**STANDARD NURSE PROTOCOL FOR**

**ACTIVE TUBERCULOSIS (TB) DISEASE**

**AGE 15 AND OVER**

**DEFINITION** Tuberculosis (TB) is an infectious disease transmitted through the air in droplet nuclei that are produced when a person with active TB disease of the lung or larynx sneezes, coughs, speaks, or sings. Persons breathing air contaminated with these droplet nuclei may become infected with TB.

Generally, a positive culture or positive Nucleic Acid Amplification test (NAAT) for *Mycobacterium tuberculosis* is necessary to confirm the diagnosis of TB disease. However, people being evaluated for TB may be diagnosed based on: a positive sputum/specimen smear for acid-fast bacilli (AFB); lung histology showing necrotizing granulomas with or without AFB; or clinical syndrome, even when a culture or pathologic specimen has not been, or cannot be, obtained.

**ETIOLOGY** Causative agent of TB is the *Mycobacterium tuberculosis* (*M.tb*) complex (*M. tuberculosis,* *M. bovis,* *M. africanum, M. microti, M. canetii, M. caprae, M.mungi and M. pinnipedii)*.

**SUBJECTIVE** 1. May have history of exposure to a knownperson with TB disease

2.May have history of active TB disease or latent TB infection

3.May have one or more of the following symptoms related to TB:

1. Productive, prolonged cough (usually more than two or three weeks’ duration)
2. Fever
3. Chest pain or pleuritic pain
4. Chills
5. Night sweats
6. Easily fatigued
7. Loss of appetite
8. Weight loss without dieting
9. Hemoptysis (coughing up blood)
10. Headache
11. Muscle/bone/joint pain

**NOTE**: A complete medical history and review of current medications is required to determine if there are any diseases/illnesses present that would require consultation or referral to delegating physician.

**OBJECTIVE** Physical examination performed per guidelines may reveal the following criteria that are useful in identifying a person with TB disease:

1. Coughing or shortness of breath
2. Fever/sweating
3. Appears ill or fragile
4. Vital signs (height, weight, BMI, blood pressure, respiratory rate)
5. Jaundice of sclera or skin
6. Abdominal tenderness
7. Joint swelling or redness
8. Difficulty walking, tremors
9. Dizziness, syncope, memory loss

**ASSESSMENT** 1. Pulmonary tuberculosis OR

2. Extra-pulmonary tuberculosis OR

3.Person being evaluated for pulmonary tuberculosis OR

4. Person being evaluated forextra-pulmonary tuberculosis

For patients with the following conditions, consultation with the delegating physician is required for patients to be treated under this protocol. Consultation must be documented in the patient’s record.

1. BMI greater than 30 (obese)
2. Diabetes mellitus
3. Pregnant/breastfeeding
4. Liver disease
5. Extra-pulmonary TB not requiring 2nd line TB drugs or use of corticosteroid therapy. (Excludes: Central Nervous System (CNS) TB, TB pericarditis: these cases must be referred for physician management).
6. Allergic reactions not requiring 2nd line TB drugs
7. Decision to extend continuation phase using first-line TB drugs, e.g. bone/joint TB, miliary TB.
8. Review of current medications reveal potential for drug-drug interactions with TB medications.
9. Treatment interruptions:
   * + 1. During the initial phase of treatment if the lapse is 14 days or more in duration.
       2. During the continuation phase of treatment:
10. If patient is smear positive initially and received less than 80% of the planned total doses for continuation phase.
11. Any patient whose lapse is 3 months or more in duration.

