

CMHC INFECTION CONTROL POLICY MANUAL	Effective Date: 02/11/2016	NUMBER: B-14.10
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The disease treatment recommendations in this policy are meant to serve as **guidelines**. These guidelines are **not** intended to substitute for the judgement of a physician or nurse in providing appropriate medical care.

POLICY: There shall be a standardized method of identifying, treating, and monitoring patients with tuberculosis exposure and tuberculosis disease.

PROCEDURES

I. TUBERCULOSIS (TB) HISTORY AND DEFINITION

- A. A TB classification ([Attachment A](#)) is assigned at the time of the health appraisal of all incoming inmates and recorded as Class 0, 1, 2, 3, 4, 5, or 6 on the Master Problem List. The Master Problem List will be updated to reflect subsequent changes in TB classification. The Mantoux (PPD) skin test is recorded on the *Abstract of Immunizations--Tuberculin Skin Tests (HSM-2)*.
- B. **Tuberculosis** is caused by bacteria in the *Mycobacterium tuberculosis* complex (MTB). This includes *Mycobacterium tuberculosis*, *Mycobacterium bovis* and *Mycobacterium africanum*. Infection or disease caused by other mycobacteria (atypical, or non-tuberculous mycobacteria) is not considered tuberculosis and is not covered by this policy.

II. INITIAL TB SCREENING

- A. Unless they already have **written** documentation of a previous positive skin test, **PPD skin tests** are to be performed: 1) on all individuals entering TDCJ; 2) annually during the anniversary month of incarceration; 3) at any time signs and symptoms are present; and 4) if they have been identified as close contacts of known or suspected cases of TB.
- B. Individuals with a confirmed past history of tuberculosis, and those with a documented significant reaction to a previous skin test, will receive a screening **chest x-ray** in lieu of skin testing upon entering TDCJ.
- C. All known or suspected **HIV infected inmates**, inmates identified to be at special risk for TB, or inmates with signs or symptoms of TB, will receive a screening chest x-ray on intake *in addition to* PPD skin testing.
- D. Skin test positive offenders who have not completed a course of

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chemoprophylaxis and those who have a history of tuberculosis must be interviewed for signs and symptoms of tuberculosis each year, with appropriate follow-up based on the presence of signs or symptoms.

III. TB SKIN TESTING

A. Tuberculin skin test technique and interpretation:

The intradermal Mantoux skin test, using 0.1 ml of PPD containing 5 TU (Tuberculin Units) will be used. Skin tests will be read 48 to 72 hours after application. Results are recorded on form HSM-2.

- B. HIV-negative inmates with reactions of 5mm - 9mm and HIV-positive inmates with reactions of 1 - 4 mm should receive a repeat test in approximately **one to two weeks**.
- C. 5 mm of induration will be considered a positive skin test reaction in HIV positive and other immunocompromised offenders and for patients with chest x-ray findings suspicious for active or inactive tuberculosis. All others, except close contacts of an active case (see III.E) will be considered positive if the induration is 10 mm or greater.
- D. 5 mm of induration will be considered positive for offenders tested as a **close contact** of a known active pulmonary TB case. If the first post-exposure skin test is done less than 3 months after exposure ended and measures less than 5 mm in diameter, another skin test should be done three months after exposure to the index case ended.
- E. **HIV counseling and testing** will be offered to any individual with TB infection or TB disease.

IV. PREVENTIVE THERAPY (TREATMENT FOR LATENT TB INFECTION, [LTBI])

- A. All offenders with a newly documented positive skin test will have a chest x-ray and be evaluated by a physician or mid-level provider for active tuberculosis before initiating preventive therapy. The chest x-ray must be done within one month prior to starting preventive therapy.

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B. Unless there is a contraindication or documented history of completed preventive therapy, *all* nonpregnant PPD-positive individuals in whom active disease has been ruled out should receive preventive therapy.

C. **Treatment regimen:**

1. Isoniazid (INH) 900 mg p.o. twice weekly or 300 mg p.o. daily for nine months. (Although the Physician's Desk Reference does not list 900 mg BIW for preventive therapy, this is a recommended regimen option according to the Centers for Disease Control and the American Thoracic Society. BIW regimens must be given by Directly Observed Therapy [DOT].) Total doses should equal 270 for daily therapy, or 76 doses for BIW therapy. Although biweekly chemoprophylaxis for LTBI must be administered by DOT, daily chemoprophylaxis may be administered at the pill window.
2. Patients weighing less than 110 lbs should have their dose adjusted based on body weight.
3. Patients exposed to individuals with **INH-resistant** or multi-drug resistant TB should be started on chemoprophylaxis after consultation with the Office of Public Health.
4. If preventive therapy has been interrupted for a period of eight weeks or more, re-initiate chemoprophylaxis after re-evaluating the patient to rule out active TB.
5. If preventive therapy is interrupted for less than 8 weeks, resume treatment and complete the total number of doses required for 9 months of therapy as listed in C.1 above.

