

Management of Tuberculosis for LDS Missionaries

Public Health Committee
TB Committee

Revised April 2011

Management of Tuberculosis for LDS Missionaries

INDEX

Goals	1
Definitions	1

Diagnostic Evaluation for Active and Latent Tuberculosis

Screening Assessment of Risk Factors	2
Performance and Interpretation of Tuberculin Skin Test (TST).....	2
Pertinent Historical Information	2
Physical Examination	3
Chest X-ray	3
Bacteriologic Tests for Active Tuberculosis	3

Treatment of Tuberculosis

Active Tuberculosis	3
Latent Tuberculosis Infection (LTBI).....	3

Management Procedures

Prospective Missionaries	4
Missionaries at MTC	5
Missionaries in Mission Field.....	5
Missionaries Departing from Mission	5

Duties of TB Surveillance Personnel	6
--	---

Contact Personnel for Tuberculosis Questions	7
---	---

APPENDICES

Appendix A: Treatment Flow Algorithms

A.1: Pre-Mission TB Screening	9
A.2: On-Mission TB Exposure Screening	10
A.3: Active TB Screening	11
A.4: Latent TB Treatment	12
A.5: Active TB Treatment	13
A.6: Post-Mission TB Screening	14

Appendix B: Mission Health Coordinator Instructions

for Treatment of Latent Tuberculosis Infection	15
---	----

Appendix C: Informed Consent for Latent Tuberculosis Infection Treatment	16
---	----

Appendix D: Refusal for Latent Tuberculosis Infection Treatment	17
--	----

Appendix E: Missionary TB Medication Tracking Report	18
---	----

Appendix F: Presumed Active Tuberculosis Case and Consultation Report	19
--	----

Appendix G: Letter RE: Tuberculosis Screening	21
--	----

Appendix H: Latent TB Treatment Policy Change	22
--	----

Appendix I: PPD Manufacturers	23
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Appendix J: References	24
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MANAGEMENT OF TUBERCULOSIS FOR LDS MISSIONARIES

GOALS

1. Identify all *prospective missionaries* with **active tuberculosis*** before entry into MTC. Prospective missionaries with a diagnosis of active tuberculosis will have mission service deferred until **successful treatment of disease*** is documented.
2. Identify all missionaries with active tuberculosis at entry into the MTC. Provide infection control, diagnostic services, and **appropriate therapy*** (see *Treatment Section*, pg. 3).
3. Identify all missionaries who develop active tuberculosis during mission service, provide initiation of proper therapy, and arrange for a medical release from mission, if appropriate.
4. Identify all prospective missionaries with **latent tuberculosis infection* (LTBI)**. All missionaries with LTBI will be offered treatment at the end of their mission service unless they meet higher risk criteria* (section A-1, A-3, A-4; section B-2-a, B-2-b, see pg. 2).
5. Identify all missionaries **at risk for LTBI*** during mission service, provide or arrange for appropriate skin testing, and offer LTBI treatment as indicated.
6. Identify all returning missionaries with LTBI. All returning missionaries with LTBI will be referred for treatment to their private physicians or county health departments.
7. Maintain statistical records of rates of LTBI and active cases of tuberculosis among missionaries and report to public health authorities as appropriate.

DEFINITIONS*

1. **Active tuberculosis:** Bacteriological, radiographic and/or clinical evidence of active TB, i.e. positive culture for *M. tuberculosis*, **or** positive sputum for acid fast bacilli, **or** positive reaction to tuberculin skin test (TST) **and** radiographic and/or clinical evidence of current disease, e.g. cough more than three weeks, fever, fatigue, unexpected weight loss, coughing up blood, chest pain, loss of appetite, or night sweats.
2. **At risk for LTBI:**
 - a. **Close contact with an active tuberculosis case** - at least 12 hours total in the same household or room with a documented active TB case, even if accumulated over several visits;
 - b. **TB risk medical conditions** - diabetes mellitus, silicosis, chronic renal failure, loss of weight more than 10% below ideal body mass index, gastrectomy, jejunioileal bypass and HIV/AIDS;
 - c. **High risk congregate setting** - residing or working in any of the following institutional settings -- hospital, homeless shelter, correctional facility, nursing home, or residential facility for persons at risk for TB, such as AIDS.
3. **Directly Observed Therapy (DOT):** A trained health care worker, or person other than the patient, directly observes and monitors the patient taking each dose of anti-tuberculosis medication.
4. **Interferon testing (IGRA):** A blood Interferon-Gamma Release Assay specific for tuberculosis (e.g. QuantiFERON-TB, T-SPOT.TB, etc.), and can be used in diagnosing LTBI.
5. **Latent Tuberculosis Infection (LTBI):** Positive reaction to tuberculin skin test or positive IGRA, with no clinical, radiographic or bacteriologic evidence of active TB.
6. **Successful treatment of disease:** Documented completion of a treatment regimen approved by the American Thoracic Society (2002 Consensus Report) with exceptions for alternative standards of care prevailing in an affected missionary's home country (see *Treatment Section*, pg. 3).
7. **Surveillance for adverse drug reactions:** If a missionary is being treated in the field for LTBI, each month the missionary will be questioned about the following symptoms -- loss of appetite, nausea/vomiting, dark urine, yellow skin, persistent unusual sensations of the hands or feet, persistent fatigue, fever lasting 3 or more days, abdominal tenderness along the right lower rib cage, easy bruising, bleeding, or joint pain. Answers will be recorded on the *Missionary TB Medication Tracking Report* form (see Appx. E) and missionary will initial form and report to Mission Health Coordinator.
8. **Tuberculin Skin Test (TST):** Intradermal skin testing with tuberculin purified proteins (e.g. Mantoux).

DIAGNOSTIC EVALUATION for Active and Latent Tuberculosis

A. Screening Assessment of Risk Factors

1. History of exposure to active TB: close contact of at least 12 hours in the same household or room with a documented active TB case (can be accumulated over several visits).
2. Living in a country with high prevalence of tuberculosis.
3. Exposure to conditions with increased risk of TB: residing or working in institutional settings such as hospitals, homeless shelters, correctional facilities, nursing homes, or facilities housing persons at high risk for TB.
4. Medical history of conditions with high risk of TB: diabetes mellitus, silicosis, chronic renal failure, weight loss of more than 10% below ideal body mass index, gastrectomy, jejunoileal bypass, and HIV/AIDS.

B. Performance & Interpretation of Tuberculin Skin Test (TST)

Tuberculin Skin Test

*(Intradermal injection of 5 TU (tuberculin units) or 2 TU of PPD by Mantoux technique)**

1. **< 5 mm** of induration on Tuberculin Skin Test (TST): always considered negative.
2. **5-14mm** of induration: considered negative or non-reactive unless:
 - a. HIV infected, close contact with documented TB case, has radiographic evidence (fibrosis) of prior TB disease, on current steroid therapy (equivalent of 15 mg/day of prednisone for at least 1 month), is an organ-transplant recipient, or immunosuppressed for other reasons: with these risk factors, induration of **5mm** or more is considered positive!
 - b. Injection drug use, documented TST conversion to positive within the previous two years, association with a high-risk congregate setting (working or residing in hospital, homeless shelter, correctional facility, nursing home or residential facilities for persons at risk for TB (such as AIDS patients), with these risk factors, induration of **10mm** or more is positive!
 - c. For returning missionaries, an **increase** of induration of **10mm** or more over initial pre-mission TST will be considered a positive TST (if result of initial TST is not known, apply risk factors in sections a & b above).
 - d. With a history of BCG vaccination, and contact with an active case of tuberculosis, induration of 10 mm or more is considered positive.
3. **≥ 15mm** of induration always considered a positive test.
4. **TST cannot be obtained:** Then individual must have **clinical examination** for signs and symptoms of tuberculosis (see C-1 below), and a **chest X-ray**. If there is no evidence of active tuberculosis, missionary may be assigned anywhere.