**NOTE:** For patients with the following conditions, referral to the delegating physician is required and patients cannot be treated under this protocol:

1. TB treatment for children (frombirth through 14 years of age**)**
2. Any known drug resistance to anti-TB medications
3. Known HIV infection
4. Central Nervous System (CNS) TB
5. TB pericarditis
6. TB patient requiring adjunctive use of corticosteroid therapy
7. Use of once-weekly Isoniazid and Rifapentine in continuation phase for active TB disease
8. Renal insufficiency **(**estimated creatinine clearance less than 70 mL/ min)
9. End-stage renal disease on hemodialysis
10. Any TB patient requiring 2nd line TB drugs
11. Treatment failure (positive culture of *M. tuberculosis* after 4 months of treatment)

**PLAN** Active TB disease with the desired outcomes of treatment being biologic cure, prevention of drug resistant TB and prevention of transmission of TB to individuals exposed to persons with active TB.

**NOTE:** Any hospital admissions or deaths of persons with TB disease are to be reported immediately to the GA TB Program.

**INITIAL DIAGNOSTIC STUDIES**

1. If positive results for either an IGRA or a TST cannot be verified (including millimeters [mm] of induration), perform a TST or IGRA. Vaccination with live viruses may interfere with either of these test reactions. For persons scheduled to receive a TST, testing should be done as follows:
   1. Either on the same day as vaccination with live-virus vaccine

**OR**

* 1. 4-6 weeks after the administration of the live-virus vaccine. At least one month after smallpox vaccination.

1. Collect three sputum specimens on consecutive days for culture and send them to the Georgia Public Health Laboratory (GPHL) in Decatur.

Use the lab slip found on the GPHL website at [**http://dph.georgia.gov/lab**](http://dph.georgia.gov/lab)**.** Look at the related files at the bottom of the page for the GPHL Submission Form. Check *Smear, Culture, and Sensitivity* for all three specimensand *NAAT* for the first specimen only*.* Do not mark “smear only” unless the patient has had a recent positive culture result.

The public health nurse (PHN) will obtain the first sputum specimen and provide the patient with two additional containers for collection and mailing of the next two specimens. Instructions should be given to both patient and family on how to properly produce sputum for examinations. At least one of the specimens collected MUST be an early morning specimen as they provide the highest yield for detecting *M.tb*. Ideally the initial specimens should be collected over a three-day period, however multiple samples may be collected in the same day if eight hours has elapsed between collections and at least one is an early morning specimen.

Specimens not mailed the day of collection should be refrigerated until mailed. Seek patient confirmation regarding mailing of specimens and check with the laboratory to confirm receipt of the specimens. If necessary, the PHN should collect and mail the specimens. Optimum sputum specimens contain an 8-10 ml sample; however, any amount collected will be tested at the state lab. Specimens received by the lab that contain less than a 0.5 ml sample may have an insufficient quantity of material for all lab testing to be performed.

1. Perform the following baseline blood chemistry labs:
2. Obtain aspartate aminotransferase (AST), alanine aminotransferase (ALT), bilirubin**,** alkaline phosphatase, CBC with platelet count, serum uric acid, serum creatinine, **Hemoglobin A1C**, and Hepatitis C antibody for all adults.
3. Hepatitis B profile should be obtained for all adults (regardless of birth country) and anyone less than 18 years old who is foreign-born.
4. All individuals will be tested for HIV using the opt-out approach. Consent is inferred unless patient declines testing. If HIV positive, collaborate with HIV Program to obtain CD4 T-cell count, then refer to consulting physician.
5. Obtain baseline visual acuity testing and red/green color discrimination for patients being placed on Ethambutol.
6. Urine pregnancy test, if woman is of child bearing age (approximately 15-45 years of age) or with menstrual cycle and not using contraceptives.
7. Refer patient to have chest x-ray performed to detect abnormalities compatible with TB disease.

