TUBERCULOSIS CONTACT INVESTIGATION

OBJECTIVES
Upon completion of this session, participants will be able to:

1. Describe the criteria used and method for determining an infectious period
2. Describe the characteristics of the TB patient, contact, and exposure that should be assessed in order to prioritize contacts
3. Name and apply the essential steps and timelines in a contact investigation (CI)
4. List three criteria used to determine when to expand the scope of a CI

INDEX OF MATERIALS

<table>
<thead>
<tr>
<th>INDEX OF MATERIALS</th>
<th>PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tuberculosis contact investigation – slide outline</td>
<td>1-22</td>
</tr>
<tr>
<td>Presented by: Lynette Leviste, RN, PHN</td>
<td></td>
</tr>
</tbody>
</table>

SUPPLEMENTAL MATERIALS

1. County of Orange Health Care Agency - Contact Evaluation Policies and Procedures
2. County of Orange Health Care Agency - Sample Initial Letter
3. County of Orange Health Care Agency - Sample Reminder Letter
4. County of Orange Health Care Agency - Sample Repeat Letter
5. County of Orange Health Care Agency - Sample Dismissal Letter
REFERENCES


ADDITIONAL RESOURCES

- Firland Foundation. Home interview during a contact investigation. 2010. Available online at: http://www.son.washington.edu/portals/idc/cases/contact/v6/
Learning Objectives

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Background


- Provide a standard framework for assembling information related to exposure to TB
- Describe how to use findings to:
  - Assess for evidence of transmission
  - Inform decisions on whether to expand the investigation
Why do we do TB contact investigations?

Remember!! Every TB Case Began as a TB Contact

Contact investigation helps to:
- Identify additional TB cases
- Identify persons with latent TB infection
- Prevent the further spread of TB
- Save someone’s life

An Essential Prevention Activity

Active TB Disease (1%)
LTBI (20-30%)
UNINFECTED
All Contacts
Contact Investigation (CI) Performance Targets and Outcomes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts are identified for 100% of sputum AFB smear-positive cases</td>
<td>94% (range 93-95%)</td>
<td>93% (range 92-94%)</td>
</tr>
<tr>
<td>93% of contacts are evaluated</td>
<td>81% (range 78-83%)</td>
<td>83% (range 80-87%)</td>
</tr>
<tr>
<td>88% of contacts to sputum AFB sm+ cases with newly diagnosed LTBI will start tx.</td>
<td>71% (range 68-74%)</td>
<td>63% (range 58-67%)</td>
</tr>
<tr>
<td>79% of contacts who start treatment will complete</td>
<td>68% (range 64-68%)</td>
<td>62% (range 59-65%)</td>
</tr>
</tbody>
</table>

CI Performance Outcomes Trends

<table>
<thead>
<tr>
<th>CI Performance Targets and Outcomes</th>
<th>CA Performance Outcomes</th>
<th>5-Year Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Identification</td>
<td>92% 94% 94% 93% 95%</td>
<td>Improving</td>
</tr>
<tr>
<td>Contact Evaluation</td>
<td>87% 87% 80% 81% 88%</td>
<td>No improvement</td>
</tr>
<tr>
<td>Contacts Starting LTBI</td>
<td>67% 63% 58% 63% 54%</td>
<td>Worsening</td>
</tr>
<tr>
<td>Contacts Completing LTBI</td>
<td>61% 59% 62% 63% 62%</td>
<td>No improvement</td>
</tr>
</tbody>
</table>

Data provided by Melissa Ehman, MPH, Epidemiologist, TB Control Branch

Definitions

- **Case** – a particular instance of disease (e.g., TB). A case is detected, documented, and reported
- **Index case** – the first patient that comes to attention as a confirmed or suspected case of tuberculosis
- **Source case** – the case or person who was the original source of infection for secondary cases or contacts
**Definitions (2)**