C. Pertinent Historical Information

1. History of symptoms or signs of active tuberculosis:
 - a. cough of more than three weeks
 - b. coughing up blood (hemoptysis)
 - c. unexplained weight loss
 - d. fever and/or night sweats
 - e. unexplained fatigue
 - f. loss of appetite/anorexia
 - g. chest pain/especially pleural

***NOTE: 2 TU strength PPD is an acceptable alternative in countries where 5 TU is not available. Interpretation of the TST induration size is the same when 2 TU is used.**

2. Medical conditions with increased risk of TB: diabetes mellitus, silicosis, chronic renal failure, weight loss of more than 10% below ideal body mass index, gastrectomy, jejunioileal bypass, and HIV/AIDS.

D. Physical Examination

1. Physical evidence of pulmonary disease: wheezing, pulmonary rales, friction rub, decreased breath sounds.
2. Unexplained fever, adenopathy, neck stiffness.
3. Jaundice, hepatosplenomegaly, tenderness at rib margins.
4. Rashes, papules, erythema nodosum, etc.

E. Chest X-ray

1. Radiographic Evidence of Active Lung Disease: pulmonary infiltrates, fibrosis, cavitation, hilar or mediastinal adenopathy, suggesting active disease.
2. Calcified nodes or nodules (Ghon complex), pleural thickening (scarring) suggesting remote disease.

F. Bacteriologic Tests for Active Tuberculosis

1. Examination of sputum for acid fast bacilli .
2. Culture of sputum specimen for *Mycobacterium tuberculosis*.

TREATMENT OF TUBERCULOSIS

A. Active Tuberculosis (see Appx. A.3, A.5, and F)

1. *Prospective missionaries* who are diagnosed with **active tuberculosis** will be treated by local physicians until they are considered non-contagious.
2. Missionaries who are diagnosed with active tuberculosis while on their mission or at a MTC with the above diagnostic criteria, will be isolated, and managed per American Thoracic Society/CDC Protocol. This includes treatment with isoniazid, rifampin, Pyrazinamide, and ethambutol for two months and until they are judged non-contagious in consultation with the Area Medical Advisor. They must complete 6 months of therapy with two drugs (isoniazid and rifampin) either at home or on mission assignment, unless alternative standards of care prevail in the missionary's home country.
3. Airline travel: LDS missionaries with **active tuberculosis** will not be transported until treatment response renders them non-infective. If a missionary with newly identified active tuberculosis has traveled by air with a flight time greater than 6 hours during the symptomatic period, notice of the event will be given to the relevant airline.

B. Latent Tuberculosis Infection (LTBI) (see Appx. A.4)

1. LTBI Treatment Criteria

- a. All missionaries going through the Provo MTC and serving in the USA or Canada will have a PPD or IGRA test, and if positive, will be offered treatment for LTBI at the conclusion of their missions (see Appx. G).
- b. Missionaries with high risk factors who test positive with PPD or IGRA (see *TST Section B-2-a* and *B-2-b*, pg. 2) are strongly encouraged to take LTBI treatment.
- c. LTBI treatment should be considered for any BCG-vaccinated person whose skin test reaction is equal to or greater than 10mm if they have had recent contact with an active case.

2. Medications

- a. **Isoniazid**
300 mg/day for 9 months
- b. **Pyridoxine (vitamin B6)**
25 mg/day with isoniazid only to missionaries with conditions in which neuropathy is common, such as diabetes, uremia, malnutrition, HIV infection, and seizure disorders.

or

- c. **Rifampin**
10 mg/kg (600 mg maximum) daily for 4 months.
Expect orange color of urine, tears, and stools.
Do not wear soft contact lenses while taking rifampin.

3. Prescribing Instructions

- a. Do not give medicines to persons with history of liver disease.
- b. If liver disease is suspected, obtain baseline AST and ALT tests before medication use.
- c. Give a 4-6 week supply of INH or a 4-6 week supply of Rifampin to the missionary, then have missionary follow up with Mission Health Coordinator to review symptoms every 4-6 weeks and receive the next 4-6 week's supply of pills.
- d. Additional information can be found in *Mission Health Coordinator Instructions for Treatment of Latent Tuberculosis Infection* (see Appx. B).

4. Precautions and Surveillance during LTBI Treatment

- a. *Isoniazid* and *rifampin* are contraindicated in anyone with liver disease or dysfunction. Missionaries on LTBI treatment should not take more than 4 grams of *acetaminophen* per day.
- b. The missionary will record daily medication on the monthly *Missionary TB Medication Tracking Report* form (see Appx. E), which is delivered monthly to the *Mission Health Coordinator*, who is responsible for surveillance of medications taken and *adverse side effects* experienced! It is desirable to have the missionary's companion directly observe and monitor the taking of medications (DOT = directly observed therapy).
- c. Each month the missionary will be questioned about the following symptoms: Loss of appetite, nausea/vomiting, dark urine, yellow skin, persistent unusual sensations of the hands or feet, persistent fatigue, fever of over 3 days, abdominal tenderness along the right lower rib cage, easy bruising, bleeding or joint pain (reported on *Missionary TB Medication Tracking Report*, Appx E).

5. Choice of LTBI Treatment

- a. Missionaries whose home or mission is in an area known to have INH resistant TB or who cannot take isoniazid and who need LTBI treatment will be placed on *rifampin* for 4 months.
- b. Missionaries from all other areas of the world who can take isoniazid (i.e. do not have liver dysfunction or disease) and who need LTBI treatment, will be given isoniazid.
- c. Missionaries who cannot take either isoniazid or rifampin will need consultation by a TB physician specialist on the Tuberculosis Committee.

6. Completion of LTBI Treatment

- a. Missionaries who do receive LTBI treatment during their mission will be tracked by the Mission Health Coordinator, their corresponding AMA, and the Missionary Tuberculosis Committee.
- b. On completion of treatment, the Missionary Tuberculosis Committee will send the missionary a Letter of Completion, documenting full completion of LTBI treatment.

MANAGEMENT PROCEDURES

Prospective Missionaries (see Appx. A.1)

- a. All prospective missionaries will receive a medical examination at the time of application for mission service. Unless otherwise specified, a TST, IGRA, or CXR must be included with the examination.
- b. Persons with active tuberculosis will be referred for treatment and will not be considered for missionary service until such time as they are non-infectious for TB as documented by a written statement from a competent medical authority. These missionaries must be monitored for drug compliance and completion of therapy.
- c. Prospective missionaries with positive TST, but without evidence of active TB (i.e. *LTBI*) who are at *low risk* for developing TB should be offered the option of treatment at the conclusion of their mission.

- d. The optimum method for TB screening of senior missionaries over the age 65 is to have a two-step tuberculosis skin test. If the initial test is negative, a repeat test should be performed in 2-3 weeks to achieve booster effect. An IGRA test is also effective.
- e. Missionaries with LTBI and moderate or *high risk factors* (see *TST Section B-2-a and B-2-b*, pg. 2) should be placed on appropriate therapy before departing for their initial mission assignment. Mission assignments should include consideration of each missionary's individual medical needs.

Missionaries at MTC: (see Appx. A.1-A.5)

- a. Missionaries arriving at a MTC to begin mission service who have lived in a country with high prevalence of tuberculosis during the past 5 years will be asked to undergo tuberculosis screening, including:
 - 1. Interview for symptoms of active tuberculosis (see *Diagnosis Evaluation Section, C-1*, pg. 2),
 - 2. Tuberculin skin testing (see *Diagnostic Evaluation Section B 1-4, TST*, pg. 2),
 - 3. Chest X-ray, and
 - 4. Other diagnostic clinical tests, such as Interferon based testing, as indicated.
- b. Missionaries who have symptoms suggestive of TB, or physical or radiographic evidence suggestive of active tuberculosis will be isolated until diagnosis is ruled out or they have received 2 weeks of four drug therapy with clinical response.
- c. All cases of active tuberculosis identified at an MTC will be reported to the Tuberculosis Committee and to the appropriate local public health authority (see Appx. F).
- d. All missionaries from developing countries or without a PPD test, going through MTC at Provo and serving in the USA and Canada, will have a PPD placed.
- e. All missionaries from North America going through the MTC at Provo with a positive PPD will have a chest x-ray to rule out active TB and may be offered treatment for LTBI at the conclusion of their mission.
- f. All international MTCs will have a reliable program to screen for tuberculosis in missionaries arriving from high prevalence countries. This must include readily available facilities to do reliable chest X-rays or PPD screenings.