**diagnostic studies’ Findings**

1. A positive interferon gamma release assay (IGRA) or a positive tuberculin skin test (TST). The absence of a positive IGRA/TST does not rule out the diagnosis of TB disease or latent TB infection.
2. Positive staining of AFB in sputum, bronchial brush, bronchial wash or lung tissue biopsy. However, a person with TB disease can be smear negative.
3. Chest x-ray showing abnormalities compatible with TB disease. (Radiographic findings of healed, inactive TB and reactivating TB sometimes cannot be distinguished).
4. The following criteria (one or more) are required for a confirmed diagnosis of TB:
5. Pathology findings compatible with the diagnosis of TB.
6. Specimens with positive culture or positive NAAT for *M.tb.*

**THERAPEUTIC**

**PHARMACOLOGIC**

**NOTE:** Order medications for treatmentwithdirectly observed therapy (DOT)from drug stock and send a copy of the drug order(s) to the District Pharmacist or District Drug Coordinator. Refer to Tables 1 and 2 for options and dosages.

1. If a patient is REFERRED to the delegating physician for management, the PHN may not dispense ANY of the prescribed medications. A Pharmacist or Dispensing Physician can dispense the 2nd line TB medications or the prescription may be called in to a pharmacy by the physician.
2. PHN may not dispense 2nd line TB medications. If 2nd line TB medications are ordered, a Pharmacist or Dispensing Physician can dispense the 2nd line TB medications or the prescription may be called in to a pharmacy by the physician.

Table 1: Regimen Options - Treatment of Patients with Drug-Susceptible TB

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Option | Total  Duration (Months) | Initial Phase | | Continuation Phase[[1]](#footnote-1) | | Comments |
| Drugs | Interval & Dose #  (minimal duration) | Drugs | Interval & Dose #  (minimal duration) |  |
| A | 6 | Isoniazid  Rifampin  Pyrazinamide  Ethambutol | Daily DOT for 40 doses (8 wks.) | Isoniazid  Rifampin | Daily DOT for 90 doses (18 weeks)  OR  Twice-weekly3 DOT for 36 doses (18 wks.)  OR  Thrice-weekly DOT for 54 doses (18 weeks) is preferred treatment | Regimen must be directly observed. Continue Ethambutol until susceptibility to Isoniazid and Rifampin is obtained via drug susceptibility results. |
| B [[2]](#footnote-2)  Selected patients only. See footnote. | 6 | Isoniazid  Rifampin  Pyrazinamide  Ethambutol | Daily DOT for 10 doses (2 wks.),  then twice-weekly DOT  for 12 doses  (6 wks.) | Isoniazid  Rifampin | Twice-weekly[[3]](#footnote-3) DOT for 36 doses (18 wks.) | Regimen must be directly observed. Include Ethambutol in initial phase. After the initial phase, continue Ethambutol until susceptibility to Isoniazid and Rifampin is obtained via drug susceptibility results. |
| Pyridoxine (Vitamin B6) 25 - 50 mg PO daily to prevent the development of Isoniazid-induced peripheral neuropathy. | | | | | | |

**NOTE:** a.Daily DOT = 5 days/week (Monday through Friday). Self-administered doses (including those on weekends) will not be counted toward the total doses.5 daily doses of DOT equal 2 twice-weekly doses of DOT.

1. Split dosing should be avoided.
2. Rifamate, a fixed combination of Rifampin 300 mg, and Isoniazid 150 mg, may be used to minimize the number of pills. Intermittent dosing is not recommended with fixed combination medications.
3. Refer to current drug reference or drug package insert for a complete list of adverse drug reactions and drug interaction.