D. **Monitoring patients on preventive therapy:**

1. Patients on preventive therapy must be monitored for drug toxicity by unit nursing staff at monthly intervals, with documentation on form HSM-19, *Tuberculosis Patient Monitoring Record* which is found in the EMR. For those facilities without EMR access use ([Attachment B](#)).
2. Patients will be questioned about signs and symptoms of tuberculosis and about drug toxicity with each visit. Comprehensive screening for adherence

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and drug toxicity should be provided during the monthly monitoring visits.

E. Liver function tests (LFTs)

1. A baseline liver profile (including at least AST, ALT and total bilirubin) should be obtained in: 1) offenders with HIV infection, 2) pregnant women, 3) those who are in the first 3 months of the post-partum period, 4) those with a history of chronic hepatitis or alcoholism, and 5.) those over age 35 who are on medication for a chronic illness.
2. Liver enzymes and bilirubin should be repeated monthly in: 1) pregnant women, 2) those in the first 3 months post-partum, and 3) those whose baseline tests were abnormal.

F. The patient should be **educated** regarding the importance of chemoprophylaxis and the possibility of toxicity including signs and symptoms of toxicity.

G. **No** anti-tuberculosis drugs, either prophylactic or therapeutic, may be administered by **KOP** programs.

H. Toxicity associated with chemoprophylaxis

1. **Symptoms and signs** consistent with INH or rifampin toxicity include unexplained rash, anorexia, nausea, right upper quadrant abdominal tenderness, persistent dark urine, jaundice, vomiting, icterus, elevated temperature (otherwise not explained), and paresthesia of the extremities.
2. If any of these develop, chemoprophylaxis should be stopped immediately and a **liver profile should be checked**. If the ALT or AST is elevated greater than three to five times the upper limit of normal (>3-5x normal) or if any other liver function test suggests hepatotoxicity, discontinue chemoprophylaxis and observe patient.
3. In general, preventive therapy should be discontinued if liver enzymes are greater than 5 times the upper limit of normal and the patient is asymptomatic, or greater than 3 times normal if they are symptomatic. The clinical judgment of the provider is important in determining whether therapy should be discontinued at a lower liver enzyme threshold.
4. In most cases chemoprophylaxis for **latent TB infection** will not be

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restarted after a patient has experienced INH liver toxicity. Certain high-risk patients may be considered for an alternative chemoprophylaxis regimen of rifampin 600 mg daily for 4 months.

5. If toxicity develops during treatment for **active tuberculosis**, consult with Office of Public Health or an appropriate specialist for advice on alternative treatment and reintroduction of antituberculosis drugs.

V. DIAGNOSIS OF TUBERCULOSIS DISEASE

The diagnostic process of tuberculosis comprises history and physical examination, tuberculin skin testing, chest x-ray examinations, and sputum examination for mycobacteria.

- A. **Risk factors** for tuberculosis include: previous incarceration, past exposure to TB, incomplete treatment and/or immunosuppression.
- B. **Symptoms/signs:** productive cough, hemoptysis, chest pain, night sweats, weight loss, fever, chills, fatigue and lymphadenopathy.
- C. **Sputum specimens**
 1. Sputum for AFB smear and culture will be collected early in the morning on two consecutive days. A third specimen should be collected later on the first or second day. The **first set of 3 specimens** should be collected prior to the initiation of medication. If the offender is so ill that initiating treatment cannot be delayed, at least the first specimen should be collected before starting treatment.
 2. Sputum specimens should be collected in a negative pressure room.
 3. **A repeat set of 3 sputum specimens** for AFB smear and culture will be obtained after 7 days of antibiotic therapy. One sputum specimen will be obtained and submitted to the laboratory once each month after positive diagnosis until two consecutive specimens are negative for MTB by **culture**. Cultures may be considered negative for MTB if the only bacteria isolated are atypical mycobacteria. If an offender does not show for a sputum collection he/she should be called out for the sputum collection.

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4. Sputum specimens for AFB must be placed in approved containers and sent by **overnight carrier** to the contracting laboratory. Unit health administrators are responsible for assuring that the packaging of these specimens conforms to the requirements of the carrier.
5. All tuberculosis-related laboratory results must be **reported** to the Office of Public Health. The unit CID will submit copies of all results of smear examinations, cultures, sensitivity studies, PCR tests, DNA probes, etc., by the 15th day of each month.

VI. SUSPECT CASES: Management of Patients and Suspects With Pulmonary Tuberculosis

- A. All patients with apparent or demonstrated pulmonary TB or tuberculosis of the upper respiratory tract will normally be placed in **AFB isolation** until tuberculosis is ruled out or the patient has been on antituberculosis therapy for at least 2 weeks and three successive sputum specimens are demonstrated to be *negative* for AFB on **smear**. Medical isolation for the treatment of TB may take place only in an approved isolation room.
- B. Patients who have been released from respiratory isolation after having received at least two weeks of antituberculosis therapy and three successive negative sputum smears must be single-celled and special transportation utilized until one of the following criteria is met:
 1. Tuberculosis is ruled out, or
 2. All sputum cultures from two successive months are negative.
- C. The following table may assist in deciding whether or not to isolate suspect cases of pulmonary TB:

X-RAY FINDINGS	SUGGESTED ACTION
I. Cavitory Lesion	Isolate; consider as likely suspect
II. Infiltrative lesion: A. Upper lobe distribution	Most likely isolate; consider as a suspect (symptoms also important).

