

Case Management for Active TB Disease

This checklist and timeline is designed to assist public health nurses/TB case managers when managing a case. The purpose of this form is to provide a checklist to organize the gathering of information on a TB case to ensure the best medical and public health practices.

Case Definitions

1. Laboratory confirmed case

- Isolation of *M. tuberculosis* complex from clinical specimen, or
- Demonstration of *M. tuberculosis* from a clinical specimen by nucleic acid amplification test (PCR, MTD)

2. Clinical case

In the absence of a laboratory confirmation of *M. tuberculosis*, a person must meet **ALL** of the following criteria to be considered a clinical case of tuberculosis:

- Positive tuberculin skin test or IGRA
- Signs and symptoms compatible with TB (e.g., abnormal chest x-ray, abnormal chest CT scan, or clinical evidence of current disease such as fever, night sweats, cough, weight loss, hemoptysis)
- Receiving treatment with two or more anti-tuberculosis medications.

3. Provider Diagnosis

If a case does not meet the laboratory or clinical definition, the case may be counted as a verified case of tuberculosis by provider diagnosis if evidence of TB is present and a client shows clinical improvements with medications.

Abbreviations	
AFB	Acid-Fast Bacilli
TST	Tuberculosis Skin Test
IGRA	Interferon Gamma Release Assay
WI	Wisconsin
WSLH	Wisconsin State Lab of Hygiene
NAAT	Nucleic Acid Amplification Test
DOT	Directly Observed Therapy
CXR	Chest X-Ray



TIMELINE
for the management of pansensitive TB suspects/cases

MONTH	1	2	3	4	5	6 ^{8,10}	7 ¹⁰	8 ¹⁰	9 ^{9,10}	Completion of treatment
	Initial Treatment Phase: INH, RIF, EMB, PZA		Continuation Treatment Phase: INH, RIF							
Treatment	DOT	DOT	DOT	DOT	DOT	DOT	DOT	DOT	DOT	
Patient Education	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Baseline Tests	✓ ¹									
Follow-up Tests		Monitor visual acuity and color vision while on EMB (monthly). Monitor uric acid while on PZA (monthly). Other tests if baseline values abnormal, if adverse reactions develop, or if other clinical indications.								
Chest X-Rays	✓	✓ ⁵								✓ ⁵
Clinical evaluation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring ² • Adherence to treatment • Response to treatment • Medication side effects or adverse reactions	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Sputum specimens	x3 ³	x1 ⁴	x1 ^{4,6}							x1
Drug susceptibility test results		✓ ⁷								

¹ Suggested tests: LFTs, uric acid, CBC, renal panel, glucose, visual acuity/color, HIV.

² Conduct in-person interviews.

³ Collect three sputum specimens for AFB sputum smear and culture 8 to 24 hours apart, with at least one being an early morning specimen. On all first-time sputum specimens, obtain the rapid molecular detection NAAT. For patients with positive AFB sputum smears at diagnosis: weekly sputum collection until three consecutive specimens are negative. If the first culture results are positive, order drug susceptibility tests. If susceptibility testing shows INH and RIF resistance, then order testing to second line drugs.

⁴ Collect one sputum monthly until two consecutive specimens are negative on culture.

Infectious patients in isolation may have specimens collected more frequently to identify response to treatment and when they become non-infectious. The following guidelines should be used:

1. Patients with **cavities and/or sputum smears that are 3+ (moderate) or 4 (heavy)**: wait until after one month of treatment to collect first follow-up sputum. If the first sputum is negative, obtain second sputum. If the second is negative, obtain a third. If any are positive, wait one week and start the process over.
2. Patients **without cavities and/or sputum smears that are 1+ (rare) or 2+ (few)**: a single sputum can be collected after two weeks of treatment. If the first sputum is negative, obtain a second sputum. If the second is negative, obtain a third. If any are positive, wait one week and start the process over.
3. Once 3 consecutively smear negative specimens are collected, the patient can be *considered for release from isolation*. Sputums should be then collected monthly until conversion to culture negative is documented.