- **Contact** – someone who has been exposed to *M. tuberculosis* infection by sharing air space with a person with infectious TB
- **Converter** – a change in the result of a test for *M. tuberculosis* infection from uninfected to infected
- **Window period** – the interval between infection and detectable reactivity to the tuberculin skin test (TST)

**Definitions (3)**

- **Acid-fast Bacilli (AFB)** – microorganisms that retain specific stains even after being decolorized with acid or alcohol solutions
- **NAAT – Nucleic Acid Amplification Test (NAAT)** – a rapid test that confirms the presence of *M. tuberculosis* complex
  - GeneXpert
  - MTD

**Definitions (4)**

- **Pyrosequencing (PSQ)** – a rapid screening technique conducted at MDL for molecular detection of *Mtb* and mutations associated with resistance to isoniazid, rifampin, quinolones, and injectable agents
- **Molecular Detection of Drug Resistance (MDDR)** – service provided by CDC that performs DNA sequencing to detect mutations associated with INH, RIF, EMB, PZA, quinolones, and injectable agents
### TB Contact Investigation Steps

1. Collect and Evaluate Index Case Information: Decide Whether to Initiate a CI
2. Interview the Index Case
3. Determine the Infectious Period
4. Examine Sites of Transmission
5. Prioritize Contacts
6. Locate and Evaluate Contacts
7. Treat and Follow up Contacts
8. Evaluate Contact Investigation Activities

### Step 1

**Collect and Evaluate Index Case Information: Decide Whether to Initiate a CI**

### What information is collected?

- Background information regarding the patient and circumstances of the illness
  - Demographics, identifiers, locating information
  - Site of disease, TB regimen, and start date(s)
  - History of previous TB exposure
  - History of previous TB disease and treatment
  - TB symptoms and the onset date(s)
  - Results of diagnostic tests
  - Concurrent medical conditions, diagnoses, or important social factors
### Assessing TB Case Characteristics

<table>
<thead>
<tr>
<th>TB CASE FACTORS</th>
<th>MORE LIKELY</th>
<th>LESS LIKELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB disease location</td>
<td>Laryngeal / pulmonary or pleural</td>
<td>Extrapulmonary alone</td>
</tr>
<tr>
<td>Smear status</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Chest x-ray</td>
<td>Cavitary</td>
<td>Non-cavitary</td>
</tr>
<tr>
<td>Symptoms/behaviors</td>
<td>Coughing, singing, sneezing, sociability</td>
<td>Not coughing, singing, sneezing</td>
</tr>
<tr>
<td>Age</td>
<td>Adult or adolescent</td>
<td>Child &lt;10 years of age</td>
</tr>
<tr>
<td>Anti-TB drugs</td>
<td>None or ineffective Rx</td>
<td>Effective treatment for 2 weeks or more</td>
</tr>
</tbody>
</table>

### Decision to Initiate a TB Contact Investigation

- Acid-fast bacilli (AFB) smear-positive
- Positive nucleic acid assay (NAA)
- Abnormal chest radiograph

**Handout 1.1**

- Index Case TB Classification
  - TB 3: Culture + Pulmonary, laryngeal or pleural TB
  - TB 5: High Pulmonary, laryngeal or pleural TB and TB treatment initiated
  - TB 5: Low Pulmonary, laryngeal or pleural TB and TB treatment not initiated
  - TB 3 or 5: EPTB No pulmonary laryngeal or pleural involvement

- Always
- C+
- C-
- Not indicated

*Acid-fast bacilli *Nucleic acid assay
Approved indication for NAA *Chest radiograph
Exercise #1:

Deciding Whether to Initiate a CI

Step 2

Interview the Index Case

TB Interview Goals

- Patient understands transmission and treatment of TB
- Problems/concerns identified and addressed
- Infectious period (IP) determined
- Areas of transmission identified
- Contacts identified, prioritized, and locating information obtained
- Contact investigation priorities established
Interview Timeframes

Conduct a minimum of 2 interviews
- 1st interview
  - ≤ 1 business day of reporting for infectious patients
  - ≤ 3 business days for others
- 2nd interview
  - 1–2 weeks later
- May need additional interviews

Use a trained interpreter when indicated

Interpreters and TB Interviews

- Ensure the interpreter is trained in medical interpretation
- Meet with the interpreter before the patient interview to instruct on procedure
- Place the interpreter beside and slightly behind patient so patient and interviewer face each other (or triangle)
- Avoid using a family member as an interpreter

Step 3

Determine the Infectious Period
What is the Infectious Period?

