

# **Tuberculosis Infection Management Care Guide**

## **February 2018**



CALIFORNIA CORRECTIONAL  
HEALTH CARE SERVICES

## SUMMARY

### GOALS

- ✓ Prevent Tuberculosis (TB) disease by treating patients with TB infection.
- ✓ Encourage patients with untreated TB infection to accept treatment.
- ✓ Monitor patients with untreated TB infection to detect TB disease promptly.

### ALERTS

- Old fibrotic lesions on chest x-ray (CXR)
- Drug interactions, adverse effects, contraindications.
- Prior adverse reactions to TB infection medications.
- Known hepatic disease, HIV infection, or pregnancy.

### DIAGNOSTIC CRITERIA/EVALUATION

- Patients with TB infection:
  - Have either a positive tuberculin skin test (TST) or a positive Interferon-Gamma Release Assay (IGRA) test;
  - Are infected with *Mycobacterium tuberculosis* (MTB) but do not have tuberculosis (TB disease); and
  - Are not infectious and cannot spread MTB to others.
- **Recent TB Infection:** identified in the past 2 years.
- **Remote TB infection:** identified more than 2 years ago.
- Identification of patients with tuberculosis (TB) infection (also known as Latent TB infection or LTBI) is described in the CCHCS TB Surveillance care guide.
- TB infection treatment prevents progression to TB disease; without treatment:
  - Approximately 5% of patients with TB infection will develop TB disease at some time in their lives; 50% of those who progress to disease do so within the first two years after infection.
  - Some medical conditions (e.g., diabetes and HIV infection) increase the risk of progression to TB disease.
- TB Disease must be ruled out prior to initiating treatment for TB infection with:
  - TB sign and symptom screen;
  - CXR; and
  - 3 negative cultures for MTB (IF respiratory specimens are collected, e.g., for patients with old fibrotic lesions).

With any suspicion of TB disease, 3 respiratory specimens must be collected and the cultures must be negative before treatment for TB infection is started.

ALL patients with TB infection should be considered as candidates for TB infection treatment.

#### Table 1: TB Infection Treatment Candidates

##### Exposure and Medical Conditions

TST <5 mm - Treat

TST >5 mm - Treat

TST >10 mm - Treat

IGRA+ - Treat

##### Known exposure to a person with TB disease and:

- Immunocompromised, defined as:
  - HIV-infected or unknown HIV status (not tested in the past 6 months);
  - Treatment with the equivalent of >15 mg/day of prednisone for > one month;
  - Cancer chemotherapy;
  - TNF alpha antagonist treatment; or
  - Immunosuppressive treatment for an organ transplant.

##### Exposure and Medical Conditions

TST <5 mm – Do Not Treat

TST >5 mm - Treat

**TST >10 mm - Treat**  
**IGRA+ - Treat**  
• Not immunocompromised

#### **Exposure and Medical Conditions**

**TST <5 mm – Do Not Treat**  
**TST >5 mm - Treat**  
**TST >10 mm - Treat**  
**IGRA+ - Treat**

#### **Unknown Exposure to a person with TB disease and:**

Immunocompromised (as defined above) and no known TB exposure

#### **Exposure and Medical Conditions**

**TST <5 mm – Do Not Treat**  
**TST >5 mm - Treat**  
**TST >10 mm - Treat**  
**IGRA+ - Treat**

#### **Unknown Exposure to a person with TB disease and:**

Old fibrotic lesions and 3 negative respiratory cultures

#### **Exposure and Medical Conditions**

**TST <5 mm – Do Not Treat**  
**TST >5 mm - Treat**  
**TST >10 mm - Treat**  
**IGRA+ - Treat**

#### **Unknown Exposure to a person with TB disease and:**

#### **Exposure and Medical Conditions**

**TST <5 mm – Do Not Treat**  
**TST >5 mm – Do Not Treat**  
**TST >10 mm - Treat**  
**IGRA+ - Treat**

No immunosuppression and CXR normal or consistent with old healed TB (pleural thickening, calcified nodule or calcified lymph nodes)

