April 2015

CCHCS Care Guide: Tuberculosis Diagnosis and Isolation

SUMMARY | **DECISION SUPPORT**

GOALS

- **Rapid identification of suspect TB patients**
- **Prompt masking and isolation of suspect TB patients**
- **Thorough and timely evaluation of suspect TB patients**
- **Prompt treatment of high suspect TB patients**
- **Respiratory protection for staff**
- **Ensure patient understanding of care plan**

ALERTS

- **Never start LTBI treatment in suspect TB cases until all respiratory culture results return as negative**
- **TST may be negative with active TB disease (in 25% of cases)**
- **TST and CXR may be negative in HIV patients with active TB disease (or CXR may be atypical)**
- **TB disease may coexist with other conditions (e.g., cancer, coccidioidomycosis, etc.)**

TB DIAGNOSIS AND INITIAL MANAGEMENT

DIAGNOSIS

ASSESS SUSPECT FOR TB DISEASE

- Symptoms: cough (usually > 2-3 weeks duration), fevers, night sweats, weight loss
- Physical findings: possible pulmonary findings
- History of TB infection or disease
- Epidemiologic factors: exposure history, residence in or travel to endemic area
- Radiographic abnormalities: usually infiltrate or cavitary lesion

CLASSIFY AS LOW OR HIGH TB SUSPECT

Low suspect: Clinical suspicion for TB disease that is not high enough to warrant TB treatment.
High suspect: High clinical suspicion for TB disease (patients placed on TB treatment prior to disease confirmation).

ASSESS RISK FOR MULTIDRUG RESISTANCE (MDR-TB)

INITIAL MANAGEMENT

ISOLATE (Airborne infection isolation room)
Immediately mask patients suspected of having TB disease based on clinical criteria and isolate in an airborne infection isolation room (AIIR) as soon as possible until they meet the criteria for return to the general population. (Provide specimen collection information to community hospitals [pages 9-10]).

REPORT CASE
Within one working day, report TB suspects to the California Correctional Health Care Services (CCHCS) Public Health Branch (PHB)* and to the Local Health Department (LHD) using the Correctional Facility Tuberculosis Patient Plan (CFTP) form (see page 2).

COLLECT SPECIMENS

- Smear and Culture – collect (according to the MTB respiratory specimen collection protocol, page 3) three respiratory specimens for Acid Fast Bacilli (AFB) smears **and** MTB cultures;
- NAAT– test one of the respiratory specimens by a nucleic acid amplification test (NAAT); and
- Human Immunodeficiency Virus (HIV) test (for HIV negative patients, if most recent HIV test was more than 6 months in the past).

RELEASE FROM ISOLATION AND FOLLOW-UP

RELEASE FROM AIRBORNE ISOLATION

LOW SUSPECT PATIENTS

- Most low suspect patients can be evaluated for TB in ≤ 2 days and released from isolation after fulfilling the low suspect release protocol (see page 5).
- The CCHCS PHB must approve release from AIIR of all low suspect TB patients.

HIGH SUSPECT PATIENTS

- Patients with high suspect TB are released from respiratory isolation depending on their tolerance of TB medications and their clinical, radiological, and laboratory findings (e.g., smear and NAAT results).
- The CCHCS PHB, along with the LHD TB Controller, must approve all releases from AIIR of patients on TB medications.

CULTURE FOLLOW-UP

- Culture results may take up to 6 weeks to return.
- Monitor for return of culture results as TB disease may be present even if smear and NAAT results were negative.
- **Ensure all TB culture results are reported back as negative before starting treatment for latent TB infection (LTBI).**

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*PH Branch Warmline: (916) 691-9901, on-call physician available 24/7 every day of year