Time during which a TB case is likely to transmit M. tuberculosis

IMPORTANCE OF ESTIMATING INFECTIOUS PERIOD

- Focuses the investigation’s time period
- Identifies contacts with exposure while the case is likely infectious
- Intensified if the contact investigation is in a congregate setting
- Identifies contacts needing repeat TST or IGRA (a 2nd TST or IGRA 8-10 weeks after date of last exposure)

Estimating Onset of Infectious Period

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>TB symptoms</th>
<th>AFB sputum smear-positive</th>
<th>Cavitory chest radiograph</th>
<th>Recommended minimum beginning of likely period of infectiousness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
<td>3 months before symptom onset or 1st positive findings consistent with TB disease, whichever is longer</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>3 months before symptom onset or 1st positive findings consistent with TB disease, whichever is longer</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>3 months before 1st positive finding consistent with TB disease</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
<td>4 weeks before date of suspected diagnosis</td>
</tr>
</tbody>
</table>

Closing the Infectious Period

- The infectious period (IP) is closed when further transmission of tuberculosis is unlikely
- **General criteria** for closing IP include:
  - Effective treatment for ≥ 2 weeks
  - Diminished symptoms
  - Mycobacteriologic response

Who is considered a “contact”?

- Must have shared same airspace as the index case during the infectious period
- Important to determine for each contact (or group of contacts):
  - When did exposure occur (in relation to index case diagnosis)?
  - How frequent and what duration was the exposure?
  - What was the date of last exposure?

Exercise #2:

Determining the Infectious Period
Step 4

Examine Sites of Transmission
(Field Investigation)

- Visit the sites where the patient spent time during infectious period
- Components include:
  - Interview, arrange for evaluation and provide TB information to contacts
  - Identify additional contacts
  - Assess physical conditions of the setting (room size, ventilation, airflow, etc.)

Assessing the Environment

<table>
<thead>
<tr>
<th>ENVIRONMENTAL FACTOR</th>
<th>LIKELIHOOD OF DISEASE TRANSMISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HIGH</td>
</tr>
<tr>
<td>Volume of shared air space</td>
<td>Low (small)</td>
</tr>
<tr>
<td>Adequacy of ventilation</td>
<td>Poor</td>
</tr>
<tr>
<td>Re-circularized air</td>
<td>Yes</td>
</tr>
<tr>
<td>Upper room ultraviolet light</td>
<td>Not present</td>
</tr>
</tbody>
</table>
Step 5

Prioritize Contacts

- Concentric circle approach is no longer the preferred CI method
- Current CDC guidelines utilize both:
  - Factors associated with transmission
  - Factors associated with increased risk for progression to TB disease (vulnerability)

Prioritize Contacts (2)

- CDC CI guidelines propose various algorithms to guide the priority classification process (e.g., handout 1.3)
- CDPH/CTCA revised CI guidelines include additional detail and criteria, particularly for classifying high and medium priority
Priority Classification

High-priority contacts are defined as those:

1. Most likely to be infected
2. Most likely to progress to disease if infected

Factors for Assigning Priority

Consider:
- Infectiousness of the TB case
- Circumstances of the exposure
  - Environment where transmission likely occurred
  - Frequency and duration of exposure
- Susceptibility/vulnerability factors of the contact:
  - Age, immune system status

Assessing Exposure Circumstances

- Determine when exposure occurred in relation to TB case’s infectious period including date of last contact (contact break date)
  - Close to date of diagnosis
  - Toward beginning of infectious period
- Determine how often (frequency) the TB case and contact shared air space and how long (duration) each exposure lasted (e.g., number of hours)
Susceptibility/Vulnerability Factors—Contact Risk Assessment

Is the contact at high risk for rapid progression to active TB?
- Under five years of age?
- HIV infected?
- Other immune suppressed?