Table 2: First-Line TB Drugs Dosages

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Drugs | Adult Dose based on body weight in kilograms (kg)[[4]](#footnote-4) | | | Adverse  Reactions |
| Daily | Twice-Weekly | Thrice-Weekly  (preferred over twice weekly) |
| Isoniazid | 300 mg  (5 mg/kg  Maximum Dose  300 mg) | 900 mg  (15 mg/kg  Maximum Dose  900 mg) | 900 mg  (15 mg/kg  Maximum Dose  900 mg) | * Gastrointestinal (GI) upset * Liver enzyme elevation * Acute hepatitis * Peripheral neuropathy * Mild effects on central nervous system * Drug interactions |
| Rifampin | 600 mg | 600 mg | 600 mg | * Orange discoloration of body fluids and secretions * Drug interactions * GI upset * Hepatitis * Easy bruising/ bleeding * Influenza-like symptoms * Rash |
| Pyrazinamide[[5]](#footnote-5) | 40-55 kg: 1000 mg  56-75 kg: 1500 mg  76+ kg: 2000 mg | 40-55 kg: 2000 mg  56-75 kg: 3000 mg  76+ kg: 4000 mg | 40-55 kg: 1500 mg  56-75 kg: 2500 mg  76+ kg: 3000 mg | * GI upset * Joint aches * Hepatitis * Rash * Hyperuricemia * Gout (rare) |
| Ethambutol | 40-55 kg: 800 mg  56-75 kg: 1200 mg  76+ kg: 1600 mg | 40-55 kg: 2000 mg  56-75 kg: 2800 mg  76+ kg: 4000 mg | 40-55 kg: 1200 mg  56-75 kg: 2000 mg  76+ kg: 2400 mg | * Optic neuritis |

**NOTE**: Ethambutol and Pyrazinamide dosage adjustment may be needed if there is renal impairment. Patients with estimated creatinine clearance less than 70 mL/min or those with end-stage renal disease on dialysis are considered to be persons with complicated TB disease and dosing should be REFERRED to the district contract TB physician or delegating physician for care; a patient with these conditions cannot be managed using this protocol.

**PATIENT EDUCATION/COUNSELING**

(Reinforce pertinent information with handouts)

Education/communication should use methods adapted to patient’s cultural and linguistic background.Provide education to the patientand his/her family,when family is available, and document in the patient record.

1. The *“12 Points of Tuberculosis (TB) Patient Education”* and the *“Patient Tuberculosis Education Record”* is located on the TB web pages at [http://dph.georgia.gov/sites/dph.georgia.gov/files/TB- ClinicForm12\_Points\_PtEd.pdf](http://dph.georgia.gov/sites/dph.georgia.gov/files/TB-%09ClinicForm12_Points_PtEd.pdf)
2. Transmission of Tuberculosis
3. Differences between latent TB infection (LTBI) and active TB disease
4. Progression of LTBI to active TB disease
5. Signs and symptoms of TB disease
6. Importance of HIV testing
7. Respiratory isolation and use of masks
8. Infectious period
9. Importance of chemotherapy as prescribed
10. Side effects and adverse medication reactions
11. Directly observed therapy
12. Importance of regular medical assessments
13. Importance of contact identification
14. The rationale for using an alternative or back-up method of birth control (e.g., copper-bearing IUD such as ParaGard, condoms, diaphragm) is that when Rifampin is prescribed, it reduces effectiveness (degree depending on method) of combined oral contraceptives, progestin-only oral contraceptives, Levonorgestrel implants, Depo-Provera, patch and ring. Advise condom back-up.
15. The patient’s immunization status. Assess and refer or administer vaccines indicated according to the current Advisory Committee on Immunization Practices (ACIP) childhood and adult immunization schedule.

For persons scheduled to receive a TST, testing should be done either on the same day as vaccination with live-virus vaccine OR 4-6 weeks after the administration of the live-virus vaccine and at least one month after smallpox vaccination.

See the Georgia Immunization Program Manual, Recommended Schedule and Guidelines, for current ACIP schedules and administration guidelines for each vaccine. The Georgia Immunization Manual may be accessed online at [**http://dph.georgia.gov/immunization-section**](http://dph.georgia.gov/immunization-section)

**FOLLOW-UP**

**NOTE:** Any hospital admissions or deaths of persons with TB disease are to be reported immediately to the GA TB Program.