Missionaries in Mission Field (see Appx. A.2)

- a. Unless local standards of care supervene, missionaries who develop active tuberculosis while serving a mission will be managed per the American Thoracic Society/CDC protocol with advice from the assigned tuberculosis physician specialist on the Tuberculosis Committee (see pg. 7). They may be medically released as soon as they pose no risk to others while in transit home as determined in consultation with the Area Medical Advisor.
- b. The responsible Area Medical Advisor will report each case of active tuberculosis to the Tuberculosis Committee and will conduct a tuberculosis contact investigation - to include TST at time of discovery and at 3 months after initial case identification for all close contacts of the affected missionary who are known to be TST negative, in order to identify and treat any other missionaries with active disease, new conversion LTBI, and discover, if possible, the source of the tuberculosis infection.

Missionaries Departing from Mission (see Appx. A.6 and Appx. G)

- a. Upon departure from their assigned mission, all missionaries and their parents will receive a copy of the letter *RE: Tuberculosis Screening* (see Appx. G) with instruction from the mission president stating that they are personally responsible to arrange for tuberculosis screening as soon as possible after returning home, in consultation with their local health care provider and/or public health department and if needed to pursue treatment under their direction.

Duties of TB Surveillance Personnel

A. MTC Medical Directors

1. Maintain (or have access to) supplies of properly stored 5 TU-PPD (*or 2 TU-PPD if 5 TU not available*), syringes and other items needed to conduct TST on all missionaries from countries with high prevalence of tuberculosis (see PPD manufacturers – Appx I).
2. Interview each missionary at risk for symptoms of tuberculosis to determine the risk of active TB. (See protocol in section on *Diagnostic Evaluation, A. Screening Assessment of Risk Factors, and C-1. History of Symptoms or Signs of Active Tuberculosis*, pg. 2).
3. Missionaries diagnosed with active tuberculosis, should be returned home, if possible, on four-drug therapy or placed in a medical facility with adequate isolation until they are non-contagious on anti-TB therapy.
4. Arrange for necessary clinical investigation of all possible cases of active tuberculosis in order to definitively establish or rule out that diagnosis.
5. Maintain (or have access to) supplies of medications for treatment of both active tuberculosis and LTBI for those receiving therapy.
6. Report all cases of active tuberculosis to the Missionary Tuberculosis Committee.
7. Make treatment decisions in consultation with the assigned TB physician specialist on the Tuberculosis Committee (see pg. 7.)
8. Follow protocol for treatment of LTBI including Directly Observed Therapy (DOT) and surveillance for adverse drug effects.
9. Pyridoxine, (25 mg/day, see pg. 3 B-2-b) is used with INH only in individuals with conditions in which neuropathy is common.
10. Inform all Area Medical Advisors of missionaries coming to their area on LTBI treatment.

B. Area Medical Advisors

1. Maintain (or have access to) adequate supplies of PPD, syringes and other items needed to conduct TST for all missionaries with close contact to a documented active case of tuberculosis. *If a skin test is performed and is positive, obtain a chest X-ray.*
2. Arrange for clinical investigation of all missionaries exhibiting symptoms of active tuberculosis in order to definitively establish or rule out that diagnosis.
3. Maintain (or have access to) supplies of necessary medications for treatment of both active tuberculosis and LTBI for those receiving therapy.
4. Assure that each missionary with LTBI identified during contact investigation has a chest radiograph.
5. Make treatment decisions in consultation with the assigned TB physician specialist on the Tuberculosis Committee (see pg. 7).
6. Train mission office staff to follow protocol for treatment of LTBI, including DOT and surveillance for adverse drug reactions.
7. Assure that mission office staff will stop LTBI therapy if an adverse drug reaction is suspected.
8. Clinically investigate all possible cases of adverse drug reactions among missionaries on LTBI therapy.
9. Continually remind all mission office staff to issue to each missionary at the time of release and departure a copy of the letter *RE: Tuberculosis Screening* (see Appx. G) with appropriate instructions.
10. Report each case of active tuberculosis and LTBI to the Tuberculosis Committee.
11. Report the findings of each tuberculosis investigation to the Tuberculosis Committee.
12. *Send copies of Missionary TB Medication Tracking Reports received each month from Mission Health Coordinators (mission president's wife), to Chairman, Missionary Department Health Services, 50 East North Temple Street, Salt Lake City, UT 84150.*

C. Mission Office Staff (Mission Health Coordinator) (*it is anticipated that the mission president's wife will often take primary responsibility for the following duties*)

1. Through the Area Medical Advisor, assure an adequate supply of LTBI treatment medications for any missionary taking LTBI therapy serving in their mission.

2. Stop LTBI treatment if adverse drug reactions are suspected.
3. Report monthly to the Area Medical Advisor concerning LTBI treatments and surveillance for adverse drug reactions by forwarding the completed *Missionary TB Medication Tracking Report* forms for each missionary on LTBI treatment. *Copies should also be sent to Chairman, Missionary Department Health Services, 50 East North Temple Street, Salt Lake City, UT 84150.*
4. Report immediately to the Area Medical Advisor each suspected case of active tuberculosis (i.e. a missionary with symptoms of tuberculosis).
5. Provide each missionary a copy of the letter *RE: Tuberculosis Screening* (see Appx G) At the time of release and departure from the mission field, and send a copy to the parents of the missionary.

D. Tuberculosis Physician Specialist on the Tuberculosis Committee:

1. Maintain current knowledge of tuberculosis treatment and diagnosis (American Thoracic Society/CDC protocol)
2. Maintain regular contact with Area Medical Advisors and MTC medical directors in assigned regions.
3. Respond to questions about tuberculosis by end of next business day (if possible).
4. Participate in and accept assignments at monthly committee meetings.

E. Chair, Tuberculosis Committee

1. Serve as liaison of the Tuberculosis Committee to the Public Health Committee.
2. Assure that the document, *Management of Tuberculosis for LDS Missionaries*, remains current.
3. Assure accuracy of statistical reports for the tuberculosis program.
4. Serve as chair of the monthly Tuberculosis Committee setting the agenda and making assignments to committee members. May also serve as Tuberculosis Physician Specialist.