Susceptibility/Vulnerability Factors – Contact Risk Assessment (2)

Children
- TB disease is more likely to occur once infected
- Incubation or latency period is briefer
- If <5 years of age, assign “high priority”

Susceptibility/Vulnerability Factors – Contact Risk Assessment (3)

Immune Status - HIV Infection

“...results in the progression of M. tuberculosis infection to TB disease more frequently and more rapidly than any other known factor”

CDC 2005
Susceptibility/Vulnerability Factors – Contact Risk Assessment (4)

Immune Status – Other

Immunosuppressive treatment that increases the likelihood of progression to TB disease after infection:

- Corticosteroids - >15 mg daily for >4 weeks
- Multiple cancer chemotherapy agents
- Anti-rejection drugs for organ transplants
- Tumor necrosis factor alpha antagonists

Susceptibility/Vulnerability Factors – Contact Risk Assessment (5)

Medical conditions that increase the likelihood of progression to TB disease after infection:

- Silicosis
- Diabetes mellitus
- Status post gastrectomy or jejunoileal bypass surgery

Exercise #3:

Examine Site(s) of Transmission and Prioritize Contacts
Step 6

Locate and Evaluate Contacts

Evaluation of Contacts

1. Medical and TB history
2. TST or IGRA; if initial test is negative, then repeat 8 - 10 weeks post contact
3. TB symptom evaluation

If symptomatic or positive TB test:
- Obtain chest X-ray and medical evaluation
- Consider sputum for AFB smear and culture if indicated

Important information for Evaluating the TB Contact

- Prior TB test history:
  - Employment or immigration health record
  - Primary care provider medical record
  - School / immunization health record
  - Cure-TB, TBNNet, other program record (e.g., foster care)
- Country of birth, year of arrival in US, and travel history
### Timeframes for Contact Evaluation

<table>
<thead>
<tr>
<th>Type of contact</th>
<th>Business days from listing of a contact to initial encounter</th>
<th>Business days from initial encounter to completion of medical evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High priority: index case AFB sputum smear positive and/or cavitary disease on chest radiograph</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>High priority: index case AFB sputum smear negative</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Medium priority: contact regardless of AFB sputum smear or culture result</td>
<td>14</td>
<td>19</td>
</tr>
</tbody>
</table>


### Step 7

**Treat and Follow Up Contacts**

### Treatment

- Treatment of latent TB infection (LTBI) is a key preventive strategy
  - At a minimum, it is recommended for persons with HIV infection and other immunosuppression (e.g., TNF-α agents)
- Treatment options
  - 9 mo. Isoniazid
  - Rifampin x 4 mo. adults, x 6 mo. Children
  - INH/rifapentine once weekly X 12 weeks
Treatment (2)

- “Window-period” prophylaxis – for contacts with a negative TST or IGRA during the period following last contact until the follow-up TST or IGRA
- MDR-TB exposure – seek expert consultation

Follow Up

- All contacts found to have LTBI and started on treatment should receive monthly visit by a nurse, physician, or other licensed practitioner
- MDR-TB exposure – seek expert consultation; follow up 2 years post exposure

Exercise #4:

Locate, Evaluate, Treat, and Follow Up Contacts
Step 8

Evaluate Contact Investigation Activities

When to Evaluate?

- When should you evaluate the contact investigation?

Answer:

- 

Why Evaluate?