1. Continuedpatient management/follow-up by a case management team comprised of the patient, PHN, physician and others determined by an individual needs assessment. Refer to the *TB Program Policy and Procedure Manual, 2016* and *Tuberculosis Nursing: A Comprehensive Guide to Patient Care, 2nd Edition* located in each county health department and *“*Scaled Goal Matrix Tool: Uniform Clinical Performance Measures for TB Nurse Case Managers, 2006” located on the TB web pages at [**https://dph.georgia.gov/tb-public-health-clinic-forms**](https://dph.georgia.gov/tb-public-health-clinic-forms)
2. After the nursing assessment, the PHN will use the *“Case Management Timeline – A Tracking Form for TB Medical Records”* located on the TB web pages at [**https://dph.georgia.gov/tb-public-health-clinic-forms**](https://dph.georgia.gov/tb-public-health-clinic-forms) to determine documents to forward for review by the district TB coordinator, the district’s contract physician and the state office.
3. Review the respiratory isolation status for the patient**.** All 3 of the following criteria must be met in order for isolation to be discontinued: patienthas three consecutive negative AFB sputum smear results; patienthas received standard anti-tuberculosis treatment for a minimum of two weeks; and patienthas demonstrated clinical improvement.

**After the baseline 3 consecutive sputum specimens, collect follow-up sputum samples as follows:**

1. **You may collect up to three sputum samples in a week until three consecutive negative AFB smears are obtained to determine when to discontinue respiratory isolation. Only one sputum sample that week should be marked on the lab form for smear/culture/sensitivity. Any additional sputum samples of the same week should be examined for AFB smear only.**
2. **After three consecutively negative sputum smears are obtained, collect only one sputum specimen for smear/culture/sensitivity weekly until culture converts to negative.**
3. **After sputum culture converts to negative, collect one sputum specimen monthly thereafter for smear/culture/sensitivity.**
4. **Collect one sputum specimen at 60 days after medication treatment initiation for smear/culture/sensitivity test. A positive culture at this point identifies patients at increased risk for relapse. If the culture is still positive, refer patient for treatment to the contract physician.**
5. **If the patient is unable to produce sputum, document the collection attempt.**
6. Monitor patient monthly for adverse drug reactions, drug-drug interactions, drug-food interactions, drug-lab interactions, infectious status, and clinical and bacteriologic response to therapy.
7. Provide HIV test results with post-test counseling to patientand, if positive, appropriate referrals to HIV care. Seek confirmation that patient kept referral appointment for HIV care.
8. Conduct contact identification following the *Tuberculosis Policy and Procedure Manual,* the *Tuberculosis Nursing: A Comprehensive Guide to Patient Care, 2nd Edition,* and the *CDC Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis* (current edition).
9. Perform the following blood chemistry tests monthly to monitor reactions to TB drugs:
10. AST and ALT
11. Bilirubin
12. Alkaline phosphatase
13. CBC with platelets
14. Serum uric acid and serum creatinine monthly only if there are abnormalities at baseline or there are clinical reasons to obtain the measurements (e.g., hepatitis B or C virus infection, alcohol abuse, and abnormal kidney function).

**NOTE:** Discontinue Isoniazid and/or Rifampin and report immediately to the consulting physician if any of the following occur:

1. AST/ALT levels equal to or greater than 3 times the upper limit of normal with symptoms of adverse reactions.
2. AST/ALT levels equal to or greater than 5 times the upper limit of normal in an asymptomatic patient.
3. Patient reporting symptoms of adverse reactions.
4. Monitor the vision of patients taking Ethambutol by providing vision checks monthly, including visual acuity and red/green color discrimination.
5. Adherence should methodically be assessed monthly, at a minimum.
6. Observe the patient for Isoniazid-induced peripheral neuropathy (e.g., tingling, numbness, pain) during therapy. If present, report to the delegating physician immediately.
7. If patient is a woman of child-bearing age, assess date of last menstrual period monthly. Perform pregnancy test as needed.

