All individuals being treated with INH shall undergo clinical monitoring at least monthly. This monitoring shall include a brief clinical assessment regarding the signs of hepatitis (i.e., nausea, vomiting, abdominal pain, jaundice, and yellow or brown urine,) and education about the adverse effects of the drug(s) and the need for prompt cessation of treatment and clinical evaluation should adverse effects occur.

Individuals at high risk for liver damage should have liver enzymes monitored at 1, 3, and 5 months (six month regimens), and additionally at 7 months (nine month regimens). (Note that the baseline, or time zero, determination shall have been obtained when liver disease was ruled out prior to starting INH therapy, as noted earlier in this section.)

Treatment for LTBI caused by drug-resistant MTB is complex and must be provided in consultation with the local health department's TB control program and persons with expertise in the medical management of drug resistant TB. Often this will require waiting for results of

susceptibility testing of the isolate from the presumed source individual. Treatment shall be guided by in vitro susceptibility test results from the isolate to which the individual was exposed.

MULTI-DRUG RESISTANT TB (MDR TB)

TB bacteria can become resistant to the medicines used to treat TB disease. This means that the medicine can no longer kill the bacteria. Resistance to anti-TB drugs can occur when these drugs are misused or mismanaged. Multidrug-resistant TB (MDR TB) is TB that is resistant to at least two of the best anti-TB drugs, isoniazid and rifampin.

Unfortunately, many practices have permitted selection of and survival for resistant organisms, and even of organisms resistant to multiple “fire line” anti-TB drugs:

1. In many foreign countries antibiotics are available without a prescription. Individuals have taken anti-TB drugs long enough to reduce the active illness, but not long enough to effect a cure, or have taken an inadequate number of anti-TB drugs, permitting selection and survival of the resistant organisms. These organisms are shared world-wide by international travelers and by immigrants.
2. Provision of INH treatment of LTBI to individuals ill with TB disease does not provide adequate coverage to treat the illness and kill the huge number of organisms present, although remission of symptoms can sometimes be obtained. This results in an effect not unlike that achieved by self-treatment in some foreign countries.
3. Provision of too short a course of INH treatment of LTBI can result in selection of resistant organisms.
4. Other scenarios, such as treating TB disease with the wrong treatment of the wrong medication dose or prescribing medications to which the involved MTB is already resistant, may permit the survival of propagation of drug resistant organisms.
5. Circumstances in which anti-TB medications have been started or stopped (as treatment for TB infection or disease).

The spread of MDR TB can be prevented by an individual infected with MTB taking all of their medication for the appropriate length of time. No doses shall be missed, and treatment should not be stopped early. Clinicians can help prevent MDR TB by quickly diagnosing cases, following recommended treatment guidelines, monitoring individuals’ response to treatment, and making sure therapy is completed.

When MDR is identified (and it should be noted that MDR TB has been reported from all parts of the USA and within many correctional systems), specialized and individualized drug regimens may be important. Consultation regarding establishment of a proper drug treatment regimen must be sought, and input from the local public health department from the IDOH TB Program staff should be obtained. Additionally, it may be useful to consult with pulmonary or infection disease

specialist who can review specific individualized material. In especially difficult situations, the CDC will assist and provide specialized consultation. Through arrangements with the IDOH, the CDC can supply hard to obtain anti-TB drugs that may be required for difficult-to-treat MDR TB.

CONTACT INVESTIGATION AND FOLLOW UP

The overall goal of a TB contact investigation is to interrupt transmission of MTB. Ongoing transmission is prevented by 1) identifying, isolating, and treating persons with TB disease (source and secondary-case individuals) and 2) identifying infected contacts of the source individual and secondary individuals and providing them with a complete course of treatment for LTBI.

TB transmission is determined by the characteristics of the source individual and exposed contacts; the circumstances surrounding the exposure itself also determine whether ongoing transmission will occur.

Source individuals who have either cavitation on chest x-ray or AFB smear-positive respiratory specimens are substantially more likely to transmit TB than persons who have neither characteristic. Delays in TB diagnosis in source individuals have also been associated with an increased likelihood of transmission. Substantial variability exists among the infectiousness of a given TB source individual. Although AFB smear status, cavitory disease, and delayed diagnosis increase the likelihood of transmission, certain persons with these characteristics infect few persons, whereas others with none of these characteristics might infect multiple persons. The best measure of the infectiousness of source individuals is the documented infection rate (e.g., conversion of TST from negative to positive) among their contacts.