---

### **Monitoring/Follow-Up**

#### **TB INFECTION MONITORING**

##### **Patients with TB infection not currently on treatment:**

- A. Patients with recent TB infections (documentation of infection within the past 2 years), without documentation of completion of treatment for TB infection, must:
  1. Be seen by a Registered Nurse (RN) every month for a TB signs/symptoms review, patient education on TB, and encouragement to take TB infection treatment;
  2. Have a CXR every 6 months; and
  3. Be seen by a RN during their annual TB evaluation and encouraged to take TB infection treatment.
- B. Patients with remote TB infections (documentation of infection more than 2 years ago) without documentation of completion of treatment must:
  1. Be seen by a RN annually (during their annual TB evaluation) for a TB signs/symptoms review, patient education on TB, and encouragement to take TB infection treatment.
- C. Patients who have completed treatment for TB disease must be seen by an RN annually for TB symptoms screening and TB education.
- D. Patients who have completed treatment for TB infection must be seen by a Licensed Vocational Nurse (LVN) annually for TB disease signs and symptoms.

**Table 2: Follow up of Patients with TB Infection not currently on Treatment**

When was TB infection? RECENT INFECTION (< 2 YEARS)

Status of TB Infection Treatment

- No documentation of TB infection treatment completion
- Incomplete TB infection treatment

Required Follow-up

- Monthly TB signs and symptoms review by an RN, education on TB, and encourage TB infection treatment
- CXR every 6 months

When was TB infection? REMOTE INFECTION (> 2 YEARS)

Status of TB Infection Treatment

- No documentation of TB infection treatment completion
- Incomplete TB infection treatment

Required Follow-up

- Annual RN visit: TB signs and symptoms review, patient education on TB, and encourage TB infection treatment

When was TB infection? Anytime

Status of TB Infection Treatment

- Documented TB infection treatment completion

Required Follow-up

- Annual TB signs and symptoms review by LVN

#### **Patients on TB infection treatment:**

Table 3 lists the three routinely used TB infection treatment regimens (3 months of INH and Rifapentine [3HP], 4 months of rifampin [4R], and 9 months of INH [9H]). Table 4 provides information on regimen, dosing, drug interactions, and adverse reactions for those receiving standard (preferred) treatment and alternative regimens for treatment of TB infection. Table 5 reviews screening for adverse reactions in patients being treated for TB infection.

#### Provider Evaluation:

1. All drug-drug interactions must be evaluated prior to prescribing treatment for TB infection (see Table 4). Patients with signs or symptoms consistent with TB should be worked up for suspect TB and treatment for TB infection should not be resumed until:
  - a) cultures for MTB from three respiratory specimens return negative, and
  - b) the patient is deemed not to have clinically confirmed TB disease.
2. The contraindications for Isoniazid and Rifapentine (3HP) are:
  - HIV infection on antiretroviral therapy (ART)
  - Hepatitis C treatment
  - Pregnancy
  - Warfarin (Coumadin) therapy
  - Anti-epileptic drug therapy (phenytoin, phenobarbital, carbamazepine, clonazepam)
  - Hypersensitivity to INH or rifamycins (rifampin, rifabutin)
  - Patients with exposure to INH- or rifampin-resistant MTB
3. Laboratory tests:
  - Patients on any regimen should have baseline liver function tests (LFTs) i.e., AST, ALT, and bilirubin, HIV, HBsAg, and HCV tests.
  - Obtain LFTs every month only for patients with: any past adverse reaction to INH or rifampin, abnormal baseline LFTs, HCV or HBV infection, excessive alcohol use, hepatic disease, Dilantin or valproic acid treatment, pregnancy or within 3 months after delivery.
  - Laboratory testing should be performed to evaluate possible adverse reactions that occur during the treatment regimen.
4. Mild or moderate adverse effects (rash, dizziness, fever) should be conservatively managed. (e.g., dizziness can be treated with rest or oral fluids) and TB infection treatment should NOT be discontinued.