**CONSULTATION/REFERRAL**

1. For patients with the following conditions, CONSULTATION with the delegating physician is required for patients to be treated under this protocol. Consultation must be documented in the patient’s record.
2. BMI greater than 30 (obese)
3. Diabetes mellitus
4. Pregnant/breastfeeding
5. Liver disease
6. Extra-pulmonary TB not requiring 2nd line TB drugs or use of corticosteroid therapy. (Excludes: Central Nervous System (CNS) TB, TB pericarditis: these cases must be REFERRED for physician management).
7. Allergic reactions not requiring 2nd line TB drugs
8. Decision to extend continuation phase using first-line TB drugs, e.g. bone/joint TB, miliary TB.
9. Review of current medications reveal potential for drug-drug interactions with TB medications.
10. Treatment interruptions:
11. During the initial phase of treatment if the lapse is 14 days or more in duration.
12. During the continuation phase of treatment:
13. If patient is smear positive initially and received less than 80% of the planned total doses for continuation phase.
14. Any patient whose lapse is 3 months or more in duration.

**NOTE:** Consult delegating physician when further medical guidance is needed and/or the TB nursing protocol is not applicable for therapeutic treatment of patient.

1. For patients with the following conditions, REFERRAL to the delegating physician is required and patients cannot be treated under this protocol.
2. TB treatment for children birth through 14 years of age
3. Any known drug resistance to anti-TB medications
4. Known HIV infection
5. Central Nervous System (CNS) TB
6. TB pericarditis
7. TB patient requiring adjunctive use of corticosteroid therapy
8. Use of once-weekly Isoniazid and Rifapentine in continuation phase for active TB disease
9. Renal insufficiency with estimated creatinine clearance less than 70 ml/min
10. End-stage renal disease on hemodialysis
11. Any TB patient requiring 2nd line TB drugs
12. Treatment failure (positive culture of *M. tb* after 4 months of treatment)

NOTE: Consult delegating physician when further medical guidance is needed and/or the TB nursing protocol is not applicable for therapeutic treatment of patient.

1. Refer patient to a licensed dietitian if indicated. This will be especially important if the patient has a history of drug or alcohol abuse, is pregnant or breastfeeding, is HIV positive, has gastrointestinal side effects from TB drugs, has history of eating disorder or if desirable weight is not maintained.
2. If patient needs housing, food or other frontline services, consult with the Georgia TB Program’s Social Worker.
3. If smoker or tobacco user, refer to a local cessation program and/or the Georgia Tobacco Quit Line, 1-877-270-STOP (7867).
4. If substance abuse known or suspected, refer for appropriate counseling.

Table 3: TREATMENT OF TB - DRUG INTERACTIONS

NOTE: Refer to current drug reference or drug package insert for a complete list of adverse drug reactions and drug interactions.

MEDICATION INTERACTIONS – RIFAMPIN

Name/type Effect

Anticoagulants (Warfarin, Coumadin) 🡫 serum concentration

Cardiac glycosides (Digoxin) 🡫 serum concentration

Sulfonylureas (Glipizide, Glyburide, Glimepiride) 🡫 serum concentration

Thiazolidinediones (Rosiglitazone, Pioglitazone) 🡫 serum concentration

Contraceptives (oral, implants, patch, ring, injections) 🡫 serum concentration

Fluconazole, Voriconazole, Itraconazole 🡫 serum concentration

Corticosteroids 🡫 serum concentration

Narcotics/analgesics (Methadone) 🡫 serum concentration

Atovaquone (Mepron) 🡫 serum concentration

Dapsone 🡫 serum concentration

Cyclosporine 🡫 serum concentration

Quinidine 🡫 serum concentration

Protease inhibitors 🡫 serum concentration

Lamotrigine (Lamictal) 🡫 serum concentration

Phenytoin (Dilantin) 🡫 serum concentration

Valproic acid and derivatives (Depakene, Depakote) 🡫 serum concentration

Buspirone (Buspar) 🡫 serum concentration

Thyroid hormone replacement 🡫 serum concentration

DRUG INTERACTIONS – ISONIAZID

Name/type Effect

Diazepam (Valium) 🡫 serum concentration 🡩 half-life

Phenytoin (Dilantin) 🡩 serum concentration 🡩 toxicity

Carbamazepine (Tegretol) 🡩 serum concentration 🡩 toxicity

Citalopram (Celexa) 🡩 serum concentration 🡩 toxicity

Alcohol 🡩 risk of Isoniazid-induced hepatitis

Antacids should be taken two hours apart, otherwise Isoniazid will have no effect