- Will help in the management, care, and follow-up of the TB case and contacts
- Analysis of the investigation in progress will allow prioritization of program activities and resources
- Will allow you to report on how well your objectives are being met for program monitoring and planning
- Will help you determine whether or not the investigation should be expanded
Deciding Whether to Expand Testing

Evidence of Recent Transmission:
- High infection rate in high-priority contacts
- Infection in a child (< 5 y/o)
- TST converters
- Secondary case
- TB disease in any contact assigned a low priority

Exercise #5:

Decide Whether to Expand the Contact Investigation

When to Call It Quits

Before closing a contact to follow-up:
- Try different methods of contacting
- Visit or call at different times of the day
- Explore obstacles, offer incentives/enablers
- Consult your supervisor and other health team members
When to Call It Quits (2)

- Inform the contact of the risks of not completing their evaluation or treatment
- Document your efforts and strategies used and the contact’s response to each
- For certain high-risk contacts, more effort may be required

Special Settings...

- TB contact investigation steps also apply to CIs in special settings (schools, correctional facilities, healthcare facilities, etc.)
- Identify stakeholders early and keep them informed
- Certain CIs may require working closely with community partners
- Be prepared for possible media attention

Summary

- Contact investigations are an essential component to TB control and prevention
- Determining the infectious period helps to maintain focus on those most likely to have been infected
- Evaluating CI activities in real time will help maintain a focus on priorities
- Seek consultation for special situations (drug resistance, outbreak, large CI, etc.)

http://www.cdph.ca.gov/programs/Tb/Pages/ResourcesLHDsTBCB.aspx
Questions
PURPOSE

The purpose of this policy and procedure is to establish guidelines for the follow-up of contacts of persons with suspected or confirmed infectious pulmonary, laryngeal, or pleural tuberculosis (TB) who fail to complete the recommended TB evaluation.

POLICY

County of Orange Health Care Agency (HCA) Pulmonary Disease Services (PDS) Program shall meet or exceed local, state and federal objectives for completion of TB evaluation of contacts of persons with infectious pulmonary, laryngeal, or pleural TB.

SCOPE

I. Program Manager and Medical Director/TB Controller are responsible for implementation and ongoing review of this policy and procedure.

II. Supervising Public Health Nurses (SPHNs) and Office Supervisors are responsible for training staff and ensuring adherence to this policy and procedure.

III. PDS staff is responsible for adherence to this policy and procedure.

A. Office Support staff is responsible for clerical support of nursing staff including telephoning, copying and assistance with filing.

B. Public Health Nurse Case Managers (CM) are responsible for ensuring completion of evaluation of contacts of persons with suspected or confirmed infectious pulmonary, laryngeal, or pleural TB in their caseloads, and obtaining disposition on completion status of contacts referred to another health jurisdiction for TB evaluation. CM shall individually case manage contacts of multi-drug resistant (MDR)-TB cases.

C. Contact Room Nurses, in collaboration with CMs, are responsible for screening contacts for TB (including but not limited to, household contacts, family and friends) and follow-up of contacts who choose to be screened for TB in the private sector.

D. Staff Nurses/CMs, in collaboration with the Contact Investigation (CI)-SPHN, are responsible for screening congregate setting contacts for TB. CM is responsible for follow-up of congregate setting contacts who choose to be screened for TB in the private sector.
E. Quality Assurance and Data Management (QADM) staff is responsible for maintaining the contact investigation databases, statistical analysis of results, and aggregate reports for TB program evaluation (ARPE).

REFERENCES


California Department of Public Health (CDPH) TB Control Branch (TBCB) TB Patient Locating Services information can be accessed at:


State of California, Health & Safety Code, §121365 et. seq.

ATTACHMENTS

I. CI Initial Letter
II. CI Initial Reminder Letter
III. CI Repeat Letter
IV. CI Dismissal Letter

Electronic contact investigation letters are available for each clinic site in English, Spanish and Vietnamese on the County computer network PDS shared folder.

DEFINITIONS

Contact Evaluation: Consists of an interview and TB symptom review, initial tuberculin skin test (TST) placed and read, repeat TST placed and read, if indicated, chest radiograph, if indicated, and medical evaluation, if indicated. Status is incomplete if evaluation steps are missed.