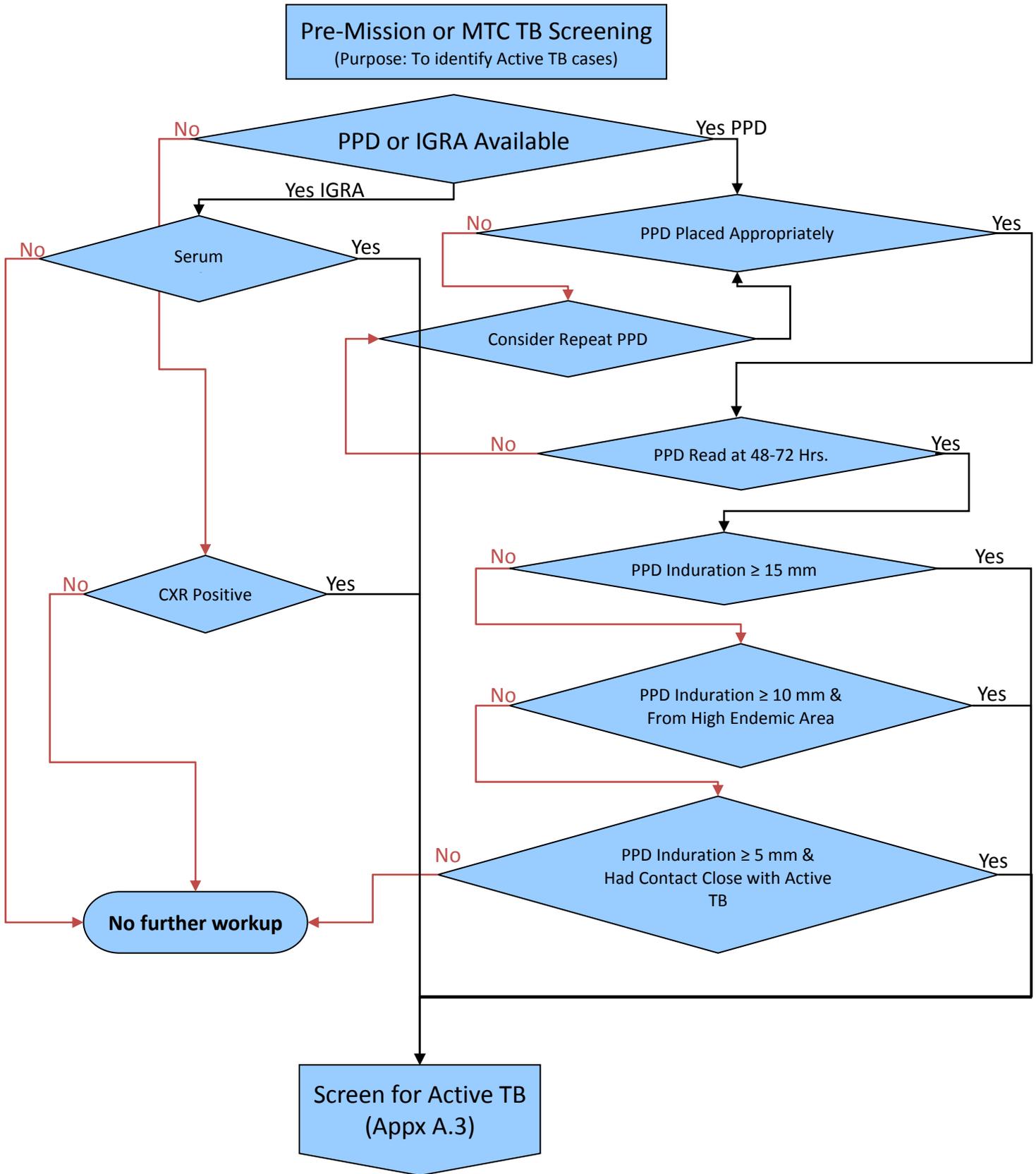
F. Tuberculosis Committee Contact Personnel

To facilitate reporting and coordination of work-up and care of missionaries with Tuberculosis concerns, three members of the TB Committee have been assigned to oversee geographic areas below.

- **Europe and North America Missions:** Dan Ricks, M.D.;
Cell phone 801-891-4130; Home phone 801-582-8495; D_J_Ricks@msn.com
- **Africa and Central and South America Missions:** Larry Wright, M.D.;
Cell phone 801-694-2584; Home phone 801-277-7179; ldlwright@comcast.net
- **Asia and Pacific Missions:** Terry Clemmer, M.D.;
Cell phone 801-583-1012; Office phone 801-408-3661; Terry.Clemmer@imail.org