Carbamazepine 🡫 carbamazepine metabolism

Cycloserine 🡩 risk of CNS toxicity

Ethionamide 🡩 risk of encephalopathy

🡩 serum concentration of Isoniazid Phenytoin 🡫 Phenytoin metabolism

MEDICATION INTERACTIONS – RIFAMPIN/RIFAPENTINE

**NOTE:** The information on interactions with Rifampin and HIV antiretroviral therapy (ART) is constantly changing; all HIV positive patients should be referred to the contract Physician for care. In general, only certain HIV medications can be used and Rifampin may be replaced by Rifabutin. Rifabutin is in the formulary at the state pharmacy.

Name/type Effect

Adefovir 🡩 risk of side effects

Amprenavir (should not be used together) 🡫 serum concentration

Anticoagulants 🡫 effectiveness of anticoagulants

Atovaquone 🡫 serum concentration

AZT 🡫 serum concentration

Barbiturates 🡫 effectiveness of barbiturates

Clarithromycin 🡫 serum concentration

Corticosteroids 🡫 serum concentration

Cyclosporine 🡫 serum concentration

Dapsone 🡫 serum concentration

Delavirdine (should be taken together otherwise, 🡫 serum concentration)

Diazepam 🡫 effectiveness of Diazepam

Digitalis 🡫 effectiveness of Digitalis

Disopyramide 🡫 effectiveness of Disopyramide

Efavirenz 🡫 serum concentration

Estrogen 🡫 effectiveness of Estrogen

Ethinyl Estradiol (birth control pills) 🡫 serum concentration

Fluconazole 🡫 serum concentration

Halothane 🡩 risk of liver toxicity

Indinavir (should not be used together) 🡩 Rifampin serum concentration

Isoniazid 🡩 risk of liver toxicity

Itraconazole 🡫 serum concentration

Lopinavir/Ritonavir (should not be used together) 🡫 serum concentration

Methadone 🡫 effectiveness of Methadone

Mexiletine 🡫 effectiveness of Mexiletine

Nelfinavir (should not be used together) 🡫 serum concentration

Nevirapine may affect serum concentration

Probenecid 🡩 Rifampin serum concentration

Progesterone 🡫 effectiveness of Progesterone

Quinidine 🡫 serum concentration

Ritonavir 🡫 serum concentration

Theophylline 🡫 serum concentration

Verapamil 🡫 effectiveness of Verapamil

Voriconazole 🡫 serum concentration

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1. TB treatment may be extended beyond 6 months minimal duration as determined by consultation with and documentation from delegating physician. [↑](#footnote-ref-1)
2. Option B should NOT be used for patients with cavitary pulmonary TB, disseminated TB, vertebral TB or for patients who have co-morbid medical conditions such as HIV, diabetes mellitus or liver disease. [↑](#footnote-ref-2)
3. Twice-weekly doses should optimally be given at least two days apart, unless given to “catch up” on a missed dose. A dose given two consecutive days is discouraged. [↑](#footnote-ref-3)
4. **Formula used to convert pounds to kilograms: Divide pounds by 2.2 to get kilograms. *Example: Patient weighs 154 pounds ÷ 2.2 = 70 kilograms.*** [↑](#footnote-ref-4)
5. **Calculate Pyrazinamide and Ethambutol doses using actual body weight. NOTE: Round up fractions of a dose to the nearest whole number. Obese patients’ (BMI over 30) dosing should be determined in collaboration with the district delegating/contract TB physician**. [↑](#footnote-ref-5)