Among individuals who have been identified as contacts, HIV infection is the greatest single risk factor for progression to TB disease. Therefore, persons living with HIV shall receive the highest priority for evaluation of TB infection, even if these persons had shorter duration of exposure than other contacts. Persons receiving prolonged therapy with corticosteroids, chemotherapy for cancer, or other immunosuppressive agents also shall be considered high priority for investigation. In addition, persons with end-stage renal disease and diabetes mellitus shall be promptly evaluated, because these conditions are associated with compromised immune function.

The volume of air shared between an infectious TB individual and susceptible contacts is a major determinant of the likelihood of transmission. Infectious particles become more widely distributed as air space increases, rendering them less likely to be inhaled. Ventilation is another key factor in the risk for airborne transmission of disease. Airborne infectious particles disburse throughout an entire enclosed space; thus, if air is allowed to circulate from the room occupied by an infectious individual into other rooms or central corridors, their occupants also will be exposed.

Although transmission of MTB has occurred after brief exposure, the likelihood of infection after exposure to an infectious individual is associated with the frequency and duration of exposure. However, defining what constitutes a substantial duration of exposure for any given contact is difficult. When conducting a contact investigation, priority shall be given first to offenders and employees who were most exposed to the source patient.

The decision to initiate a contact investigation for a patient with possible TB is made on a case-by-case basis. The source patient's clinical presentation (e.g., types and duration of symptoms, x-ray findings, AFB results, sensitivity of the cultured organism, etc.) and opportunities for exposure shall be evaluated (e.g., nature of the physical plant and HVAC systems, assignment of the index individual (work, housing, etc.), duration of stay at the facility, etc.).

Contact investigations must be conducted in the following circumstances:

- Suspected or confirmed pulmonary, laryngeal, or pleural TB with cavitary disease on chest radiograph or positive AFB smears (sputum or other respiratory specimens). If the sputum smear is positive and the culture is negative, TB is unlikely, and a contact investigation typically can be deferred.
- Suspected or confirmed pulmonary (noncavitary) or pleural TB with negative AFB smears (sputum or other respiratory specimens) and a decision has been made to initiate TB treatment. A more limited initial investigation may be conducted for smear-negative cases.

Contact investigations typically are not indicated for extra-pulmonary TB cases (except for laryngeal and pleural TB), unless pulmonary involvement is also diagnosed.

Those with close ("household" type) contact with the index case shall be identified and screened, whether they are employees or patients. Previously negative skin testers shall be skin tested; previously positive skin testers shall be screened for the presence of symptoms of TB disease and managed accordingly.

The determination of what is and is not household contact is not simple. While a cell mate or other person living in the same dormitory clearly is a household contact, it is not clear if others living in a cellblock or on the same range are. Rather, considerations of air exchange, size of the unit, presence of open windows, duration of contact, type and severity of symptoms, site of infection, and so on shall lead to a determination of the type of exposure that has occurred. The Executive Director of Physical Health and the Epidemiologist shall be consulted in all circumstances in which infectious TB is identified and may be very helpful in identifying and defining household contact and in assisting in planning appropriate screening interventions.

All contacts, both patients and employees, must be interviewed for symptoms of TB disease. Those contacts who were previously skin test negative shall receive a TST. The majority of persons who are infected will have a positive TST result within 6 weeks of exposure; therefore, contacts of an individual with drug-susceptible TB disease that have initial negative TSTs shall be retested 8–10 weeks after the end of exposure to a person with suspected or confirmed TB disease. No further follow up is necessary if both TST's are negative. These reports may be requested by the IDOH TB Director to validate appropriate screening.

Those contacts with a history of a positive TST shall receive a symptom screen. Previously positive TST patients who are asymptomatic and HIV-negative, need no further follow-up, other

than consideration for routine treatment of LTBI, if not completed in the past. However, if the contact has any signs or symptoms suggestive of TB, further evaluation must be conducted (e.g., a chest x-ray and if indicated, smear- and culture-sputum examination)

Symptomatic contacts shall receive a chest x-ray and a complete medical evaluation by a provider, regardless of TST status. A patient contact with symptoms shall be isolated appropriately (an AII room) if infectious TB disease is suspected by chest x-ray or clinical findings.