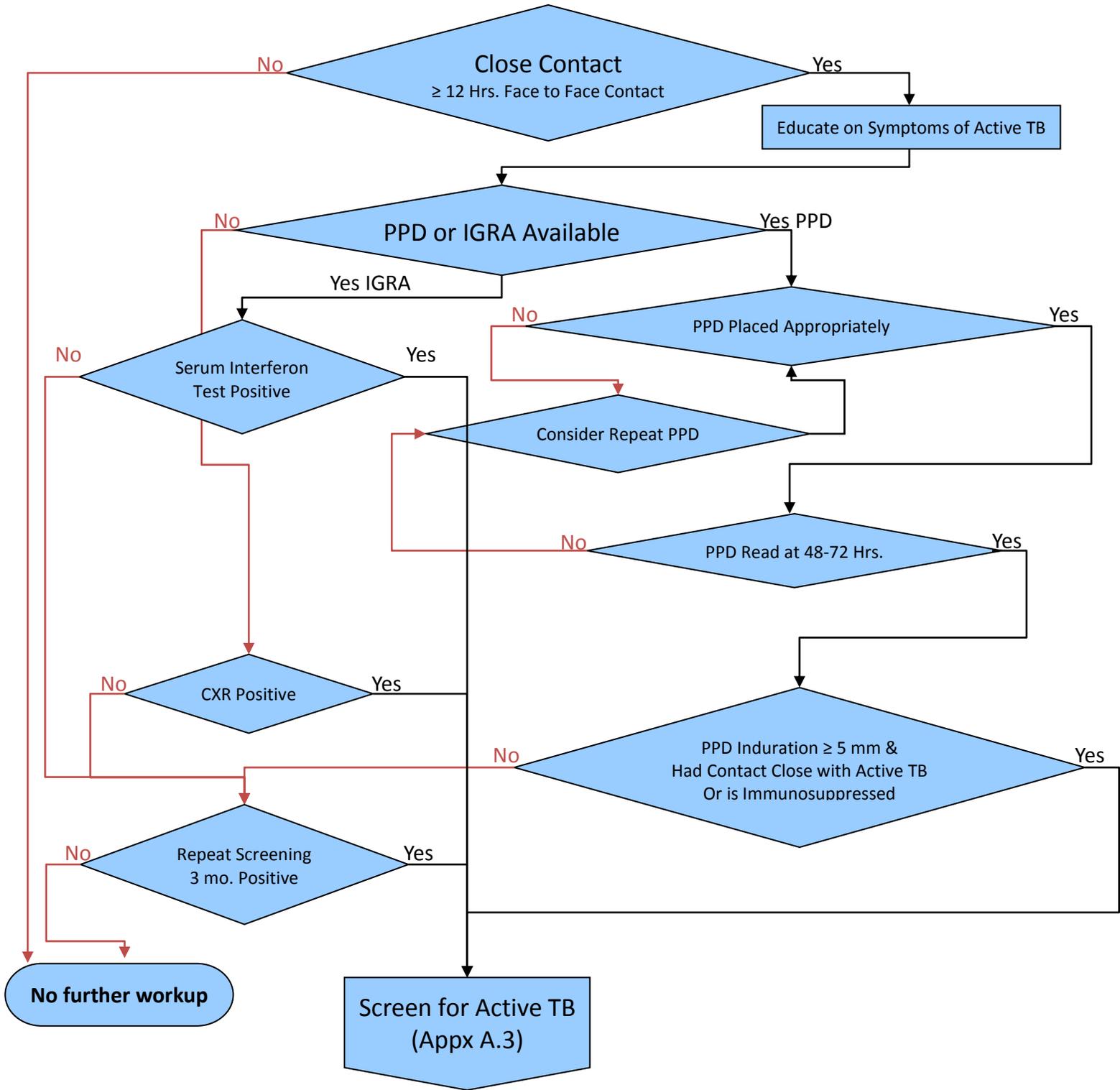
APPENDICES

APPENDIX A.1



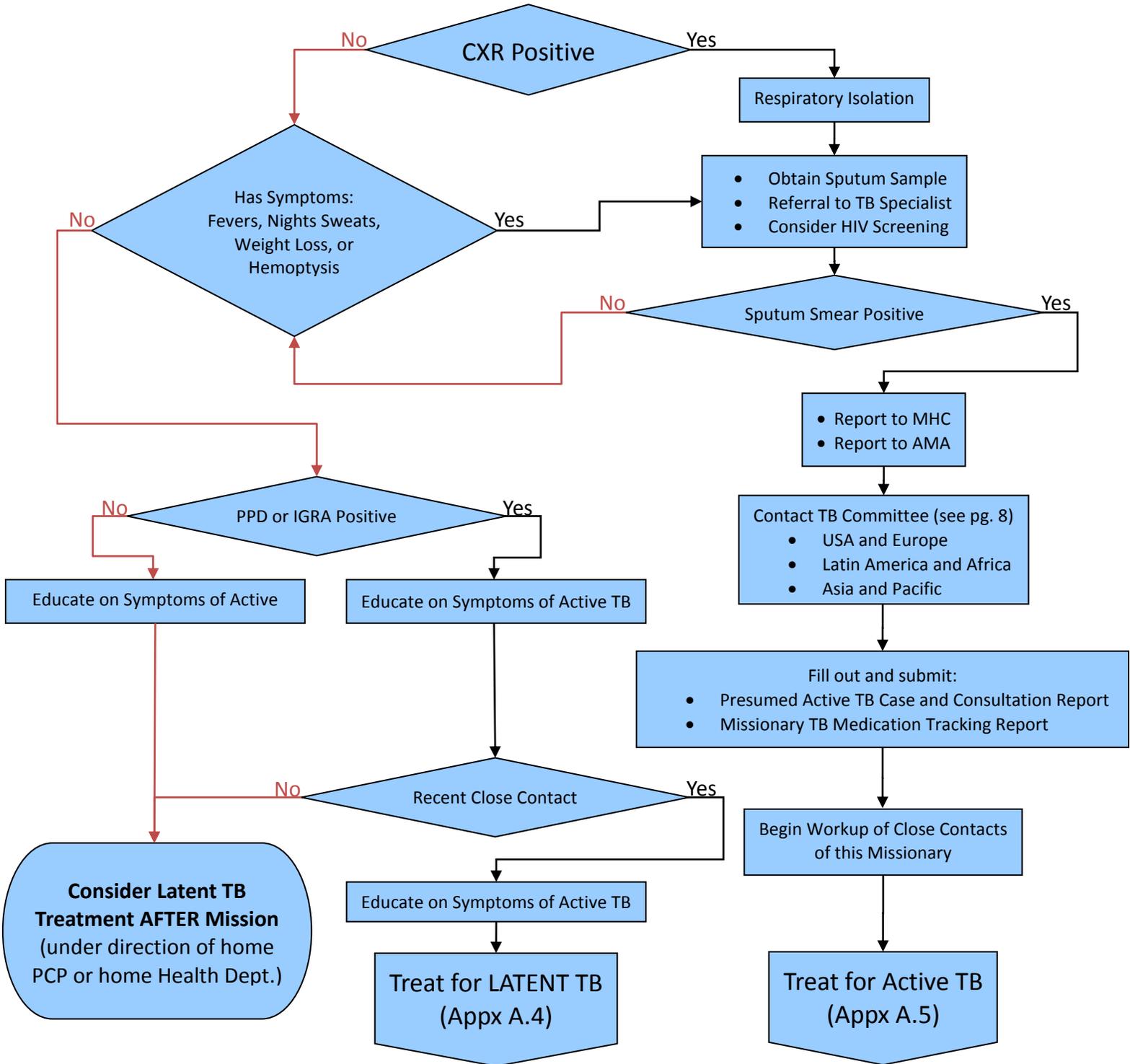
APPENDIX A.2

On-Mission TB Exposure Screening
(Purpose: To identify Latent and Active TB cases)