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INITIAL EVALUATION

PRIMARY CARE PROVIDER ASSESSMENT

1. Evaluate for TB signs and symptoms—cough of two or more weeks duration and systemic symptoms (e.g. night sweats, fever, chills, unexplained weight loss, fatigue, anorexia);
2. Obtain medical history, with special attention to risk factors for TB disease;
   - history of TB exposure, prior tuberculin skin tests (TSTs), prior TB infection or disease;
   - risk factors for drug resistant TB (history of incomplete treatment or immigration from an MDR TB endemic region);
   - medical conditions that increase the risk for developing TB disease if infected (HIV or other immunosuppressive conditions; status post organ transplant; recent TB infection; fibrotic changes on chest x-ray consistent with old/healed TB; diabetes mellitus; silicosis; chronic renal failure; leukemia/lymphoma; carcinoma of the head, neck, or lung; underweight; gastrectomy/jejunoilial bypass);
   - immunosuppressive therapy (equivalent to ≥15 mg prednisone/day for one month or more);
   - antiTNF alpha therapy.
3. Perform physical examination.
4. Test for TB infection [TST].
5. Obtain chest x-ray.
   - The chest x-ray must be completed **within 72 hours** of suspicion of TB disease and must include posterior-anterior (PA) and lateral views.
   - The chest x-ray report(s) must be forwarded to the institution's Chief Medical Executive (CME)/designee for review and recommendations with a “wet reading” (immediate impression) by the ordering physician.
6. Obtain HIV test if the patient is HIV negative and the last HIV test was more than 6 months prior to this TB evaluation.

RESPIRATORY PROTECTION AND ISOLATION

Mask TB suspects: Immediately place surgical mask on TB suspect. The patient must remain masked until housed in an airborne infection isolation room (AIIR). While under respiratory precautions, patients shall wear a surgical mask whenever outside of the AIIR.

Mask staff: Employees must wear an N95 respirator or other approved respirator (e.g., a powered air purifying respirator [PAPR]) when entering an AIIR or interacting with the suspect TB patient.

- Employees require fit testing prior to use of N95 respirators.
- When transferring a TB suspect patient to another location for respiratory isolation staff must wear fit-tested N95s or other approved respirators (and patient must wear a surgical mask, see above).

Isolate: If a patient requires an AIIR and no AIIR is available at the institution, healthcare staff will make immediate arrangements for transfer of the patient to another institution or to a contract community hospital where an AIIR is available.

CASE REPORTING—Initial

The institution’s public health nurse (PHN) will report the TB suspect within one working day using the Correctional Facility Tuberculosis Patient Plan (CFTP) form* to the:

- California Correctional Health Care Services (CCHCS) Public Health Branch (PHB) and
- Local Health Department (LHD).

The CFTP must be updated and resubmitted at certain junctures in the patient course, as described in this Care Guide’s section Case Reporting—Follow-up (page 9).

*The Correctional Facility Tuberculosis Patient Plan (CFTP) form is available on Lifeline in the medical forms section and in the Care Guide Section of Clinical Programs/Resources within Medical Services in the Tuberculosis folder.

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INITIAL EVALUATION

TB RESPIRATORY SPECIMEN COLLECTION PROTOCOL

1. Collect respiratory specimens for all patients in whom pulmonary, pleural, or laryngeal TB is *suspected*, as well as in those in whom extrapulmonary TB has been *diagnosed*.
2. Specimens must be collected with the patient isolated in an AIIR.
3. Complete initial laboratory evaluation of respiratory specimens for both low and high suspect TB patients requires **all** of the following:
   - Collection of three respiratory specimens for AFB smear **and culture** according to this protocol:
     - Specimens must be collected **at least 8 hours apart**.
       (While it is necessary to ensure 8 hour intervals between specimens, it is not necessary to collect at longer intervals—24 hour collection intervals are **NOT** advisable and lead to unnecessarily long AIIR stays).
     - One of the specimens must be collected:
       - in the early morning (preferred)
       - by sputum induction (second choice)
       - by bronchoalveolar lavage (BAL) (last choice).
   - Nucleic acid amplification testing (NAAT) of one of the respiratory specimens:
     - The NAAT should be performed on an AFB positive smear, if available.
     - One of the specimens must be tested by NAAT even if all smears are AFB negative. (When all AFB smears are negative, any of the specimens may be chosen for NAAT testing, however, it is preferable to test the specimen that was collected in the early morning, by sputum induction, or by BAL).