⁵ For patients with positive cultures at diagnosis, a repeat CXR at completion of two months of treatment and/or at completion of therapy may be useful but it is not essential. For patients with negative initial cultures, a CXR is necessary after two months of treatment and a radiograph at completion of therapy is desirable.

⁶ If smear/culture is still positive after two months of treatment, consult with experts. If culture is positive after three months, consider drug resistance, noncompliance, or nonabsorption.

⁷ If results show INH and RIF resistance, send isolate for testing on susceptibility to second-line drugs.

⁸ Month six is the final month for patients on the four-month continuation phase who have taken their anti-TB medications on schedule.

⁹ Month nine is the final month for patients on the seven-month continuation phase who have taken their anti-TB medications on schedule.

¹⁰ CAUTION: Some patients may have adherence or medical issues that lengthen their duration of treatment.

Guidelines for Home and Hospital Isolation of Infectious Tuberculosis Patients

Adapted from Heartland National TB

TB Patient Characteristics at Diagnosis	Current Isolation and Release Criteria	Guidelines for Adults and Children with Adult Type Disease*
Sputum Acid Fast Bacilli (AFB) smear positive, and/or NAA positive or patient suspected of having active TB.	Hospitalized under inpatient airborne isolation or home isolation and being released to: <ul style="list-style-type: none"> • General hospitalization, <i>or</i> • Outpatient congregate setting, <i>or</i> • Home or setting with high-risk contacts 	Discharge from airborne isolation patient <i>must</i> meet all the following criteria: <ol style="list-style-type: none"> 1) Have received standard multidrug anti-TB therapy for at least 2 weeks if original AFB smear positive OR on therapy for 5-7 days if original AFB smear was negative 2) Demonstrated adherence to treatment (DOT) 3) Demonstrated clinical improvement 4) Have 3 consecutive negative AFB smears collected at least 8 hours apart with at least 1 early morning specimen 5) Have no risk factors for drug resistance
Sputum AFB smear negative <i>and TB is not suspected</i> , NAA testing if done is negative and/or another diagnosis is likely	Hospitalized under inpatient airborne isolation and being released to: <ul style="list-style-type: none"> • General hospitalization • Return to school, <i>or</i> • Return to work, <i>or</i> • Allowed to travel on public transportation 	Discharge from airborne isolation patient <i>must</i> meet all the following criteria: <ol style="list-style-type: none"> 1) Have 3 consecutive negative AFB smears collected at least 8 hours apart with at least 1 early morning specimen 2) TB is not likely and another diagnosis is identified
Sputum AFB smear negative <i>and TB is suspected or confirmed through NAA testing</i>	Hospitalized under inpatient airborne isolation or home isolation and being released to return to normal activities including: <ul style="list-style-type: none"> • General hospitalization • Return to school, <i>or</i> • Return to work, <i>or</i> • Allowed to travel on public transportation 	Discharge from home isolation patient <i>must</i> meet all the following criteria: <ol style="list-style-type: none"> 1) Have received standard multidrug anti-TB therapy for at least 5-7 days 2) Demonstrated adherence to treatment (DOT) 3) Demonstrated clinical improvement 4) Have 3 consecutive negative AFB smears collected at least 8 hours apart with at least 1 early morning specimen 5) Have no risk factors for drug resistance
TB MDR/ or XDR confirmed infection	Hospitalized under inpatient airborne isolation or home isolation and being released to return to normal activities including: <ul style="list-style-type: none"> • Return to school, <i>or</i> • Return to work, <i>or</i> • Allowed to travel on public transportation 	Discharge from home isolation patient <i>must</i> meet all the following criteria: <ol style="list-style-type: none"> 1) Receiving and tolerating appropriate multidrug anti-TB regimen 2) Demonstrated adherence to treatment (DOT) 3) Demonstrated clinical improvement 4) Have 3 consecutive negative AFB cultures* <p><i>*Expert opinion varies; some experts satisfied with negative smears</i></p>

A TB suspect or case may be released from hospital to home setting if there are no high risk individuals in the home **even if they do not meet the criteria for release from isolation. Clinical judgment and consultation with public health is needed.**

TIME FRAMES & TASK LIST

for the management of TB suspects/cases and contact investigation

MONTH 1 – Week 1

Start of initial assessment

- Receive the TB suspect/case report and notify the WI TB Program.
- Enter TB suspect/case into WEDSS.
- Assign the case manager.
- Take infection control precautions:
Isolate the patient, if necessary (if the patient has positive AFB sputum smear results and/or cough and/or cavitary disease) or high suspicion for active TB even if smear negative.
- Start the initial assessment within 24 hours of notification of the case report.