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B. Distribution other than upper lobe	Prior to deciding to isolate, review for presence of relevant history (especially immunosuppression) and symptoms
III. Solitary nodule lesion	Doubtful that isolation will be necessary (symptoms important; and may need to refer for specialist evaluation).

- D. All health care personnel entering an AFB (respiratory) isolation room shall observe established TDCJ respiratory isolation precautions, including the use of approved masks (*at least* NIOSH-certified N-95 respirator or equivalent).
- E. Patients with demonstrated or suspected pulmonary TB who must be transported will not be transported with other patients. The patient and all staff members who share air space will wear appropriate face masks during the period of transportation. * Patients will wear a surgical mask to prevent particles from the respiratory tract being released into shared airspace. Staff members should wear approved (ie; NIOSH –certified N-95 respiratory or equivalent) to remove particles from the air that they inhale. Ventilation will be maximized to prevent rebreathing of air in the vehicle.
- F. Consider starting patients with suspected TB on treatment after the first set of 3 sputum specimens is collected. This will allow earlier discharge from isolation (after 2 weeks of treatment) if the initial sputum smears are negative, rather than keeping them in isolation until all cultures are negative if treatment is not started. If TB is subsequently ruled out treatment can be changed to chemoprophylaxis and an alternative diagnosis of the pulmonary lesion pursued.
- G. Isolation is *not* needed in cases of **atypical (non-TB) mycobacterial disease**. Respiratory isolation may be discontinued if the infection is solely due to non-tuberculosis mycobacteria.

VII. TREATMENT OF TB

- A. Treatment must include a full course of at least two drugs to which there is demonstrated susceptibility. Because of the possibility of primary drug resistance, initial therapy with multiple drugs (**four or more antituberculosis drugs**) is recommended.
- B. Determination of **risk factors** for infection with **drug-resistant** TB must be made

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prior to initiating treatment. Those with an increased risk of drug-resistance include:

- Persons with a history of previous treatment for tuberculosis
- Contacts of known or suspected drug-resistant cases

If drug resistance is anticipated or determined by sensitivities, **consultation** with the Office of Public Health and appropriate specialists is required within three days of initiating therapy.

- C. **Recommended therapeutic regimen** for patients **without** risk factors for resistant infection, who are HIV negative or HIV positive and not on a protease inhibitor or a non-nucleoside RTI:

First 2 weeks (induction phase, 10 doses given 5 days per week as a single daily dose)

INH 5 mg/kg (maximum 300 mg) p.o. daily
Rifampin 10 mg/kg (maximum 600 mg) p.o. daily
Ethambutol (see Table 1) p.o. daily
Pyrazinamide (see Table 2) p.o.daily

Next 6 weeks (intensive phase, 12 doses as a single dose BIW)

INH 15 mg/kg (maximum 900 mg) p.o. twice weekly
Rifampin 10 mg/kg (maximum 600 mg) p.o. twice weekly
Ethambutol (see Table 1) twice weekly
Pyrazinamide (see Table 2) twice weekly

Continuation Phase (36 doses as a single dose BIW)

INH 15 mg/kg (maximum 900 mg) twice weekly
Rifampin 10 mg/kg (maximum 600 mg) twice weekly

Table 1 Suggested ethambutol doses based on estimated lean body weight

	Weight (kg)		
	40-55	56-75	76-90
Daily dose, mg	800	1,200	1,600
BIW dose, mg	2,000	2,800	4,000

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- Ethambutol and Pyrazinamide will need to be adjusted for those chronic renal insufficiency or chronic renal failure.

Table 2 Suggested pyrazinamide doses based on estimated lean body weight

	Weight (kg)		
	40-55	56-75	76-90
Daily dose, mg	1,000	1,500	2,000
BIW dose, mg	2,000	3,000	4,000

The continuation phase should be lengthened if the patient has not become sputum culture negative after the second month of therapy. Treatment should continue a minimum of six months, and until the patient has been culture negative for at least 4 months. **Treatment regimens that do not include pyrazinamide for the initial two months, or those in which INH or rifampin are not included will have to be prolonged. Consult the Office of Public Health for more information in these situations.**

Ethambutol may be discontinued before the end of the intensive phase as long as INH and rifampin are included in the treatment regimen and the organism is susceptible to both drugs on culture. Pyridoxine (50 mg daily or 100 mg BIW) may be added to the above regimen if vitamin B-6 supplementation is felt to be necessary.