TABLE 1: RESPONSE TO RESPIRATORY SPECIMEN RESULTS

AFB Smear results from 3 specimens	NAAT results 1 specimen	Next step	Culture results	Next step
LOW SUSPECT				
Negative or ≥ 1 positive	Negative for MTB*	Consider release from AIIR if all conditions of the low suspect protocol are met	Negative for MTB	No further workup necessary
Negative or ≥ 1 positive	Negative for MTB*	Consider release from AIIR if all conditions of the low suspect protocol are met	Positive for MTB	Start patient on RIPE, consult TB controller and PHB
Negative	Positive for MTB	Start patient on RIPE, follow high suspect, smear negative protocol		
≥ 1 Positive	Positive for MTB	Start patient on RIPE, follow high suspect, smear positive protocol		
HIGH SUSPECT				
Negative	Negative for MTB*	Consider release from AIIR if all conditions of the high suspect, smear negative protocol are met	Negative for MTB	Seek consultation with TB controller and PHB for possible clinical confirmation of TB
Negative	Negative for MTB*	Consider release from AIIR if all conditions of the high suspect, smear negative protocol are met	Positive for MTB	Continue TB management using the TB treatment protocols
Negative	Positive for MTB	Consider release from AIIR if all conditions of the high suspect, smear negative protocol are met	Positive for MTB	Continue TB management using the TB treatment protocols
≥ 1 Positive	Negative for MTB*	Consult with TB controller	Negative or positive for MTB	Seek consultation with TB controller and PHB for management
≥ 1 Positive	Positive for MTB	Consider release from AIIR if all conditions of the high suspect protocol for smear positive patients are met	Positive for MTB	Continue TB management using the TB treatment protocols

* Even if positive for atypical mycobacteria

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RISK ASSESSMENT: Patient Infectiousness

The timing of release of a patient from respiratory isolation is based on the patient's infectiousness.

Infectiousness is correlated with the following factors:

- Location of TB disease in lungs, airways, or larynx;
- Presence of a cough;
- Presence of an AFB positive respiratory smear;
- Extent of infiltration on chest x-ray;
- Presence of a cavity on chest x-ray;
- Duration of appropriate treatment.

RISK ASSESSMENT: MDR-TB

1. Contact with an MDR-TB case
2. Evidence of treatment failure on current TB treatment
3. History of prior TB treatment which was not delivered by DOT
4. Immigration from, or recent travel to, an area with high incidence of MDR-TB
5. Other risk groups identified by state or local public health departments.

AIRBORNE PRECAUTIONS*

- **As soon as TB is suspected: Place the patient under *Airborne Precautions*.**
- **Every patient under *Airborne Precautions* should be transferred to an airborne infection isolation room (AIIR) as soon as possible.**
- **Any patient under airborne precautions outside an AIIR must wear a surgical mask covering the nose and mouth.**
- **While in an AIIR the patient need not wear a mask but the mask must be worn by the patient when leaving the AIIR for any reason, e.g.:**
  - **during transportation within a facility such as moving from a housing unit to a clinic,**
  - **during transportation to another institution or a contract hospital.**
- **If the surgical mask becomes moist or torn it must be changed.**
- **All staff in contact with a patient under Airborne Precautions (guarding, transporting, or caring for patient) *must* wear an N95 or powered air purifying respirator (PAPR), <u>regardless of whether or not the patient is in an AIIR, except when a respirator hinders safe operation of a vehicle</u>.**

**Airborne Precautions (IMSP&P Vol. 10 Chapter 9.2, Airborne Precautions)*

TRANSPORTATION PRECAUTIONS*

- **When a patient under *Airborne Precautions* needs to be transported to another location inside the institution (e.g., from a housing unit to the medical clinic), the receiving area *must* be notified prior to the patient's arrival that airborne precautions are required.**
- **A patient under Airborne Precautions poses a high risk of transmitting TB Infection and cannot be put on regular CDC transportation, including buses and transportation used to move inmates from CDC facilities to CCFs. These inmates shall be transferred by special transportation using respiratory precautions.**
- **Medical staff will alert the receiving institution or hospital of the transfer of a patient needing airborne precautions.**

**Airborne Precautions (IMSP&P Vol. 10 Chapter 9.2, Airborne Precautions)*

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PROTOCOL FOR RELEASE FROM RESPIRATORY ISOLATION

LOW SUSPECT TB

A low suspect TB patient may be released from respiratory isolation if **ALL** of the following conditions are met:

1. The patient does not have a cough;
2. The chest x-ray is negative for cavitary disease;
3. The patient does not have another infectious disease that requires respiratory isolation;
4. The patient is not HIV infected (with a negative HIV test documented within the past 6 months).
5. There is consultation and concurrence with the Public Health Branch (PHB);
6. There have been three respiratory specimens collected by the TB respiratory specimen collection protocol (page 3).
7. A nucleic acid amplification test (NAAT) has been performed and is negative for *Mycobacterium tuberculosis* (MTB) (the NAAT may be positive for atypical mycobacterium which is not relevant to this work-up);
8. All respiratory specimens were smear negative for AFB, or
   Any smear positive respiratory specimen was NAAT negative for MTB;
9. All three sputum specimens collected by the TB respiratory specimen collection protocol have been sent for culture.

Note: Low-suspect cases in patients without all these criteria **MUST** have a review by a TB Controller and a written recommendation for treatment from the TB Controller.

HIGH SUSPECT TB

HIGH SUSPECT TB PATIENTS W/O RISK FOR MDR-TB SMEAR NEGATIVE

High suspect TB patients:
- with no risk factors for MDR-TB;
- with all required respiratory specimens collected per protocol and sent for testing;
- whose initial respiratory specimens were AFB smear negative (may be either NAAT positive or NAAT negative).

May be released from respiratory isolation under the following circumstances:
- The patient has taken and tolerated 5 days rifampin, isoniaizid, pyrazinamide, and ethambutal (RIPE) delivered by direct observed therapy (DOT);
- There is consultation and concurrence with the PHB and TB Controller.

HIGH SUSPECT TB PATIENTS W/O RISK FOR MDR-TB SMEAR POSITIVE AND NAAT NEGATIVE

High suspect TB patients:
- with no risk factors for MDR-TB;
- with all required respiratory specimens collected per protocol and sent for testing;
- whose initial respiratory specimens were smear positive and NAAT negative (for MTB).

Further management after consult with TB controller, and PHB may include:
- Release from AIIR with no further Rx.
- Release from AIIR after 5 days of treatment.
- Release from AIIR after 14 days of treatment.

HIGH SUSPECT TB PATIENTS W/O RISK FOR MDR-TB SMEAR POSITIVE AND NAAT POSITIVE

High suspect TB patients:
- with no risk factors for MDR-TB;
- with all required respiratory specimens collected per protocol and sent for testing;
- whose initial respiratory specimens were AFB smear positive;
- whose NAAT was positive for MTB (or NAAT result is not known).

May be released from respiratory isolation under the following circumstances:
- Three subsequent specimens collected by the TB respiratory specimen collection protocol were AFB smear negative;
- The patient has taken and tolerated 14 days RIPE delivered by DOT;
- The patient has clinically improved;
- There is consultation and concurrence with the PHB;
- The TB controller (LHD) agrees to the release.