Persons living with HIV and exposed patients shall be interviewed for symptoms, have a TST and a chest x-ray performed, and initiate a complete course of treatment for LTBI (once TB disease has been ruled out), regardless of the TST result. Treatment shall be initiated even for persons with a history of previous treatment for LTBI or TB disease because of the possibility of re-infection. Those with a history of a negative TST shall have a TST placed at baseline and again in 8–10 weeks. The results of the TST will not affect treatment decisions but provide important information for the contact investigation. Anergy testing is not recommended.

Contacts of patients with drug-susceptible TB disease who once tested negative but subsequently have a positive TST result (i.e., >5 mm) shall have a chest x-ray. If the x-ray is negative, the patient shall be evaluated for treatment of LTBI.

Employee contacts shall be managed by outside health care providers (beyond the initial skin test screening). Any work up required for staff due to a change in TST from negative to positive or the presence of symptoms suggestive of TB disease shall be carried out by outside medical providers.

If the level of new infection is high in the group initially screened (and this needs to be defined in consultation with IDOH, the Executive Director of Physical Health and the Epidemiologist), investigation of contacts shall proceed to a larger group; those who shared air with the index case, although not as closely as the first group. If this larger group also exhibits an increased incidence of infection, another, larger group shall be examined. The Health Services staff contact investigation stops at the facility level; however, if the expanding circle still demonstrates excessive skin test conversions, the state and local health department shall continue the process beyond the facility walls into the community.

If no evidence of transmission is observed, the investigation shall not be expanded. When the group screened shows no evidence of transmission, the contact investigation shall not be expanded further.

The Executive Director of Physical Health and the Epidemiologist must be fully informed regarding contact investigation activities and outcomes. Consultative support is available from the local health department, the IDOH, and the Central Office Health Services Division.

SCREENING OF STAFF

Initial Screening

All new employees who will have contact with confined patients including new Parole staff who will be visiting high risk facilities such as jails must be screened for the presence of TB infection with a symptom screen and, unless a credible history of a positive TST is provided, a TST. Pregnant applicants without symptoms may defer the skin test until after the pregnancy is over if a supporting letter from a physician is provided. Central Office and Parole staff who do not visit confinement facilities do not have to be screened.

New employees who report a previously positive TST shall receive a symptoms screen. Chest x-rays shall not be obtained unless the employee reports symptoms suggestive of TB infection. Chest x-rays shall not be carried out by the Department or the Health Services vendor for staff and the Department will not provide financial support for this screening.

Prospective employees with signs and symptoms suggestive of infectious TB or a positive TST shall be referred to community providers for evaluation and, if necessary, treatment.

No one suspected of having infectious TB disease shall be permitted to work until the possibility of infecting others has been ruled out. Evaluation with the object of treating LTBI shall not be carried out by the Health Services vendor's staff.

All prospective employees must understand that continuing employment will require participation in an annual screening program that will include periodic TB skin testing.

New employees shall be screened on day one of the new employee orientation. The TST will be administered to all new staff by the Health Services vendor at the employees' respective facility or a location agreed upon by the facility and the Health Services Administrator. The Regional Training Managers will coordinate with the Health Services Administrator at the respective Regional Facility to ensure that the date and time is coordinated for all test to be read at the same time. This test will be read in the classroom at the Regional Site locations.

New employees shall receive the second test of the 2 step of the two-step testing on day one of on-the-job training (OJT) and will have the test read in the Health Services Department two days after the second skin test was administered.

Periodic Screening

In addition to post-offer pre-employment screening, all staff shall be screened for the presence of TB annually. In general, the screening shall resemble that provided for patients; all employees shall be screened with questions designed to elicit the presence of symptoms of TB, and previously skin test negative employees will also receive a TST.

Newly positive reactors and all positive reactors with symptoms will be referred to outside

providers for evaluation. If symptoms suggestive of TB disease are present, the involved employee's situation shall be reviewed by the Warden and facility medical director to determine whether the employee can be permitted to continue to work while active TB is ruled out. SPD shall be included in decision making as well.