- D. Special considerations must be taken for **patients who are on a protease inhibitor or NNRTI**, or are candidates for such therapy. Consider consulting with an infectious disease specialist regarding the management of these patients.
- E. Patients who have a CD4+ count of less than 100 should not receive BIW therapy. They should either continue on daily therapy for the duration of treatment or receive treatment three times weekly (TIW) during the intensive and continuation phase of treatment. Consider consulting with an infectious disease specialist when treating these patients.
- F. HIV positive patients who develop tuberculosis and who are not on antiretroviral therapy should have an expedited referral to an infectious disease specialist (UTMB) or other designated physician (Texas Tech) to initiate antiretroviral therapy for HIV. Do not delay starting antituberculosis therapy in these patients. TB treatment should be started before initiating antiretroviral therapy. Because TB is an AIDS-defining illness, these patients are potential candidates for antiretroviral therapy regardless of their CD4+ count or viral load.

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- E. **Directly Observed Therapy (DOT)** is the standard of care for the treatment of suspected and confirmed cases of tuberculosis. The CID nurse is responsible for ensuring that DOT is implemented; however, distribution of medication via DOT may be accomplished by *any* staff qualified to hand out medications. Each unit must develop a **specific protocol** for medication administration via DOT, which includes the following:
- Unit-specific clinic **access procedures** (eg, pass for specific time).
 - Each patient will receive an **information sheet** ([Attachment D](#)) signed by the patient and CID nurse. A copy is given to the patient.
 - CID nurse must **monitor compliance** at least weekly and the unit must document doses on **PRS** and in the record on the HSM-76 ([Attachment E](#)).
 - Daily **assignment sheets** must include DOT task.
 - Offenders should be called out when they do not show for a dose of DOT medication.
 - Staff assigned to administer DOT must communicate **refusals** and **no shows** to the CID nurse, who is responsible for educating the patient and encouraging compliance. Further refusals or no shows will then be reported to the unit physician.
 - Patient will be observed taking medications and **oral cavity checks** may be utilized if deemed appropriate.
- F. Patients on anti-TB therapy must be seen by a **physician** monthly until 2 consecutive monthly sputum **cultures** are reported negative. Subsequent monthly follow-up may be performed by a physician, physician assistant, or registered nurse.
- G. Patients will be monitored at least monthly for signs and symptoms of drug toxicity as outlined in sections IV(D) – IV(H).

VIII. EVALUATION OF CONTACTS

- A. When a patient is determined to be a **suspected TB case** (i.e., when placed into respiratory isolation, started on antituberculosis therapy or sputum cultures to rule out TB are ordered):
1. The unit CID nurse will begin collecting information about the identity of offenders and staff who would be considered close contacts. [Attachment F](#)

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provides guidance in conducting a contact investigation.

2. The CID nurse should also get a current unit strength report that includes housing and job assignments for future use in case a contact investigation must be expanded. Housing contacts may also be determined by using the INTBLIST report on FORVUS. Contact Office of Public Health if you are unable to access INTBLIST.
3. If the offender has been on the facility for less than a month, the CID nurse at the previous facility must be notified to begin compiling a list of potential contacts at that facility.
4. It is advisable that the warden be notified of the potential need for a contact investigation, but that testing will not begin until tuberculosis is confirmed.

B. If the **case is confirmed as tuberculosis, the **contact investigation should begin:****

1. Assess those who are considered close contacts for signs and symptoms of tuberculosis, and begin PPD skin testing of those contacts.
2. If there are a large number of positive reactions on initial screening, additional contacts with less exposure should be tested.
3. 5 mm of induration is considered a positive skin test for close contacts of a case of tuberculosis. If the initial skin test reaction is less than 5 mm in size then a repeat skin test should be done 12 weeks after the last possible exposure to the index case.
4. If there are any conversions from negative to positive between the first and second skin tests, the contact investigation should be expanded to include those contacts with less exposure.
5. If uncertain of the need or degree to which a contact investigation should be expanded, consult the Office of Public Health for advice.
6. Positive skin tests should be evaluated and treated as in Section IV.
7. If a contact is immunocompromised, the provider should determine whether preventive therapy should be considered even if the skin test is negative.

C. If an offender is transferred from another unit for respiratory isolation to rule out TB, it is essential that information about positive smear or culture results be telephoned to the sending unit as soon as available so that an appropriate contact investigation can be undertaken. The sending unit should also check with the receiving unit to find out the offender's status if no information is received within a reasonable period of time.

D. **Employees considered to be close contacts of identified cases of TB within TDCJ**

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will be offered TB skin testing when a contact investigation is indicated. Unit health services personnel will notify the Office of Public Health of those circumstances and forward records of testing.