Contact: A person who has shared air with a suspected or confirmed case of pulmonary, laryngeal or pleural TB during the case’s period of infectiousness.
High-priority contact: An individual exposed to a suspected or confirmed case of pulmonary, laryngeal, or pleural TB who is at high risk of recent infection and/or high risk of progression to TB disease or increased morbidity or mortality from TB disease.

A. Index case AFB sputum-smear positive and/or cavitary disease on chest radiograph:
   1. Contacts with prolonged, frequent or intense exposure to the index case during the period of infectiousness, including but not limited to:
      a. Persons who shared the same house
      b. Persons who carpooled with index case,
      c. Exposure during an aerosol-inducing medical procedure (e.g., sputum induction, or bronchoscopy),
      d. Spending time with index case for frequent or prolonged periods of time
      e. Sharing air in small, enclosed spaces with little natural ventilation or mechanical ventilation with re-circulated air
   2. < 5 years of age
   3. Infected with HIV, or with risk factors for HIV including injection drug use
   4. Other medical risk factors for TB:
      a. Immunosuppressive medical treatment including ≥ 15mg/day prednisone or its equivalent for one month or more, cancer chemotherapy agents, antirejection drugs for organ transplantation, tumor necrosis factor alpha antagonists (TNF-α)
      b. Medical conditions, including chronic kidney disease/end-stage renal disease, diabetes mellitus, silicosis, head and neck cancer, hematological and reticuloendothelial disease, intestinal by-pass or gastrectomy, chronic malabsorption syndrome, low body weight, chronic alcoholism
   5. Exposure in a congregate setting (contact priority assigned by TB Controller)
   6. Other as determined by the TB Controller

B. Index case sputum-smear negative, chest radiograph abnormal but not cavitary, NAAT positive, and/or culture positive for M. tuberculosis:
   1. < 5 years of age
   2. Infected with HIV, or with risk factors for HIV including injection drug use
   3. Other medical risk factors for TB (see A.4 above)
   4. Exposure during an aerosol-inducing medical procedure (e.g., sputum induction, or bronchoscopy)
   5. Other as determined by the TB Controller
**Highest risk high-priority contact:** Child-reactor <5 years of age, HIV/immunosuppressed, tuberculin skin test (TST) or Interferon Gamma Release Assay (IGRA) conversion from negative to positive associated with documented exposure; other as determined by the TB Controller.

**Medium-priority contact:** An individual exposed to a suspected or confirmed case of pulmonary, laryngeal, or pleural TB who, based on review of the characteristics of the index case, characteristics of the contact including age, immune status and existence of other medical conditions, and circumstances of the exposure including frequency, intensity and duration of environmental exposure, is considered to be at lower risk for transmission of TB, or progression to TB disease if infected, and/or is less likely to suffer increased morbidity or mortality from TB disease.

**Low priority contact:** Any contact to a suspected or confirmed case of pulmonary, laryngeal or pleural TB not classified as high or medium priority.

**Non-contact:** A person who has probably not shared air with the index case but who requested inclusion in the contact investigation, i.e. a worried person who was probably not exposed. Examples include, but are not limited to, a person who:
1. Shared an elevator ride with the index case.
2. Was exposed to the index case outdoors only.

**Congregate setting:** A setting in which the index case lived, worked, attended school, was incarcerated, received medical treatment or participated in social or recreational activities during his/her infectious period. Congregate settings where exposed individuals are at high risk of progression to TB disease if infected or increased morbidity or mortality from TB disease, are described as “high-risk congregate settings” (e.g., preschools, hemodialysis centers, outpatient cancer treatment centers, HIV/AIDS congregate living facilities).

**Index case:** The case or patient with suspected or confirmed infectious pulmonary, laryngeal or pleural TB who first comes to attention as an indication of a public health problem.
PROCEDURE

I. MONITORING FOR COMPLETION OF TB EVALUATION

A. A contact is **fully evaluated** if the indicated evaluation steps are completed, as part of a contact investigation, to the point where a final determination can be made about one of the three potential diagnostic outcomes: latent TB infection, TB disease, or neither (no evidence of TB infection or disease). If the evaluation is not completed, the diagnostic outcome is unknown.