Initial interviews and consultations

- Consult with the responsible clinician for medical examination within 24 hours of notification of the case report.
- Obtain initial baseline tests from clinician.
- Interview the patient in person (i.e., face to face) within ≤ 1 business day of the case report.
 - Provide patient education.
 - Collect patient data to determine infectious period.
 - Identify source of infection, if possible.
 - Gather contact investigation data if needed.
 - If any household contact is <5 years of age, then see window prophylaxis guidance.
 - Identify patient insurance status, housing needs, and other social needs.

Medical evaluation

- Assure a medical evaluation of the patient within 1 week of notification of the case report.
- Gather medical history.
- Conduct a physical examination.
- Administer, measure, and interpret a TST or IGRA.
- Order complete chest radiography.
- Collect and submit 3 sputum specimens for AFB smear and culture (if not done earlier). Obtain specimens 8 to 24 hours apart with one being an early morning specimen.
- Start TB treatment with 4 drugs therapy within 48 hours of high suspicion or TB diagnosis.
- Complete initial request for medications form and identify pharmacy where PHN will pick up medications. Send completed forms to the State TB Program for processing.

After AFB sputum smear testing completed

- Receive results of AFB sputum smear tests (turn-around time from WSLH is 24 hours).
- On all first-time sputum specimens, obtain the rapid molecular detection NAAT, if needed to quickly confirm diagnosis of TB for a patient with positive AFB sputum smear (turn-around time from WSLH is 24-48 hours).
- Determine the patient's infectious period (count three months back from start of symptoms-cough, weight loss, fever, chest pain, night sweats).

After sufficient medical and laboratory assessment data gathered

- For hospitalized patient, clarify the hospital discharge arrangements and assure that they are communicated to the hospital's outpatient coordinator and the treating clinician(s). Provide discharge guidance to hospital, as needed. *See Discharge plan instructions document for hospitals.*

- Obtain baseline tests for toxicity monitoring (suggested tests: LFTs, uric acid, CBC, renal panel, glucose, visual acuity/color, HIV)
- Complete clinician and public health agreement form.
- Assure that a written treatment plan is developed.
- Assure that education is provided to the patient and responsible clinician as needed when their signatures are obtained on the treatment plan.
- Begin implementing the treatment plan. Implement DOT.
- Enter data into WEDSS.

Decision to conduct contact and/or field investigations

- Gather the index patient's medical records (from hospital, clinic, and/or healthcare providers).
- Decide if a contact investigation is indicated (based on positive AFB sputum smear results and/or cavitary disease or pleural TB).
- If an investigation is indicated, start the contact investigation within ≤ 3 business days of notification of the suspect or confirmed case.

Contact list

- During the index patient interview, start listing names and locating information of named contacts and continue listing them throughout the investigation.
- Assign an initial priority classification to each contact (and revise as needed when new information is received)
- Review all documentation to ensure that the contact list is complete.
- Report contacts to State TB Program within 2 weeks of notification of the case report via WEDSS or fax.