Certain employees may have assignments that place them at increased risk for contracting TB infection. These include

1. entering a respiratory isolation room in which persons with infectious TB disease have been housed,
2. performing procedures that may create high hazard AFB atmospheres (such as nebulization assisted sputum sampling for TB individuals),
3. transporting or being present during the transport of individuals with infectious TB disease in an enclosed vehicle, and
4. working in an Intake area where early TB identification procedures are performed and in which six or more individuals with TB disease have been encountered during the previous 12 months.

Employees who perform these assignments must be screened for TB every six months.

The employer generally does not know when an employee is at high risk for TB infection. The employer's screening process will not be able to adjust for the modification in interpretation of the TST required in the presence of HIV infection or other severe immune suppression and affected employees will need to address this issue with their personal medical care providers.

Both the pre-employment and the periodic screenings are mandatory and are considered conditions of employment with the Department; failure to cooperate will result in disciplinary action and possible separation from employment. When, from time to time, disease containment may necessitate screening of staff, this too shall be considered mandatory.

The periodic screening shall be conducted in a manner that does not require the employer to know or the employee to provide any medical information other than current TB status and testing data. Licensed or certified Health Services employees who will be administering the test shall be able to review a brief questionnaire and determine whether TST screening or a questionnaire screening is appropriate. State Form 45901, "Initial Questionnaire," is provided for this purpose.

The employee's consent shall be sought. In the absence of written consent, no screening can be carried out. With employee consent, a TST will appropriately be placed and read, and documented. Newly positive reactors will be referred to their personal medical care providers or to specialized community clinics, if available, for evaluation. An inquiry for the presence of symptoms of TB will be made to determine whether the employee can continue to work during the period in which the evaluation is carried out. In no case shall this period exceed four weeks.

Previously infected employees shall be screened with a questionnaire. If current symptoms are present, referral to personal medical care providers or to specialized community clinics, if

available, for evaluation shall be made. In this situation, employees shall not be permitted to return to work until their medical care provider provides written documentation that infectious TB disease is not present. If current symptoms are not present and the employee has never had a professional evaluation regarding the prior infection, this shall be advised, although it is not required.

Referrals of positive testers shall be accompanied by written information regarding the necessity for medical consultation, with appropriate information to be provided according to the employee's status.

Any employee whose skin test status is known to have been negative at the inception of employment, or whose skin test status at that time is unknown, and who develops a positive TST during employment in a position that includes incarcerated individuals contact, is presumed to have developed this in relation to their work assignment. Costs of TB screening and time off from work shall be submitted for coverage through the Worker's Compensation program in accordance with that program's regulations. If the Worker's Compensation program determines that it will not cover the costs and time off, the Department shall review each such case and determine whether it will cover the expenses. If an employee in this category develops TB disease, the costs of management and time off shall be handled in a similar manner. Facilities shall identify their occupational health providers as the locus in which evaluation and treatment will be provided. In addition, the contracted medical vendor shall have a procedure for all vendor staff.

Any employee who is known to have had a positive TST at the inception of employment who develops signs or symptoms of TB disease will be presumed to have developed these due to the existing infection. It will not be considered work related and the employee will not receive support beyond insurance coverage and the use of accrued leave time. This is true even if the active TB is discovered during contact investigation. Employees in this category do not need to use the health care providers selected by the Department's Human Resources offices.

The TB screening results shall be documented and stored by the Human Resources Department with other employee health information in an appropriately confidential manner.

CASE REPORTING

The Health Services vendor must report all suspected and confirmed cases of TB disease and LTBI, whether patient or employee to the IDOH. This reporting is mandatory

All reports shall be made to the main TB line at 317-234-7437 or the IDOH TB Director. When a diagnosis of TB disease or LTBI is made at any Department facility, the Health Services vendor shall complete State Form 14058 "Report of Tuberculosis".

COORDINATION WITH THE PUBLIC HEALTH DEPARTMENTS

TB control in correctional settings is critical to general societal TB control. Several sections above (Management of Suspected Cases of TB disease in patients, and Release of patients from Confinement) make reference to coordination with the local or State public health agencies. In

addition, the local and State public health agencies shall be informed when any TB transmission is documented. The Health Services vendor shall report all suspected, confirmed, and LTBI cases to the IDOH.