IX. REPORTS

- A. A **Tuberculosis Screening Report** ([Attachment C](#)) must be completed monthly by the unit CID and mailed, e-mailed or faxed to the Office of Public Health by the 5th day of the month following the month of screening.
- B. **Form TB-400 A** ([Attachment G-1](#)) must be initiated when preventive therapy is started and then completed and submitted to the Office of Public Health when preventive therapy is stopped or completed, or when the offender is discharged from TDCJ before completion of preventive therapy.
- C. **Form TB-400 B** ([Attachment G-2](#)) must be completed and filed when a patient is determined to be a suspect case of TB, when a final diagnosis of tuberculosis is made, every 3 months during treatment, and upon completing chemotherapy for TB. A copy of the form is to be mailed. E-mailed or faxed on each occasion to the Office of Public Health. A TB400B should be submitted as well if an offender leaves TDCJ before completing treatment for TB.
- D. **Forms TB-340 and TB-341** are used for reporting the results of a contact investigation (see Attachment F). Copies of these forms are in [Attachment H](#).
- E. An offender should have only one tuberculosis-related **medical alert code** entered at any time. The TB-related medical alert codes are 0120, 0121, 0130 and 0140. Medical alert code 0119 is also TB-related but should not be used. When their diagnosis changes, the medical alert codes should be entered or changed as follows:
 1. Offender found to have a positive tuberculin skin test by documented history or by skin testing, and active tuberculosis has been ruled out (TB Class 2; Latent TB Infection). Enter medical alert code 0120.
 2. Offender is suspected to have active tuberculosis but the diagnosis is not confirmed yet (TB Class 5). Enter medical alert code 0140. If the offender previously had medical alert code 0120 or 0130, change the code to 0140.
 3. Offender found to have active tuberculosis (TB Class 3). Enter medical alert code 0121. If the offender previously had medical alert code 0120 or 0140, change the code to 0121.

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4. Offender has completed therapy for **active** tuberculosis (not preventive therapy). Offender no longer has tuberculosis (TB Class 4). Change medical alert code from 0121 to 0130.
5. Do not use medical alert code 0119. This code corresponds to TB Class 1 and would only apply for a skin test negative contact of a case of active tuberculosis.

References:

1. ATS/CDC. Treatment of Tuberculosis. Am J Respir Crit Care Med 2003; 167:603-662.
2. CDC. Targeted Tuberculin Testing and Treatment of Latent TB Infection. MMWR 2000; 49(RR-6), June 9, 2000.
3. CDC. Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations for CDC. MMWR 2006; 55 (RR-9), July 7, 2006.

REF:

ACA Standards 4-4354, 4-4355
 NCCHC Standard P-14, Infection Control Program (essential)
 Curry International Tuberculosis Center, March 2004

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ATTACHMENT A

CLASSIFICATION OF TUBERCULOSIS (1990)

CLASS

-
- 0 No tuberculosis exposure; not infected Persons in this class have no history of exposure and a negative reaction to the tuberculin skin test.
-
- 1 Tuberculosis exposure; no evidence of infection Persons in this class have a history of exposure but have a **negative** reaction to the tuberculin skin test. Action taken for persons in this class depends mainly on the degree and recentness of exposure to *M. tuberculosis*. Medical Alert Code = 0119
-
- 2 Tuberculosis infection, no disease (significant reaction to tuberculin skin test; negative bacteriologic studies [if done]; no clinical and/or roentgenographic evidence of tuberculosis). Medical Alert Code = 0120
-
- 3 Tuberculosis; infection with current disease (*M. tuberculosis* cultured [if done]; otherwise, both a significant reaction to tuberculin skin test and clinical and/or roentgenographic evidence of current disease). Medical Alert Code = 0121
-
- 4 Tuberculosis; no current disease (history of previous episode(s) of tuberculosis, or abnormal stable roentgenographic findings in a person with a significant reaction to tuberculin skin test; negative roentgenologic studies [if done]; no clinical and/or roentgenographic evidence of current disease). Medical Alert Code = 0130
-
- 5 Tuberculosis suspect (diagnosis pending). Medical Alert Code = 0140
-
- 6 Non-tuberculous mycobacteria (eg, *M. avium*, *M. Kansasii*, *M. Gordonae*, etc.).
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American Thoracic Society and Centers for Disease Control. *Diagnostic Standards and Classification of Tuberculosis and Other Mycobacterial Diseases*. 15th ed. **Am. J. Resp. Dis.** 142: 725-735;1990.

**ATTACHMENT B, Page 1
POLICY #B-14.10
For Non-EMR Facilities**

TEXAS DEPARTMENT OF CRIMINAL JUSTICE
INSTITUTIONAL DIVISION
TUBERCULOSIS PATIENT MONITORING RECORD

Name: _____ Date: _____ Facility: _____ TDCJ#: _____

Reason for Supervision:	Date	Date
_____ Tuberculosis	_____	_____ Positive Reactor (on Therapy)
_____ Suspect	_____	_____ Converter
_____ Contact	_____	_____ Reactivation
_____ Positive Reactor	_____	_____ Other (specify) _____

	Initial Visit	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Date													
Weight													
RX compliance*													
X-ray done													
Sputum done													
ALT or AST													
Nausea													
Vomiting													
Jaundice													
Paresthesias													
Vision change													
Hearing change													
Visual acuity **													
Audiogram ***													
Pt. Teaching ****													
Abdominal Pain													
Dark Urine													
Rash													
Initials													

HIV test offered? _____ Yes _____ Date Counseled
 _____ No _____ Refusal signed

*Record compliance as (number of doses actually taken)/(number of doses expected). For example, in a 4 week period, a person on twice weekly therapy would be expected to take 8 doses of meds. If he only took 6, then compliance nee would be recorded as 6/8.