MONTH 1 – Week 2

Case management of index patient

- Provide DOT and assess adherence and side effects/adverse reactions at each visit.
- Follow up missed appointments on the same day.
- If the patient initially had positive AFB sputum smear results quantified as 1+ (rare) to 2+ (few) and/or no cavitation, collect a single sputum after 2 weeks of treatment. If the first sputum is negative, obtain a second sputum. If the second is negative, obtain a third. If any are positive, wait one week and start the process over. Do this process until 3 consecutive negative AFB sputum results are reported (this usually occurs within 2 months of treatment). If beyond 2 months, then other tests are ordered.
- If the patient initially had positive AFB sputum smear results quantified as 3+ (moderate) to 4+ (heavy) and/or cavitation, wait until after 2 weeks of treatment to collect first follow-up sputum.
- Reassess information about the index patient weekly until drug susceptibility results are available or for 2 months after the case report, whichever is longer.
- Susceptibility reports are usually available within 28 days (first line drugs). If results show drug resistance then contact the State TB Program for consultation.
- Reassess treatment, side effects, and adherence, and if concerned, consult with the treating clinician. If a change is decided upon, obtain new clinician's order and order drugs.
- If the patient has pulmonary TB (lung, pleural, miliary, laryngeal) and is isolated, determine whether isolation can be discontinued based on conversion of negative sputum smear and culture and if patient is sensitive to all first line drugs.
- If the patient has extrapulmonary TB and is isolated, determine whether isolation can be

discontinued based on negative sputum smear and culture and if patient is sensitive to all first line drugs.

Field investigation and interviews

- Complete the field investigation (visiting all potential transmission sites) within 5 days after starting the investigation. Consider OSHA Rules and Regulations.
- Re-interview the index patient in their home within 1-2 weeks after the first interview.

Contact evaluation

- Assure that face-to-face initial encounters and TST or IGRAs are conducted among high- and medium- priority contacts within 7 days after being listed in the investigation. (For interpreting the TST, an induration transverse diameter of ≥ 5 mm is positive for any contact).
- For each contact listed in the investigation, assure that medical evaluations are conducted (positive TST or IGRA includes history and CXR) and treatment started for LTBI in high-priority contacts who are children and/or have high risk factors within 5 days after initial encounter with contact.
- Assure that medical evaluations are conducted of other high-priority contacts to index patients with positive AFB sputum smear results within 5 days after initial encounter with contact.
- Review and assess the completeness of contacts' medical follow-up and treatment plans within 5 days after their medical evaluations.

Data review and reporting

- Continue to collect copies of medical evaluation (i.e., lab results, CXR, history and physical, etc.) from the treating clinician.
- Each week, review documentation to ensure that contact list is complete.
- Each week, collect and analyze data on contacts and TSTs or IGRAs; reassesses contact priorities.
- Decide whether to continue/expand the investigation based on analysis of TST or IGRA data.
- Report to the State TB Program the contact list and after initial TST or IGRA is completed.

MONTH 1 – Weeks 3 and 4

Case management of index patient.

- Provide DOT and assess adherence and side effects/adverse reactions at each visit.
- Follow up on missed appointments on the same day.
- If the patient initially had positive AFB sputum smear results quantified as 1+ (rare) to 2+ (few) and/or no cavitation, collect a single sputum after 2 weeks of treatment. If the first sputum is negative, obtain a second sputum. If the second is negative, obtain a third. If any are positive, wait one week and start the process over. Do this process until 3 consecutive negative AFB sputum results are reported (this usually occurs within 2 months of treatment). If beyond 2 months, then other tests are ordered.
- If the patient initially had positive AFB sputum smear results quantified as 3+ (moderate) to 4+ (heavy) and/or cavitation, wait until after 1 month of treatment to collect first follow-up sputum. If the first sputum is negative, obtain a second sputum. If the second is negative, obtain a third. If any are positive, wait one week and start the process over. Do this process until 3 consecutive negative AFB sputum results are reported (this usually occurs within 2 months of treatment).
- Reassess information about the index patient weekly until drug susceptibility results are available and then reassess at least monthly.
- Susceptibility reports are usually available within 28 days (first line drugs). If results show drug resistance then contact the State TB Program for consultation.
- Reassess treatment, side effects, and adherence and, if concerned, consult with the treating

clinician. If a change is decided upon, obtain new clinician's orders and drug prescription.

- If the patient is isolated, determine whether isolation can be discontinued based on resolution of symptoms and current treatment and 3 negative smears and patient is on current treatment with anti-TB regimen to which strain is known to be susceptible.