Once reported, the IDOH TB manager will assign the case to one of four regional nurse consultants (RNC) to provide oversight and consultation, as needed. Once assigned to their TB RNC, the Department facility shall work directly with RNC for guidance on isolation, treatment, and contact investigations. The Department facility shall complete State Form 48092 “Monthly TB Follow Up” report and complete a directly observed therapy log (may send the MAR) and turn it in to the RNC every month.

In addition to reporting via the Monthly TB Follow-up Report, the facility should reach out to the RNC immediately with the following:

- Discharge of a patient from Department Custody
- Death of a patient
- Discontinuation of any or all TB medication on a patient for any reason
- Severe allergic reaction attributed to TB medication

IDOH TB will invite Department staff to attend monthly cohort review when any Department patient is up for review. During cohort review, the patient’s case will be presented to the IDOH TB Medical Director and reviewed, including diagnosis, treatment, clinical improvement, and an overview of the contact investigation.

Consultation with local and State public health agencies can be beneficial both to planning the Department’s internal responses to TB problems and ensuring that appropriate actions are taken regarding non-Department persons who may be affected.

MONTHLY REPORTING

The HSA or designee shall report the following information each month on the Health Services Report to the Health Services Division:

- the number of TST’s given during the month
- the number of new (intake) patients with a positive TST
- the number of patients with a positive TST on annual screening
- the number of patients treated for LTBI
- patients who have been diagnosed with active, infectious TB disease

Conversion rates (as determined by annual testing) for patients and employees shall be determined and tracked from month to month to monitor for unsuspected transmission in the facility.

RELEASE OF PATIENTS FROM CONFINEMENT

Indiana law contains specific measures to ensure that treatment started by the Department will be continued after release.

Within the thirty (30) days prior to the proposed release patients diagnosed with TB disease, being treated for TB disease or receiving treatment of LTBI, shall be reported to IDOH by, the Department's contracted medical vendor. The medical vendor is required to report the following patient information to the IDOH;

- Name
- Proposed address
- Date of birth
- Sex
- Proposed release date

Patients being released from confinement into community facilities that do not have their own medical services staff will be included in the group reported to the IDOH. The Health Services vendor shall also provide the IDOH with information regarding the nature of anti-TB treatment being provided to permit the IDOH to ensure that continuous care is provided after release.

Notification shall be made to the Executive Director of Physical Health and the Executive Director of Transitional Health to address additional release needs.

Patients shall be provided with at least thirty (30) days of medication prior to release from the confinement facility. NOTE: this is an exception to many other Department medication practices. They shall also be provided with education regarding their treatment regimens and instructed to report to the local county health departments as soon as possible after arrival at their destinations.

STAFF TRAINING

Health Services vendor's staff administering the TB program shall be trained on:

- Proper use of the TB skin test,
- Proper screening of offenders at intake and annually,
- Management of employee screening,
- Management and referral of the positive tester, and
- Association between TB and HIV.

Health Services staff working in facilities equipped with an AII room shall be provided clear guidelines regarding the identification and containment of persons with TB disease. Education efforts for these employees shall include discussion of the use of administrative and engineering controls and personal protective equipment and a respiratory protection program as mandated by OSHA.

INFECTION CONTROL AND SAFETY HAZARD MANAGER

Responsibility for TB disease control preferably should reside with a single person. The Health Services vendor shall identify an infection control nurse for this position. When possible, this person should have knowledge and expertise adequate to address infection control, occupational health, and engineering aspects of TB prevention and control; when this is not possible, the individual shall have access to others with additional knowledge and expertise, either locally or at the Department's Central Office level.

FACILITY RISK ASSESSMENT AND TB INFECTION CONTROL PLAN

All Department facilities are "very low risk" for TB and need not conduct annual "Facility Risk Assessments" (FRAs). Any facility that identifies a case of infectious TB disease in its population shall, at the end of the following June, conduct an FRA.

Assessment of a facility's risk level includes analysis of disease burden and facility transmission, which can be conducted by examining the following indicators:

- Burden of disease
 - community rates of TB disease (including other communities from which substantial numbers of patients come; these data are available from local health departments),
 - the number of cases of TB disease in the facility during the preceding year, and
 - the number and percentage of patients and staff with LTBI; and
- Facility transmission
 - the number and percentage of staff and offenders whose tests for TB infection converted and the reasons for the conversion,
 - the number of TB exposure incidents (see Contact Investigation), and
 - evidence of person-to-person transmission.