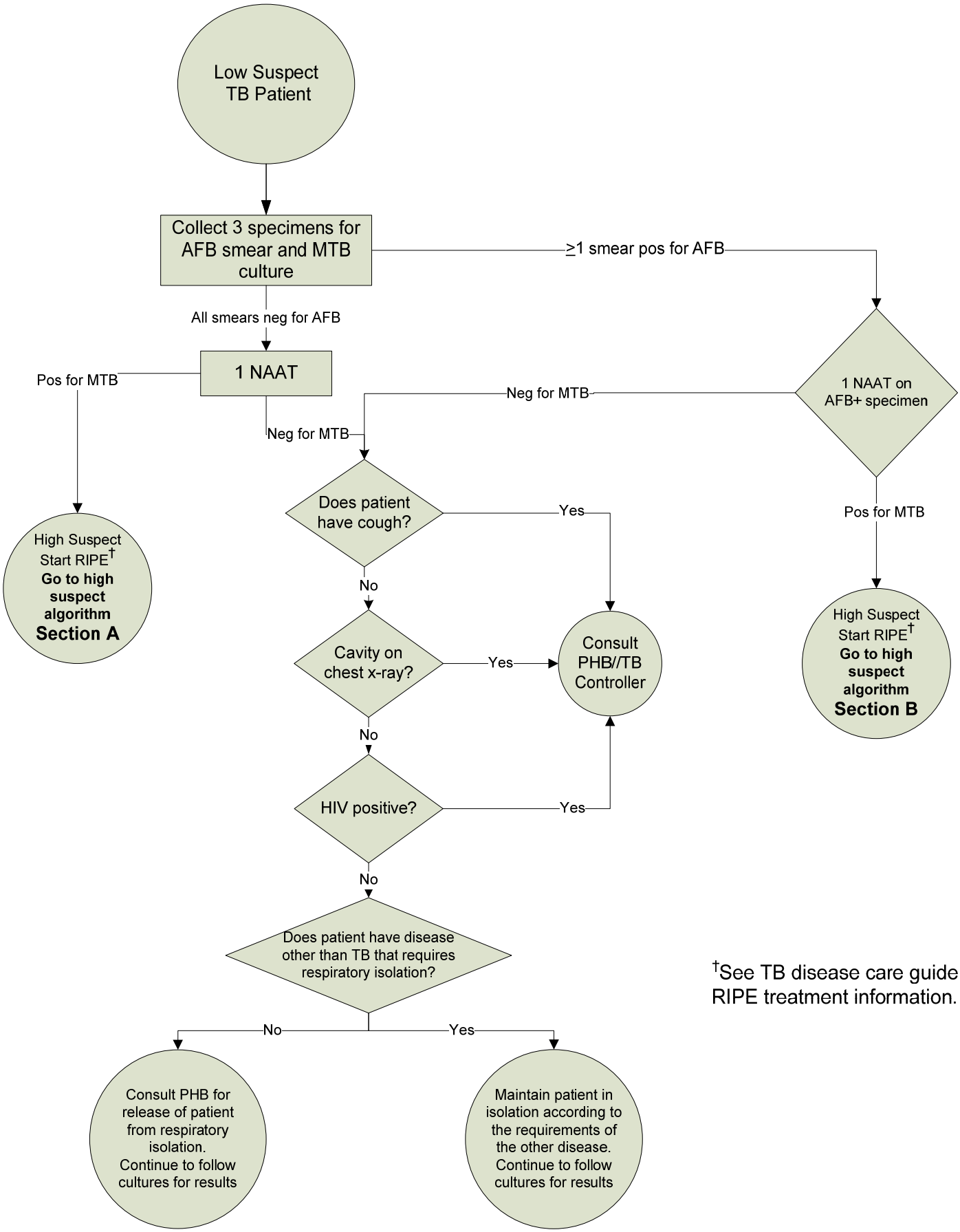
HIGH SUSPECT TB PATIENTS WITH RISK FACTORS FOR MDR-TB

High suspect TB patients with risk factors for MDR-TB must obtain a direct genetic test for rifampin resistance.
- If the test results are negative, the patient will be released according to the protocols for high suspect TB patients with no risk factors for MDR-TB.
- If the results are positive, the patient will be released according to the MDR-TB release criteria below.

HIGH SUSPECT TB PATIENTS WITH MDR-TB

Patients with MDR-TB may be released from respiratory isolation only after thorough review by the MDR-TB treatment team led by the California Department of Public Health TB Control Branch.

LOW SUSPECT TB PATIENT EVALUATION ALGORITHM



†See TB disease care guide for RIPE treatment information.