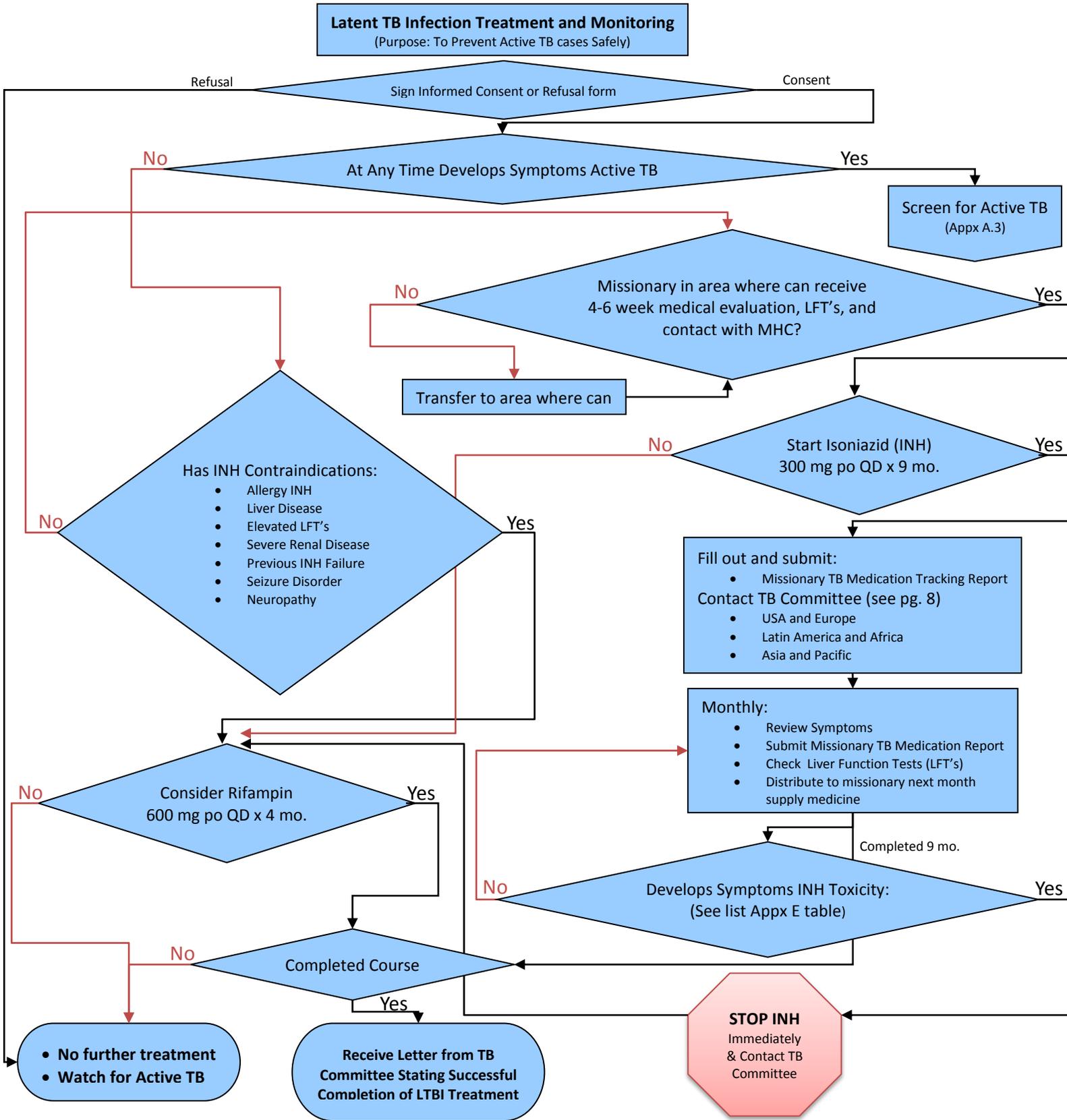


APPENDIX A.3

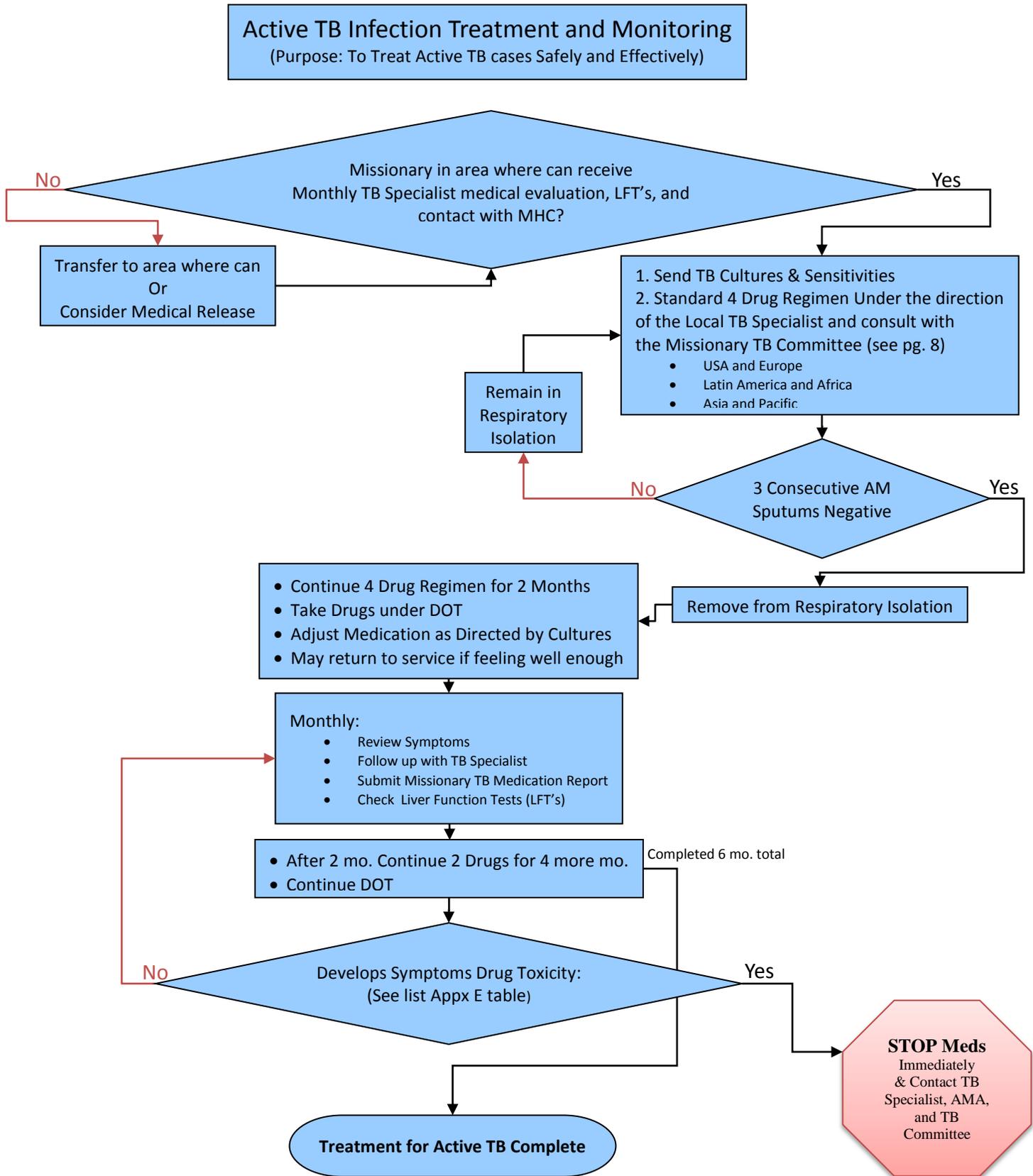
Screening for Active TB (Purpose: To identify Active TB cases and recent Latent cases)



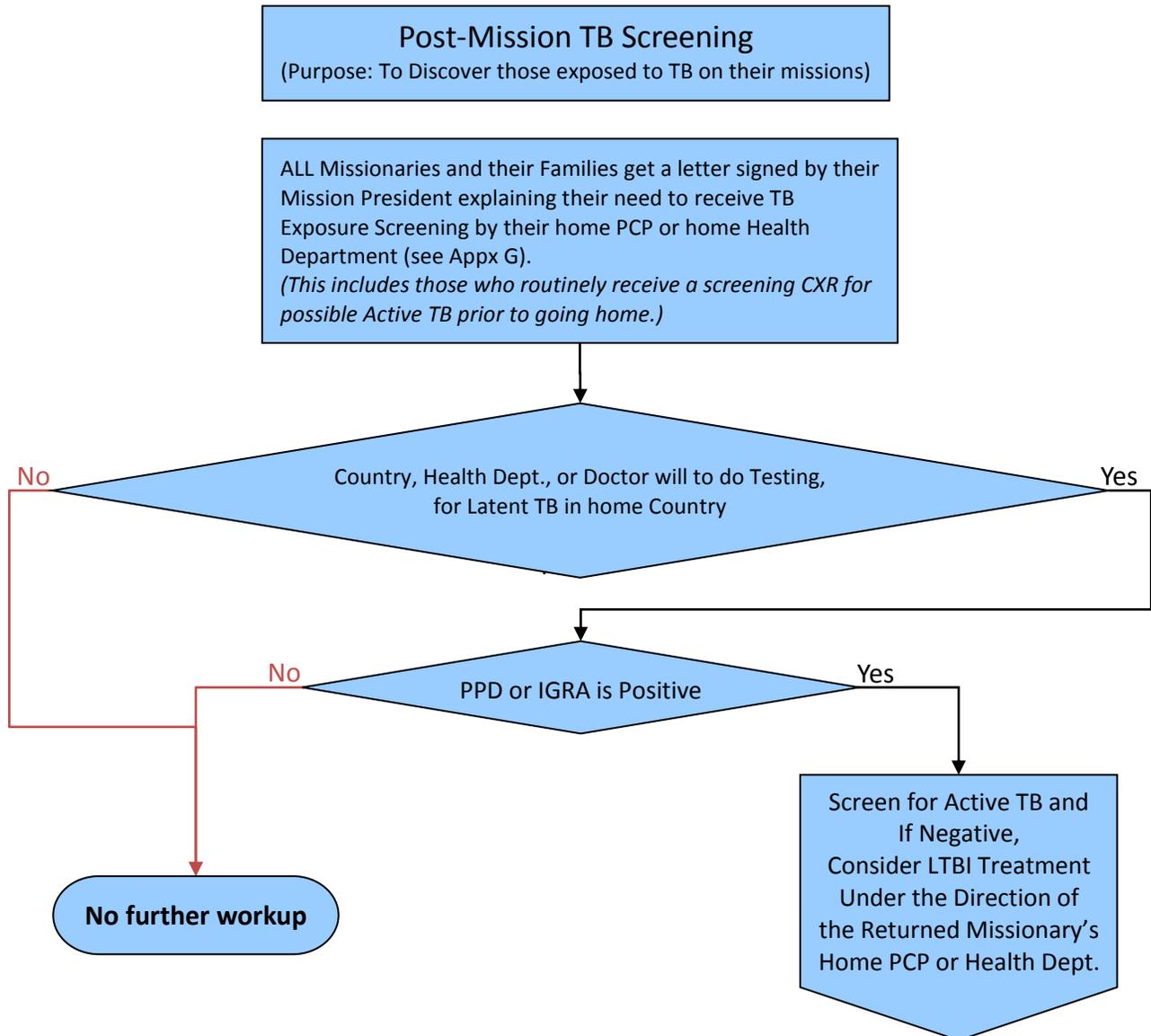
APPENDIX A.4



APPENDIX A.5



APPENDIX A.6



APPENDIX B

Mission Health Coordinator Instructions for Treatment of Latent Tuberculosis Infection