** Visual acuity recommended as baseline on everybody on TB drugs and monthly on persons on daily ethambutol.

*** Audiogram is recommended monthly for persons on streptomycin or other ototoxic drugs only.

**** Patient teaching of signs and symptoms of toxicity.

If treatment extends past 12 months, use a second sheet to continue documentation of toxicity checks

MONITORING PATIENTS ON TREATMENT FOR TB

I. Monitoring for drug toxicity

Adults treated for TB should have baseline measurements of hepatic enzymes, bilirubin, serum creatinine or blood urea nitrogen, a complete blood count, and a platelet count (or estimate). Serum uric acid should be measured if pyrazinamide is used, and a baseline examination of visual acuity A. and testing of color discrimination (Ishihara test) should be obtained for patients to be treated with ethambutol. Audiometry should be performed at the beginning of streptomycin therapy. The purpose of these baseline tests is to detect any abnormality that would complicate the regimen or necessitate its modification.

Toxicity monitoring must be individualized and based on the drugs used in a given regimen (see below) and patient factors related to toxicity (e.g., age, alcohol use). At a minimum, patients should be seen at least monthly during therapy and questioned by medical personnel for toxicity, even if no problems are apparent. Patients should be specifically instructed to look for symptoms associated with the most common reactions to the medications they are receiving. If symptoms suggesting drug toxicity occur, appropriate laboratory testing should be performed.

All patients receiving isoniazid, rifampin, and/or pyrazinamide should be instructed to report immediately any symptoms suggesting hepatitis (loss of appetite, nausea, vomiting, persistently dark urine, yellowish skin, malaise, unexplained elevated temperature of greater than three days duration, or abdominal tenderness). Patients receiving rifampin twice-weekly should be monitored by history for possible manifestations of thrombocytopenia (bleeding tendency, easy bruisability, blood in urine), or a "flu-like syndrome."

Peripheral neuropathy is associated with isoniazid administration but is uncommon at doses of 5 mg/kg. In persons with conditions in which neuropathy is common (diabetes, uremia, alcoholism, malnutrition), pyridoxine (10-50mg/day) may be given with isoniazid. It is also advisable to give pyridoxine with isoniazid to persons who are pregnant or who have a seizure disorder.

Hyperuricemia may occur in patients receiving pyrazinamide, but acute gout is uncommon. Asymptomatic hyperuricemia is not an indication for discontinuing the drug.

Audiometry should be performed as periodic intervals during streptomycin therapy. If vertigo, dizziness, and ataxia occur (up to 10 percent of patients) in patients receiving streptomycin, the drug should be immediately discontinued.

The interaction of isoniazid and phenytoin or carbamazepine increases the serum concentration of both drugs. When these drugs are given concomitantly, the serum level of phenytoin or carbamazepine should be monitored. Isoniazid may also increase the serum level of some benzodiazepams.

Rifampin may accelerate clearance of drugs metabolized by the liver. These include methadone, coumadin derivatives, glucocorticoids, estrogens, oral hypoglycemic agents, digitalis, anticonvulsants, ketoconazole, and cyclosporin. By accelerating estrogen metabolism, rifampin may interfere with the effectiveness of oral contraceptives.

ATTACHMENT B - Page 3
POLICY #B-14.10

II. Monitoring Response to Treatment

The best way to measure the effectiveness of therapy for pulmonary TB is to monitor patients bacteriologically through sputum examination at least monthly until conversion to negative. Patients being treated for uncomplicated pulmonary TB do not require frequent chest radiographs. Bacteriologic examination is far more important than monitoring chest films.

A positive sputum culture is the only definitive sign of treatment failure or relapse, and the persistence or reappearance of organisms in the smear should create a high index of suspicion. Radiographic changes and symptoms correlate poorly.

It may also be helpful to assess the radiographic response early in the course of treatment (2-3 months) to rule out an underlying concomitant pulmonary process or complication. A chest film at completion of treatment provides a baseline for comparison with any future films.

Sputum that remains culture positive beyond three months of therapy should suggest the possibility of disease due to drug-resistant organisms or failure of the patient to take medications as prescribed. Over 90% of patients taking isoniazid and rifampin should become sputum culture negative within three months of starting treatment. Patients with sputum that remains culture positive beyond three months should be evaluated for disease due to drug-resistant organisms by repeating sputum cultures and obtaining drug-susceptibility studies. The treatment regimen should not be changed until the drug susceptibility pattern is known, unless the patient is rapidly deteriorating. Never add one new drug at a time to a failing regimen as this may promote the development of further drug resistance.