New identified contact evaluation and treatment

- Assure that face-to-face initial encounters and TST or IGRA testing are conducted among high- and medium- priority contacts within 3 days after being listed in the investigation.
- For each new contact listed in the investigation, assure that medical evaluations are conducted (positive TST or IGRA includes history and CXR) and treatment started for LTBI in high-priority contacts who are children and/or have high risk factors within 5 days after initial encounter with contact.
- Assure that medical evaluations are conducted of other high-priority contacts to index patients with positive AFB sputum smear results within 5 days after initial encounter with contact.
- Assure that medical evaluations are conducted of high-priority contacts to index patients with negative AFB sputum smear and medium-priority contacts within 10 days after initial encounter with contact.

Data review and reporting

- Continue to collect copies of medical evaluation (i.e., lab results, CXR, history and physical, etc.) from the treating clinician.
- Each week, review documentation to ensure that contact list is complete.
- Each week, collect and analyze data on contacts and TSTs or IGRAs; reassesses contact priorities.
- Decide whether to continue/expand the investigation based on analysis of TST or IGRA data.
- Case Review with WI TB Program and report any initial TST or IGRA results from contact list.

MONTH 2

Case management of index patient.

- Provide DOT and assess adherence and side effects/adverse reactions at each visit.
- Follow up on missed appointments on the same day.
- Conduct ongoing assessment and monitoring at least monthly (clinical response, adverse reactions, adherence)
- Repeat liver function tests (AST, ALT, and serum bilirubin) when the patient is taking INH, a rifamycin, or PZA if:
 - Baseline results are abnormal.
 - Patient is pregnant, in the immediate postpartum period, or at high risk for adverse reactions.
 - Patient has symptoms of adverse reactions.
- Question the patient taking ethambutol monthly regarding possible visual disturbances, including blurred vision or scotomata.
- Test visual acuity and color discrimination monthly when the patient is taking ethambutol:
 - In doses > 15-20 mg/kg (the recommended range).
 - For > 2 months.
 - With renal insufficiency.
- If the patient initially had positive AFB sputum smear results quantified as 1+ (rare) to 2+ (few) and/or no cavitation, collect a single sputum after 2 weeks of treatment. If the first sputum is negative, obtain a second sputum. If the second is negative, obtain a third. If any are positive, wait

one week and start the process over. Do this process until 3 consecutive negative AFB sputum results are reported (this usually occurs within 2 months of treatment). If beyond 2 months, then other tests are ordered.

- If the patient initially had positive AFB sputum smear results quantified as 3+ (moderate) to 4+ (heavy) and/or cavitation, wait until after 1 month of treatment to collect first follow-up sputum. If the first sputum is negative, obtain a second sputum. If the second is negative, obtain a third. If any are positive, wait one week and start the process over. Do this process until 3 consecutive negative AFB sputum results are reported (this usually occurs within 2 months of treatment).
- If the patient has negative AFB sputum smear results, each month collect sputum specimens and submit them for testing until 2 consecutive negative culture results are reported.
- If sputum culture results are positive after 2 months of treatment, call the WI TB Program for a consultation.
- Receive culture results.
- If the patient is isolated, determine whether isolation can be discontinued.
- Reassess information about the index patient weekly until drug susceptibility results are available or for 2 months after the case report, whichever is longer.
- Reassess treatment, side effects, and adherence and, if concerned, consult with the treating clinician. If a change is decided upon, obtain new clinician's orders and order drugs.
- Send updates with changes in treatment plan to WI TB Program.

Contact evaluation and treatment

- Assure that contacts are assessed monthly for:
 - Clinical follow-up.
 - Adherence to LTBI treatment.
 - Adverse reactions to LTBI treatment.
- On contacts whose results were initially negative, repeat TST or IGRA testing 8 to 10 weeks after each contact's last exposure to the index patient during the infectious period.
- After retesting, reevaluate contacts who were initially TST negative or IGRA negative and started on LTBI treatment to determine if treatment should be continued.

Data review and reporting

- Each week, review documentation to ensure that contact list is complete.
- Each week, collect and analyze data on contacts and TSTs or IGRAs; reassesses contact priorities.
- Decide whether to continue/expand the investigation based on analysis of TST or IGRA data.
- Report to the State TB Program after initial TST or IGRA is completed.
- Call the State TB Program to provide a case overview.