1. Missionary will arrive in the mission with his first 4-6 week supply of medication to treat latent tuberculosis infection*. Subsequent 4-6 week supplies should be distributed through the Mission Health Coordinator until the course of treatment is complete or terminated.
2. The Mission Health Coordinator** is responsible for ensuring the following:
 - a. Sufficient *Missionary TB Medication Tracking Report* forms (see Appx. E) for the duration of treatment are distributed to missionary.
 - b. Instruct missionary to record medication dosage taken **daily**.
 - c. Instruct missionary's companion to observe medicine being taken daily and initial *Missionary TB Medication Tracking Report* form on days observed.
 - d. Instruct missionary to submit completed *Missionary TB Medication Tracking Report* form to the Mission Health Coordinator at the **end of each month**.
 - e. Missionary being treated for latent tuberculosis, will report any of the following conditions to the Mission Health Coordinator **immediately**:
 - Dark brown urine
 - Jaundice (white of eye becomes yellow)
 - Loss of appetite
 - Recurrent nausea/vomiting
 - Recurrent abdominal pain
 - Recurrent fever lasting 3 or more days
 - Numbness or tingling in the hands or feet
 - Easy bruising or bleeding
 - Unusual fatigue
3. Mission Health Coordinator will instruct missionary to **stop taking medication** if:
 - a. Dark urine and/or yellow eyes are reported.
 - b. Two or more conditions (see 2e above) are reported.
 - ▶ **Report these findings to the Area Medical Advisor immediately.**
4. The Mission Health Coordinator should do the following on a **monthly basis**:
 - a. Ask missionary if they have any of the symptoms found in 2e above.
 - b. If there are no contraindications (adverse side-effects, see 2e above), the missionary can continue on medications.
 - c. Mission Health Coordinator will collect and forward copies of the *Missionary TB Medication Tracking Report form to their Area Medical Advisor and to Chairman, Missionary Department Health Services; 50 East North Temple Street; Salt Lake City, UT 84150; pho 801-718-7733; fax 801-240-1744; Donald.Doty@ldschurch.org*.
 - d. The Area Medical Advisor is responsible for:
 - i. reviewing the reports,
 - ii. taking appropriate action, and
 - iii. informing and consulting with Tuberculosis Committee (see pg. 8).

*Person infected with tuberculosis bacterium, but person does not have active disease nor is he/she contagious

**Usually the mission president's wife

APPENDIX C

Informed Consent for Latent Tuberculosis Infection Treatment

Missionary Name	Mission
Missionary Release Date (mm/dd/yr)	Mission Health Coordinator
Mission Area Medical Advisor	Home Stake
Home Ward	Home Address
Home Telephone	

Dear Missionary:

Your recent medical evaluation and tests have shown that you have been infected by the bacterium that causes tuberculosis. Currently your infection is dormant and not a danger to you or those with whom you come in contact. However, if not treated, you have a 1 in 10 chance of developing active TB during your lifetime.

It is recommended that you be treated with the medications isoniazid that will kill the tuberculosis bacterium. The medications may have side effects (see list below). These side effects must be reported to the person who is following your care. In about 1% of cases, the medications can cause liver inflammation. The inflammation will stop when the medications are discontinued.

You will receive sufficient medication for the first 4-6 week period and are asked to keep a daily medication dosage record, which will be provided, for the full treatment period. You will also be asked by the Mission Health Coordinator every 4-6 weeks before you receive the next 4-6 weeks of medicine from them, if the following conditions occur before a new supply of medication is provided:

- Dark brown urine
- Jaundice (white of eyes become yellow)
- Loss of appetite
- Recurrent nausea/vomiting
- Recurrent abdominal pain
- Recurrent fever lasting 3 or more days
- Numbness or tingling in the hands or feet
- Easy bruising or bleeding
- Unusual fatigue

Your signature below indicates you understand the risk of developing tuberculosis; and that you understand the usefulness of taking isoniazid for the probable prevention of tuberculosis.

You also understand that the medicines have a 1% possibility of causing liver inflammation. That careful reporting of any problems you have with the use of the medicines can prevent the development of liver inflammation.

Signature	Date
Witness	Date

**Return to: Chairman, Missionary Department Health Services
50 East North Temple Street
Salt Lake City, UT 84150**

or: Fax 801-240-1744

APPENDIX D

Refusal for Latent Tuberculosis Infection Treatment

Missionary Name	Mission
Missionary Release Date (mm/dd/yr)	Mission Health Coordinator
Mission Area Medical Advisor	Home Stake
Home Ward	Home Address
Home Telephone	

Dear Missionary:

Your recent medical evaluation and tests have shown that you have been infected with the bacterium that causes tuberculosis. Currently the infection is dormant and not a danger to you or those with whom you come in contact. However, if you are not treated you have a risk of 1 in 10 chance of developing active TB during your lifetime.

We recommend that you be treated with the medications isoniazid or rifampin. These drugs kill the tuberculosis bacterium.

I understand the risk of developing tuberculosis in my lifetime if I do not take the treatment. I refuse to take medication for the treatment of latent tuberculosis.

Signature	Date
Witness	Date

Return to: Chairman, Missionary Department Health Services
50 East North Temple Street
Salt Lake City, UT 84150

or: Fax 801-240-1744

APPENDIX E

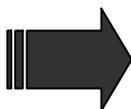
Missionary TB Medication Tracking Report For the month of _____

Missionary Name	Mission
Missionary Release Date (mm/dd/yr)	Health Coordinator Phone
Mission Area Medical Advisor	Missionary Home Address
Missionary Home Ward	
Missionary Home Stake	Missionary Home Telephone

The missionary in question should do the following:

1. Record on a **daily** basis that medication was taken by filling in the date on the daily log below. Your companion should observe you taking the medication and confirms this by initialing each day of observation. **(IMPORTANT: Missionary must take TB medication on a daily basis for the full period of time prescribed if the TB organism is to be killed. Otherwise there is a 1 in 10 chance of getting active tuberculosis during one's lifetime.)**
2. Stop medication immediately and report symptoms to Health Coordinator immediately if:
 - a. you experience dark urine and/or jaundice (white of the eye becomes yellow),
 - b. two or more of the conditions below are experienced.

Must Be Completed



Circle 'yes' or 'no' for each item below and date when appropriate			If yes, date of occurrence
Dark brown urine	Yes	No	
Jaundice (white of eye becomes yellow)	Yes	No	
Loss of appetite	Yes	No	
Recurrent nausea/vomiting	Yes	No	
Recurrent abdominal pain	Yes	No	
Recurrent fever lasting 3 or more days	Yes	No	
Numbness or tingling in the hands or feet	Yes	No	
Easy bruising or bleeding	Yes	No	
Unusual Fatigue	Yes	No	

3. Date medication was discontinued _____ completed _____

Daily Log of TB Medication Taken:

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Date ___/___/___ <input type="checkbox"/> TB medicine Initial _____						
Date ___/___/___ <input type="checkbox"/> TB medicine Initial _____						
Date ___/___/___ <input type="checkbox"/> TB medicine Initial _____						
Date ___/___/___ <input type="checkbox"/> TB medicine Initial _____						
Date ___/___/___ <input type="checkbox"/> TB medicine Initial _____						

Missionary: Immediately forward completed copy of the *Missionary TB Medication Tracking Report* to your Mission Health Coordinator.
Mission Health Coordinator: Immediately forward completed copies of the *Missionary TB Medication Tracking Report* form to your Area Medical Advisor and the same information to Chairman, Missionary Department Health Services; 50 East North Temple Street; Salt Lake City, UT 84150; pho 801-240-7733; fax 801-240-1744, Donald.Doty@ldschurch.org.