For patients with disease due to drug-resistant organisms, expert consultation from a specialist should be obtained. Patients with drug-resistant disease should be treated with 2 to 3 drugs to which their organisms are susceptible. Many of the second-line drugs are associated with significantly increased toxicity and require particularly close monitoring of patients receiving them.

For patients who have had a satisfactory and prompt bacteriologic response and who also have completed a six to nine month regimen containing isoniazid and rifampin, routine follow-up is not needed.

Adapted from:
Core Curriculum on Tuberculosis, National Tuberculosis Training Initiative

**Attachment C (POLICY B-14.10)
Tuberculosis Screening Report**

UNIT: _____ DATE OF INCARCERATION MONTH: _____

CID: _____

Purpose of form: 1) To identify the percentage of positive tuberculosis skin test reactors among person entering TDCJ; 2) To identify the percentage of positive tuberculosis skin test reactors (converters) among persons receiving an annual repeat test.

INTAKE FACILITIES: PPDs for newly incarcerated inmates:

TOTAL NUMBER OF CHARTS SCREENED UPON INTAKE: _____

TOTAL NUMBER OF CHARTS WITH A CURRENT POSITIVE TB SKIN TEST: _____
(Note: current = inmate had a positive PPD upon entry into TDCJ)

TOTAL PPDS GIVEN: _____

TOTAL PPDS READ: _____

POSITIVE REACTORS: _____

Positive reactors = incoming inmates who are given a skin test upon arrival into TDCJ, and whose skin test is read as reactive.

If you are giving the 2nd step of a 2-step test, please DO NOT include the 2nd test given or read on this report. Do, however, include the result if it is positive with the number of Positive Reactors. (We are trying to determine the number of individuals who have positive skin tests, not the number of tests given to each individual.)

Note: Chart screens and PPD tests done/positive should only be recorded for the **initial chart review** or PPD test **when an offender enters TDCJ**. Chart reviews done when an offender transfers between units should not be recorded in this section.

PPDS for date of incarceration annual follow-up or for other reasons after intake (converters)

TOTAL PPDS GIVEN: _____

TOTAL PPDS READ: _____

POSITIVE REACTORS: _____

Converter = an individual who has had a documented negative PPD more than three months prior to the positive skin test result. This will apply to tests administered during the annual incarceration month.

.....
This report is due in the Office of Public Health by the 5th of each month.

ATTACHMENT D (POLICY B-14.10)

INFORMATION SHEET

You have been given information about your illness and will be receiving medications either every day or twice a week . Your medications may be changed by your doctor at some time during your treatment which can take six to nine months or more to complete. Because it is extremely important that you take your medications regularly, you will come to the medical department to receive your medication directly from the nurse or medication aide. It may be necessary for him/her to make sure you have been able to swallow your medicine and you will be asked to sign your name each time you take it.

Your illness can be cured, but you must take responsibility for helping yourself to get well. If you fail to take your medicine regularly, you could become very ill, and your present medications may no longer help you.

Once a month you will be seen in the clinic and you should report any unusual symptoms at that time. You may also need lab results at that time.

=====

The following procedure must be followed on this unit for you to report to the medical department.

Patient Signature	Date	Health Care Worker's Signature	Date
TDCJ#			

ORIGINAL MUST BE PLACED IN PATIENT MEDICAL RECORD COPY GIVEN TO PATIENT

ATTACHMENT F (POLICY B-14.10)