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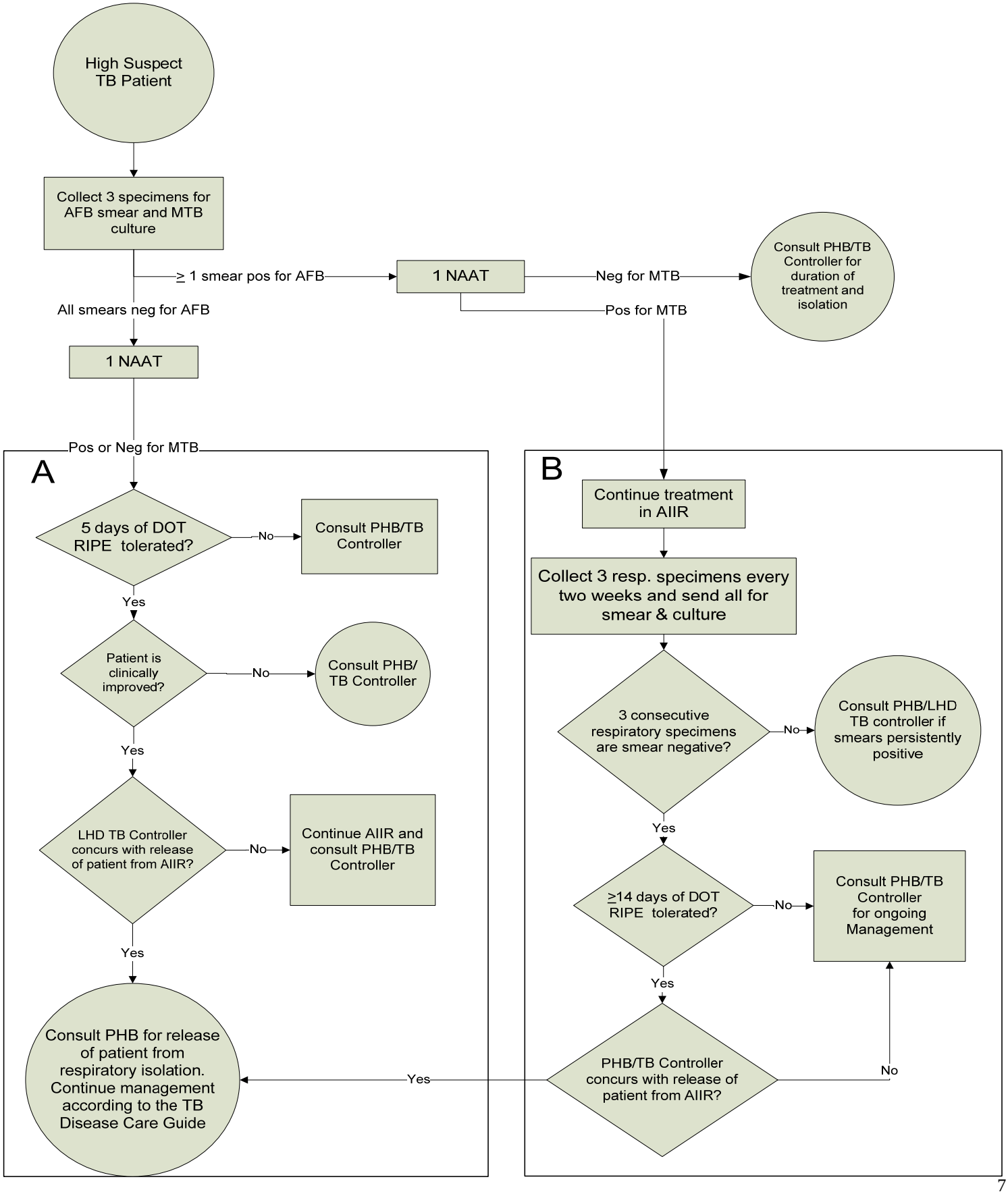
HIGH SUSPECT TB PATIENT EVALUATION ALGORITHM



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COMMUNICATION AND REPORTING

TB PATIENT CARE TEAM

Team members shall include, at a minimum:

- Chief Medical Executive (CME)/designee and/or Chief Physician and Surgeon (CP&S)/designee of the institution where the patient is located
- Chief Nurse Executive/designee of the institution where the patient is located
- Providers and nursing staff with primary medical responsibility for the patient
- The public health nurse (PHN) of the institution where the patient is located
- The utilization management (UM) nurse of the institution where the patient is located
- The CCHCS public health branch
- The Associate Warden Health Care Services/designee
- Pharmacist in Charge/designee

Communication must be timely and appropriately directed to ensure all caregivers are aware of TB suspect and TB disease patients to ensure appropriate follow-up and continuation of treatment without interruption.