5. Discontinue treatment for TB infection if:
  - a) An LFT is  $\geq 5$  times the upper limit of normal even if the patient has no symptoms of hepatotoxicity; or
  - b) An LFT is  $\geq 3$  times the upper limit of normal AND the patient has symptoms of hepatotoxicity.
6. For severe adverse reactions (e.g., hypotension requiring intravenous fluid support), treatment for TB infection should be discontinued and an alternative regimen should be considered.
7. Severe adverse events (e.g., liver injury, metabolic acidosis, anaphylaxis, seizure, severe dermatitis) with hospitalization or death must be reported immediately. Report to the Division of Tuberculosis Elimination by sending an email to [LTBIdrugevents@cdc.gov](mailto:LTBIdrugevents@cdc.gov) and contact the local health department.

### **Pregnancy:**

After TB disease is excluded, consider treatment for TB infection if the pregnant woman is HIV infected or recently exposed to a person with TB disease. Otherwise, delay initiating treatment for TB infection until 2-3 months post-partum (because of the increased risk of hepatotoxicity through the first 3 months post-partum). Isoniazid (9H) is the preferred regimen; breastfeeding is not a contraindication.

### **Interrupted Treatment:**

Completion of therapy is based on the total number of doses administered - not on the duration of therapy. If treatment is not completed within the recommended timeframe (See Table 3), extend treatment until treatment is completed within the recommended timeframe. After a TB sign and symptom review, physical examination by a health care provider, and when indicated, a CXR and bacteriologic studies to exclude active TB disease must be completed before TB infection treatment is restarted. After a TB infection treatment interruption of more than six months, a CXR is required.

### **Table 3: LTBI Treatment Regimens**

**Routine TB infection treatment regimens** - Isoniazid and Rifapentine (3HP) - preferred, including HIV infected not on ART

**Doses** 12

**Treatment Frequency** Once weekly

**Treatment Duration** 12 weeks

**Treatment Completion Definition (if treatment is interrupted)** 11 doses in 16 weeks

**Routine TB infection treatment regimens** - Rifampin (4R) - 2nd choice, preferred for INH-resistant TB infection

**Doses** 120

**Treatment Frequency** Daily

**Treatment Duration** 4 months

**Treatment Completion Definition (if treatment is interrupted)** 120 doses in 6 months

**Routine TB infection treatment regimens** - Isoniazid (9H) - 3rd choice, preferred for pregnant and HIV infected on ART

**Doses** 76

**Treatment Frequency** Twice weekly

**Treatment Duration** 9 months

**Treatment Completion Definition (if treatment is interrupted)** 76 doses in 12 months

### **Patients on TB infection treatment:**

- A. LVNs shall administer TB infection treatment by direct observation (directly observed therapy [DOT]).
  1. LVNs who identify patients with symptoms of TB or signs or symptoms of an adverse reaction shall refer the patient for a focused assessment by an RN who should report findings promptly to a provider. Check for: numb hands/feet, headache, seizure, vision decrease, memory loss, appetite loss, nausea/vomiting, yellow skin or eyes, fatigue, weight loss, abdominal pain, brown urine, diarrhea, dizziness, fever or chills, rash or hives, and sore muscles or joints. (See Table 5) **ALERT:** If a patient presents with fever, yellow eyes, dizziness, rash, or aches or greater than 1 day of nausea, vomiting, weakness, abdominal pain, or loss of appetite, then TB infection treatment should be discontinued and the patient should be seen by a provider.

- B. Patients shall be seen by an RN weekly or monthly (weekly for 3HP or 4R, monthly for 9H regimen) to:
1. Assess for adherence, tolerance to treatment, TB signs or symptoms and adverse effects. (See Table 5)
  2. Obtain blood pressure (to assess for hypotension) and weight (to check for weight loss);
  3. Review laboratory results (platelets, LFTs) and refer those with abnormal tests to a provider;
  4. Educate the patient on TB infection, symptoms of TB disease and adverse drug effects, and encourage the patient to see prompt medical attention if he/she develops symptoms;
  5. Encourage the patient to complete treatment for TB infection;
  6. Report any findings consistent with TB disease or adverse effects to a provider; and
  7. Record treatment completion on the problem list.

Additional Notes:

- Retreatment may be indicated for patients at high risk of becoming re-infected and progressing to TB disease (e.g., immunosuppressed patients).
- With known exposure to TB, a full course of TB infection treatment may be recommended even in the absence of a positive test for TB infection. Consult with CCHCS Public Health Branch regarding the management of such contacts.