GUIDE TO PERFORMING A CONTACT INVESTIGATION

- I. **Gather Information that will be needed for a contact investigation.** This is done when TB is suspected, even before confirmation of the case. Initiate the following within 24-48 hrs of receiving a report of “sputum positive for AFB” or a positive culture for AFB from a respiratory tract source:
- A. Notify the CID nurse and the warden. If the CID nurse is absent, the back-up nurse should notify the CID nurse immediately upon return.
 - B. The CID or back-up nurse should notify the Office of Public Health.
 - C. Obtain from the suspected case (i.e., with a positive smear and/or culture) and count room the names of high risk (close) contacts for the time that the suspected case was on the unit within the month preceding the date the culture/smear was collected up until the time the patient was placed in respiratory isolation. Include as close contacts:
 - Cell mate and offenders in adjacent cells
 - In dorms, the 15 offenders in closest proximity
 - Offenders/teacher in classroom
 - Offenders/employees at work (if work indoors)
 - Offenders in day room (if case offender has spent at least 4 hr/day three times per week in the day room)
 - Household members (if case was identified on arrival to TDCJ or on furlough or bench warrant within past month)
 - D. Review PPD and HIV status of all named offenders.
 - E. Obtain copies of the daily Unit Locator Reports for the time frame given in step B from the count room and save them for possible future use. Do not discard before the contact investigation is completed.
 - F. Notify all units that the suspected case-offender was on during the time from one month prior to collection of the specimen until he/she was placed in respiratory isolation, so that they may begin their contact investigation. If the offender was in a non-TDCJ facility during this time frame, notify the Office of Public Health so notification of the outside facility can take place.
- II. **No contact investigation is necessary if the case turns out not to be TB.** If the cultures of the AFB smear-positive sputum are only positive for a non-tuberculous mycobacteria (i.e., species other than *M. tuberculosis*) the case is closed. Complete the form TB400 accordingly and send it to Preventive Medicine. No contact investigation is necessary.
- III. **Begin the skin testing of close contacts when the case is confirmed.** If any culture from a respiratory tract source is reported as positive for *M. tuberculosis*, initiate the following within 24-48 hours for all persons on the list generated in I.B. above.
- A. Notify the CID nurse.
 - B. For contacts who have been **PPD**-negative (documented in medical record) or whose PPD status is unknown.
 - 1. Obtain history regarding symptoms of TB:
 - Cough for ≥ 3 wk
 - Unexplained, documented fever for ≥ 1 wk
 - Recurrent night sweats for ≥ 1 wk
 - Any documented episode of hemoptysis
 - If 1 or more of the above are present, follow Nursing Protocol for Suspected TB.
 - 2. Place **PPD** and interpret reaction 48-72 hours after placement. Record skin test results (indicate diameter [in millimeters] of induration). Please note that the classification of positive skin tests given here only addresses the most common situations. Refer to the Core Curriculum on Tuberculosis (CDC) for a more complete discussion of the interpretation of skin tests.

- a. If the first **PPD** is positive (i.e., ≥ 5 mm induration):
 - Initiate chest x-ray on offenders.
 - Encourage HIV testing if not previously recorded.
 - Educate contact about symptoms of TB, including instructions to seek medical attention if they occur.
 - Refer to provider for possible preventive therapy with **INH**. Employees should be referred to their private physician for chest x-ray and follow-up.
 - b. If the first **PPD** is negative
 - Educate contact about TB and importance of repeat skin testing for determining infection in 3 months.
 - If **HIV**-positive or if they refuse **HIV** testing and are in a high-risk group:
 - Initiate chest x-ray
 - Refer to provider for possible preventive therapy with **INH** pending follow-up **PPD**.
 - Schedule follow-up **PPD** 3 months after the last contact before the case was placed in respiratory isolation. (Applies whether HIV-positive or negative)
 - If the second **PPD** is negative (i.e., < 5 mm induration), case on that contact is closed (no infection). Provider may elect to continue INH therapy if the contact is immunocompromised.
 - If the second **PPD** is positive (i.e., ≥ 5 mm):
 - Initiate chest x-ray on offenders
 - Encourage **HIV** testing if not previously recorded.
 - Educate contact about TB and benefits and possible side-effects of isoniazid (**INH**). Obtain informed consent for preventive therapy if authorized by the provider.
 - Refer to provider for possible preventive therapy with **INH**. Employees should be referred to their private physician for chest x-ray and follow-up.
- C. For contacts who are previously documented **PPD**-positive:
1. Refer prior positive employees to their private physician for further follow-up.
 2. Obtain history regarding symptoms of TB:
 - Cough for ≥ 3 wk
 - Unexplained, documented fever for ≥ 1 wk
 - Recurrent night sweats for ≥ 1 wk
 - Any documented episode of hemoptysis
 - If 1 or more of the above are present, follow Nursing Protocol for suspected TB.
 3. Initiate chest x-ray upon physician's order
 4. Encourage **HIV** testing (if negative or unknown)
 5. Educate contact about symptoms of TB, including instructions to seek medical attention if they occur.
- D. If more than 10% of the close contacts identified in step I.B convert to PPD positive, widen the contact investigation to include offenders or staff with less contact with the index case.
- E. All contacts identified and tested should be reported on a TB 340 and B 341 form. After the second round of skin testing is completed, all forms should be mailed to the Office of Public Health. Any offender contact started on tuberculosis medication for therapy or preventive therapy should be reported on the TB 400A or TB 400B forms to the Office of Public Health.

PLEASE UTILIZE

THE TEXAS DEPARTMENT OF STATE HEALTH SERVICES (TDSHS)

ATTACHMENT A (G-2A) FORM AND ATTACHMENT B (G-2B) FORM

PLEASE UTILIZE THE TEXAS DEPARTMENT OF STATE HEALTH SERVICES (DSHS)
ATTACHMENT A (G-2A) FORM AND ATTACHMENT B (G-2B) FORM

PLEASE UTILIZE THE TEXAS DEPARTMENT OF STATE HEALTH SERVICES (DSHS)

ATTACHMENT H (TB-340) Page 1 and ATTACHMENT H (TB-341) Page 2 FORMS

<http://www.dshs.state.tx.us/idcu/disease/tb/forms/>