1. INFORM when new TB suspect identified:
   - When a medical provider identifies a TB suspect by writing an order to "r/o TB" or a TB smear and culture are ordered on respiratory specimens (even when ordered in a low suspect patient) for a patient, the clinic or TTA provider or nurse will:
     -Immediately notify the institution's PHN by telephone of the TB suspect
     -Indicated exposure precautions will immediately be implemented (surgical mask on patient, and appropriate respiratory protection of exposed staff).
   - If the TB suspect or TB disease determination is made outside the institution (e.g. community hospital), the institution UM nurse will immediately notify the institution PHN of the case.
   - The PHN will monitor the Daily Inpatient Census (UM nurse report) each day to identify community hospital patients with a diagnosis of "r/o TB".
   - The PHN will contact Central Control/Watch Office (institution custody staff) to learn if any inmates were sent out to the community hospital using respiratory precautions.
2. IMPLEMENT EXPOSURE PRECAUTIONS:
   Affected institution staff (medical and custody) will be informed of the indicated exposure precautions following the policy in IMP&P Vol. 10, Chapter 9.1 and 9.2, Communicating Precautions from Healthcare Staff to Custody Staff (see page 4).
3. COMMUNICATE with community hospitals about TB suspects
   - The UM nurse will inform the medical team members (including the CME/designee and the PHN) of the patient's status while in the community hospital.
   - The CME or designee shall discuss with the hospital physician the CCHCS requirements for TB respiratory specimen collection (use Care Guide pages 9-10) and attempt to ensure that the hospital team adheres to the CCHCS protocols (including collection of sputum specimens at least 8 hours apart [but NOT 24 hours apart]) and ensure that return of patient to institution conforms with TB control protocols).
4. DOCUMENT in health record for patients on treatment for TB disease:
   - Ensure that the patient is identified as high risk on the medical classification chrono (MCC) for duration of the course of treatment.
   - Record medical hold on the MCC (to permit retention at a basic institution for completion of TB therapy when medically appropriate).

Patient Movement Issues:

- If the patient is transferred to another institution in order to be placed in an AIIR, the CME/designee of the institution where the patient is being isolated becomes the responsible CME.
- The California Correctional Health Care Services (CCHCS) Public Health Branch (PHB) must agree to the release from respiratory isolation of all low and high suspect TB patients.
- The TB controller(s) of the LHD where the patient is isolated must agree to the release from respiratory isolation of all high suspect TB patients.

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CALIFORNIA CORRECTIONAL HEALTH CARE SERVICES

TO COMMUNITY HOSPITAL STAFF

A TB suspect inmate-patient has been transferred to your facility from the California Correctional Health Care Services (CCHCS) of the California Department of Corrections and Rehabilitation (CDCR) for respiratory isolation and evaluation.

This handout will assist you in evaluation of our patient by outlining the very specific requirements of the CCHCS TB suspect evaluation protocol arising from our high risk setting for TB transmission.

Please see below the CCHCS requirements for:

- **Respiratory specimen collection and other evaluation**
- **Return to a CDCR institution**

CCHCS TB RESPIRATORY SPECIMEN COLLECTION PROTOCOL

1. Collect respiratory specimens for all patients in whom pulmonary, pleural, or laryngeal TB is suspected, as well as in those in whom extrapulmonary TB has been diagnosed.
2. Specimen collection must be performed with the patient isolated in an AIIR.
3. **All** of the following are required for a complete initial laboratory evaluation of respiratory specimens for both low and high suspect TB patients:
   - **Collection of <u>three</u> respiratory specimens** according to this protocol:
     - **AFB smear on all three specimens**
     - **Culture of all three specimens**
     - Specimens must be collected **at least 8 hours apart**.
       (While it is necessary to ensure 8 hour intervals between specimens, it is not necessary collect at longer intervals—24 hour collection intervals are **NOT** advisable and lead to unnecessarily long AIIR stays).
     - One of the specimens must be collected:
       - in the early morning (preferred), or
       - by sputum induction (second choice), or
       - by bronchoalveolar lavage (BAL) (last choice).
   - Performance of nucleic acid amplification testing (NAAT) on **at least one** of the respiratory specimens
     - The NAAT test should be performed on an AFB positive smear, if available.
     - One of the specimens must be tested by NAAT even if all smears are AFB negative.
     - If all AFB smears are negative, any of the specimens may be chosen for NAAT testing, however, it is preferable to test the specimen that was collected in the early morning, by sputum induction, or by BAL.

OTHER EVALUATION: If HIV status is unknown, an HIV test MUST also be performed.