APPENDIX F

Presumed Active Tuberculosis Case and Consultation Report

Area Medical Advisors should complete this form whenever there is a presumed active tuberculosis case or need for consultation related to a missionary. This form should immediately be emailed or faxed to **Chairman, Missionary Department Health Services in Salt Lake City at fax number 801-240-1744**. When in need of consultation, please contact your Tuberculosis Committee member based on their area of geographical responsibility. They are as follows:

- **Europe and North America Missions:** Dan Ricks, M.D.;
Cell phone 801-891-4130; Home phone 801-582-8495; D_J_Ricks@msn.com
- **Africa and Central and South America Missions:** Larry Wright, M.D.;
Cell phone 801-694-2584; Home phone 801-277-7179; ldlwright@comcast.net
- **Asia and Pacific Missions:** Terry Clemmer, M.D.;
Cell phone 801583-1012; Office phone 801-408-3661; Terry.Clemmer@imail.org

Please print clearly

Missionary's Name	Missionary I.D. #	Mission
Home Stake/District	Stake/ District President	Stake/ District President phone
Parent /Guardian	Parent/Guardian Phone	Parent/Guardian Address
Date case was first reported	Name of person reporting case	Name of person taking report
AMA name	AMA home phone	AMA cell phone

1. How was tuberculosis diagnosis established (history, examination, laboratory)? _____

2. Current therapy: _____

3. Proposed future therapy: _____

4. CDC Classification of case:

5. Notes (record dates of receipt of follow-up information on index case and investigation of close contacts below):

CDC Classification System for TB

Class	Type	Description
0	No TB exposure Not infected	No history of exposure Negative reaction to tuberculin skin test
1	TB exposure No evidence of infection	History of exposure Negative reaction to tuberculin skin test
2	TB infection No disease	Positive reaction to tuberculin skin test Negative bacteriologic studies (if done) No clinical, bacteriological, or radiographic evidence of active TB
3	TB, clinically active	<i>M. tuberculosis</i> cultured (if done) Clinical, bacteriological, or radiographic evidence of current disease
4	TB Not clinically active	History of episode(s) of TB Or Abnormal but stable radiographic findings Positive reaction to the tuberculin skin test Negative bacteriologic studies (if done) And No clinical or radiographic evidence of current disease
5	TB suspected	Diagnosis pending

APPENDIX G

Letter RE: Tuberculosis Screening

Dear Elder/Sister _____,

Tuberculosis is a serious disease caused by bacteria that attack and destroy the lungs and other organs in the body causing disability or death. It is spread through the air from person to person. You may have been exposed to tuberculosis while serving your mission and not even know it. If you were infected during your mission the disease may progress to active tuberculosis with persistent cough, fever, or night sweats, weight loss, fatigue, and weakness. In most cases however, the body's immune system contains the infection (this is referred to as latent tuberculosis). There is a 10 percent chance that the disease may reactivate later. It is important therefore, that you are tested for tuberculosis on returning to your home.

Before beginning missionary service, you should have had a skin test for tuberculosis (PPD test or something similar) or a chest X-ray. After returning home you should go to your doctor's office or a public health facility to have another PPD skin test. This will determine if you have been infected with the tuberculosis bacteria. If the skin test is negative, you have not been infected with tuberculosis.

However, if you have been infected, the skin test will become positive, and there will be redness and swelling where the test material was injected into the skin. A chest X-ray should be done if the skin test converts from negative to positive. If the skin test was positive before your mission and infection occurred during your mission the redness and swelling may be greater. A chest X-ray should be done. An abnormal chest X-ray requires further testing to determine if there is active tuberculosis. When the skin test had changed, but the chest X-ray is normal, this indicates latent tuberculosis. Current medical practice in the United States and Canada, and some other countries, is to offer treatment with Isoniazid (INH), one 300 mg tablet per day, for nine months, to reduce the number of bacteria lying inactive in the body, thereby reducing the possibility of ever developing active disease.

It is your personal responsibility to be tested for tuberculosis. Testing for tuberculosis cannot be overemphasized and should be high on your list of things to do soon after you return home.

Sincerely,

Mission President

APPENDIX H

LATENT TB TREATMENT POLICY CHANGE

October 5, 2010

To: Area Medical Advisors

RE: Change in Recommendations for Latent Tuberculosis Treatment

Because of risks of toxicity during INH treatment without adequate follow-up, and other challenges, we recommend that missionaries with latent TB should, with few exceptions (see #3 below), await any possible treatment until they return to their home. Treatments, if any, should be done under the direction of their home country health department, or qualified primary care provider.

Note: Those who have already begun treatment should finish their course under close monthly medical follow-up but should stop immediately if symptoms develop and be reevaluated.

Background:

A recent article in the CDC's MMWR brought to the forefront some issues regarding latent TB treatment. The article (Morbidity & Mortality Weekly Report. 2010;59(8):224-229) discussed 17 cases of patients on isoniazid (INH) therapy who had severe adverse reactions with severe liver damage, and reported 5 cases ending in fatality due to liver failure. Though rare (thought to be 1/20,000) these cases of severe liver toxicities might be prevented if patients are closely followed by the qualified medical professional or clinic familiar with the case, and the medicines are stopped at the first signs of symptoms (excess fatigue, nausea, vomiting, abdominal pain, or jaundice). The CDC therefore recommends close monthly follow-up by a qualified medical professional while on treatment.

There are 3 main issues we face in following the CDC guideline:

1. Adequate follow-up, 2. Confusion of varying country policies, 3. Determining who is most in need of treatment (Recent vs. Remote TB Exposure).

1. Adequate Follow-Up: We have sought to develop a system where missionaries could receive adequate oversight and follow-up in the past, with missionaries filling out daily forms, and the Mission Medical Coordinators following them and filling out reports that are forwarded on to the AMAs and the TB committee. However, such a system has multiple possible failure points, and in most cases, this would still not include monthly follow-up with the prescribing professional, as directed by the CDC.

2. Varying Country Policies: Many, if not most, nations of the world do not screen for, or treat latent tuberculosis, but choose to treat active cases only. This has led to some confusion as we follow the recommendations for latent treatment based on the missionary's home country requirements, leading to some missionaries having been treated while others have not.

3. Recent vs. Remote Exposure: The final issue relates to the difficulty often encountered in determining if the PPD is a recent conversion, or something more remote. A patient with a recent exposure and conversion of PPD, is more likely to develop active TB in the first few years after exposure than later. If there is a case with known recent exposure and conversion to positive status on testing, you may consider having the local health department initiate latent treatment if the patient is in a position to receive close monthly follow-up by that medical facility to completion. In such cases please use the current forms for reporting latent treatment of these missionaries.

SOURCE: CDC. MMWR. 2010;59(8):224-229 and MMWR 2000;49(No. RR-6).

Appendix I PPD Manufacturers

Sanofi Pasteur – PPD UNITED STATES

Discovery Drive
Swiftwater PA 18370
United States
Tel: +1.570 957 7187
Fax: +1.570 957 5415
www.sanofipasteur.us

Statens Serum Institute - PPD Worldwide.

Headquarters

Statens Serum Institut
5 Artillerivej
DK 2300 Copenhagen S
Tel.: +45 3268 0000
Fax: +45 3268 0000
www.ssi.dk/English.aspx
E-mail: serum@ssi.dk
Sales and Business Development
Fax: +45 3268 3167
vaccine@ssi.dk

Regional contacts for commercial enquiries

Sweden, Norway, Finland, Asia, Australia & New Zealand

Torben Sørensen
Export Manager
Tel: +45 3268 3250
TSN@ssi.dk

Europe, North East Africa & Indonesia

Fabricio Corzo Carvajalino
Regional Manager
Tel: +45 3268 3363
FCO@ssi.dk

East Europe & Central Asia

Hanna M. Krupka-Poltorak
Regional Manager
Tel: +48 22 668 86 73
Cell: +48 60 124 61 46
HAK@ssi.pl

Latin America & Iberia

Thomas K. Christoffersen
Regional Manager
Tel: +45 3268 3787
TKC@ssi.dk

Mediterranean, Africa & Middle East

Alberto Leal
Regional Manager
Tel: +45 3268 3982
ABL@ssi.dk

Germany, UK, Ireland, Italy & North America

Lisbet Riiber Høj
Regional Manager
Tel: +45 3268 8641
RBH@ssi.dk

APPENDIX J

REFERENCES

Core Curriculum on Tuberculosis: What the Clinician Should Know. Fourth Edition, 2000, pp 1-139, CDC, Atlanta. (Available on website in PDF format with Acrobat www.cdc.gov/ncbdtb/tb/pubs/corecuff.com)

Diagnostic Standards and Classification of Tuberculosis in Adults and Children. (Official statement of the American Thoracic Society and the CDC) *Am J Respir Crit Care Med*, 161: 1376-1395, 2000.

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