MONTHS 3 through 5

Case management of index patient

- Provide DOT and assess adherence and side effects/adverse reactions at each visit.
- Follow up on missed appointments on the same day.
- Conduct ongoing assessment and monitoring at least monthly (clinical response, adverse reactions, adherence)
- When the patient has negative AFB sputum smear results, each month collect sputum specimens and submit them for testing until 2 consecutive negative culture results are reported.
- If sputum smear results are positive after 2 months of treatment, call the WI TB Program for a consultation.

- If index patient can produce sputum sample, collect one sputum monthly to assess for relapse and/or treatment failure.
- Repeat liver function tests (AST, ALT, and serum bilirubin) when the patient is taking INH, a rifamycin, or PZA if:
 - Baseline results are abnormal.
 - Patient is pregnant, in the immediate postpartum period, or at high risk for adverse reactions.
- Patient has symptoms of adverse reactions
- Question the patient taking ethambutol monthly regarding possible visual disturbances, including blurred vision or scotomata.
- Test visual acuity and color discrimination monthly when the patient is taking ethambutol:
 - In doses > 15-20 mg/kg (the recommended range).
 - For > 2 months.
 - With renal insufficiency.
- Reassess treatment, side effects, and adherence and, if concerned, consult with the treating clinician. If a change is decided upon, obtain new clinician's orders and order drugs.
- Send updates with changes in treatment plan to the State TB Program.

Contact evaluation and treatment

- Assure that contacts are assessed monthly for:
 - Clinical follow-up.
 - Adherence to LTBI treatment.
 - Adverse reactions to LTBI treatment.
- Verify completion of treatment 3 to 9 months after treatment was started (depending upon regimen, adherence, number of weeks on treatment and/or number of doses taken).
- Each week, review documentation to ensure that the contact list is complete.

Data review and reporting

- Each week, review documentation to ensure adequate care.
- Provide monthly care overview to the State TB Program.

MONTHS 6 through 9

Case management of index patient.

- Provide DOT and assess adherence and side effects/adverse reactions at each visit.
- Follow up on missed appointments on the same day.
- Conduct ongoing assessment and monitoring at least monthly (clinical response, adverse reactions, adherence)
- If index patient can produce sputum sample, collect one sputum monthly to assess for relapse and/or treatment failure.
- Repeat liver function tests (AST, ALT, and serum bilirubin) when the patient is taking INH, a rifamycin, or PZA if:
 - Baseline results are abnormal.
 - Patient is pregnant, in the immediate postpartum period, or at high risk for adverse reactions.
 - Patient has symptoms of adverse reactions.
- Question the patient taking ethambutol monthly regarding possible visual disturbances, including blurred vision or scotomata.

- Test visual acuity and color discrimination monthly when the patient is taking ethambutol:
 - In doses > 15-20 mg/kg (the recommended range).
 - For > 2 months.
 - With renal insufficiency.
- Reassess treatment, side effects, and adherence and, if concerned, consult with the treating clinician. If a change is decided upon, obtain new clinician's orders and order drugs.
- Verify completion of treatment 6 to 9 months after treatment was started (depending upon regimen, adherence, response to treatment, number to weeks on DOT, and number of doses taken)
- Send updates with changes in treatment plan to WI TB Program.

Contact treatment and investigation

- Assure that contacts are assessed monthly for:
 - Clinical follow-up.
 - Adherence to LTBI treatment.
 - Adverse reactions to LTBI treatment.
- Verify completion of treatment 3 to 9 months after treatment was started (depending upon regimen, adherence, number to weeks on treatment and/or number of doses taken).
- Each week, review documentation to ensure that the contact list is complete.

Completion of treatment

- Provide letter of completion to clinician and patient.
- Assure that a final medical evaluation of the patient is completed.
 - CXR
 - Patient education
 - Sputum specimen, if possible
 - LFTs
 - Obtain copies and upload via WEDSS or fax to State TB Program
- Make a case summary in WEDSS Notes section.
- Notify State TB Program of completion of treatment.