Please contact our institution if you have questions: _____
institution

Medical Department Telephone # _____
24 hour contact number

SEE NEXT PAGE FOR INSTRUCTIONS ON RELEASE FROM HOSPITAL AND RETURN TO STATE CORRECTIONAL FACILITY

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CALIFORNIA CORRECTIONAL HEALTH CARE SERVICES

TO COMMUNITY HOSPITAL STAFF (PAGE 2)

INSTRUCTIONS FOR RELEASE FROM HOSPITAL AND RETURN TO STATE CORRECTIONAL FACILITY

LOW SUSPECT TB CASES - patients worked up for TB but NOT placed on rifampin, isoniazid, pyrazinamide, ethambutol (RIPE) treatment

Work-up must be reviewed by the accepting institution's Chief Medical Executive or designee.

- Patients not on TB treatment are usually accepted for return to the institution **when** all the following criteria have been met:
  1) HIV negative test in past 6 months,
  2) All respiratory specimens collected correctly (including timing and types of specimen) and sent for smear **and** culture,
  3) All smears negative for AFB AND all NAATs negative for MTB (or AFB smear positive and NAAT negative for MTB),
  4) The patient has NO cough,
  5) The CXR does NOT show a cavitary lesion (note: a CT scan may have a cavitary lesion).
- Low suspect TB cases who do not meet the 5 criteria above must be reviewed by the local TB controller and the CME (or designee) of the accepting institution before release from the community hospital.
  - low suspect patients who are smear positive for AFB but NAAT negative for MTB can usually be returned to the institution if the other criteria for return of a low suspect patient are met (see above). Occasionally these patients will need review by the local TB controller prior to returning to the institution.

HIGH SUSPECT TB CASES - patients placed on RIPE treatment

- High suspect patients **with THREE smears negative for AFB** (even if the NAAT is positive for MTB) may return to the institution:
  - After the patient has taken and tolerated FIVE days of RIPE, AND
  - The local TB controller has approved of a written treatment plan for the patient (required by law), AND
  - The CME (or designee) has approved the transfer.
- High suspect TB cases **with any AFB smear positive for AFB** (unless the AFB smear is NAAT negative for MTB) may be released from AIIR:
  - After the patient has taken and tolerated 14 days of RIPE, AND
  - Subsequent smear results are AFB negative, AND
  - Patient is clinically improved, AND
  - The local TB controller has approved of a written plan for the patient (required by law), AND
  - The CME (or designee) has approved the transfer.

Note: High suspect TB patients generally remain on RIPE until their cultures return when a decision is made about continuing/not continuing the course of treatment (e.g., if the cultures are negative and there is no clinical indication that the patient has TB disease). Some patients may have RIPE discontinued prior to culture return IF the local TB controller has approved of that plan.

COMMUNICATION AND REPORTING

CASE REPORTING—Follow-up

The Correctional Facility Tuberculosis Patient Plan (CFTP) must be updated and resubmitted by the PHN:

- **Immediately to the receiving institution** when the patient is transferred to another institution
- **To the CCHCS PHB** in each of the following circumstances:
  - Patient is started on TB medications;
  - AFB smears and/or NAAT results become available;
  - HIV test result becomes available;
  - Culture results become available;
  - *Mycobacterium tuberculosis* (MTB) drug sensitivity results become available;
  - TB medication regimen is changed, discontinued, or completed;
  - Patient is transferred to another institution or to a contract hospital;
  - Patient paroles or is discharged.
- **To the LHD** of the jurisdiction where the patient was incarcerated and the LHD of the receiving jurisdiction when a patient is paroled or discharged.

REFERENCES

1. **CDPH/CTCA Joint Guidelines, Guidelines for the Assessment of Tuberculosis Patient Infectiousness and Placement into High and Lower Risk Settings, 2009.**
2. **CDHS/CTCA Joint Guidelines, Guidelines for the Treatment of Active Tuberculosis Disease, 2003.**
3. **Federal Bureau of Prisons, Management of Tuberculosis, Clinical Practice Guidelines, 2010.**
4. **Centers for Disease Control and Prevention, Core Curriculum on Tuberculosis: What the Clinician Should Know, Sixth Edition, 2013.**
5. **Current data on the risk of MDR-TB in the US, TB Cases by Country of Origin, available from CDC, Division of TB Elimination (DTBE). www.cdc.gov/tb**
6. **Current data on epidemiologic groups at increased risk for MDR-TB available from CDPH, TBCB (510-620-3000). www.cdph.ca.gov/programs/tb**