B. Disposition is required on the completion status of TB evaluation of contacts of persons with suspected or confirmed pulmonary, laryngeal, or pleural TB, whether followed by Public Health or in the private sector, or in another health jurisdiction.

II. SYMPTOMATIC CONTACTS, TB EVALUATION INCOMPLETE

A. Contacts of persons with infectious pulmonary, laryngeal, or pleural TB who are symptomatic for TB and fail to complete the recommended TB evaluation may be subject to legal authority (Health & Safety Code 121365), if least restrictive alternatives are not effective in achieving adherence and members of the public are at risk for transmission of TB.

B. Contacts with a persistent cough or 2 or more symptoms of TB who fail to complete the recommended TB evaluation, regardless of priority status:
   1. Notify CM, SPHN, CI-SPHN and TB Controller as appropriate and follow TB Controller instructions

III. HIGH-PRIORITY CONTACTS, TB EVALUATION INCOMPLETE

A. Initial, repeat or one-time only TB screening not completed within **14 days** of first notification:
   1. Telephone patient
   2. If unable to reach patient after initial contact investigation letter (Attachment I) and telephone call, mail a reminder letter (Attachment II):
      a. Allow **14 days** to complete TB evaluation
      b. If patient does not respond within **14 days**, consult with CM, SPHN, CI-SPHN and/or TB Controller as appropriate
   3. Recommended follow-up might include (but is not limited to):
      a. Home Visit by CM, Social Worker Assistant (SWA) or Community Health Assistant (CHA)
      b. Field investigation by Senior Communicable Disease Investigator (Sr. CDI)
      c. Postal search
d. Department of Motor Vehicles (DMV) search (State Investigator)
e. CDPH-TBCB Patient Locating Service referral

B. Address verified as correct, patient located but fails to respond:
   1. Minors and highest risk high-priority contacts: consult with CM, SPHN, CI-SPHN (as appropriate) and TB Controller (further action might include referral to Child Abuse Registry)
   2. All other contacts: mail repeat letter (Attachment III) or dismissal letter (Attachment IV) as applicable
      a. Allow 14 days to complete TB evaluation
      b. If patient does not respond within 14 days, dismiss as “no response to contact attempts”

C. Patients not located after following III.A, steps 1-3 (above) who are not minors or highest risk high-priority contacts:
   1. Dismiss as “lost to follow-up”

IV. MEDIUM AND LOW PRIORITY CONTACTS, TB EVALUATION INCOMPLETE

A. Initial TB screening not completed within 14 days of first notification:
   1. If less than 8 weeks has elapsed since contact was broken, take no immediate action; send repeat letter when repeat contact testing is due (wait for repeat mailing)

B. Repeat TB screening not completed within 14 days of mailing repeat contact letters:
   1. Mail dismissal letter
      a. Allow 14 days to complete TB evaluation
      b. If patient does not respond within 14 days, dismiss as “no response to contact attempts”

C. One-time test only (minimum of 8 weeks elapsed since contact was broken) and TB evaluation not completed within 14 days of first notification:
   1. Mail dismissal letter
      a. Allow 14 days to complete TB evaluation
      b. If patient does not respond within 14 days, dismiss as “no response to contact attempts”

V. CONTACTS TO PERSONS WITH MDR-TB DISEASE

A. CM is responsible for completion of initial and follow-up medical evaluations and extended monitoring.

B. TB treating physician shall medically manage contacts of MDR-TB cases.
C. Consult with SPHN and/or TB Controller if patient fails to complete initial medical evaluation within 14 days of first notification.

D. Consult with SPHN and/or TB Controller, if patient fails to follow-up with extended monitoring.

VI. CONTACTS FOLLOWED IN THE PRIVATE SECTOR

A. Follow Sections II, III and IV above.

B. Coordinate TB evaluation with healthcare providers if exposure occurs in a healthcare setting, e.g., skilled nursing facility, hemodialysis center, or cancer treatment center.

VII. FOLLOW-UP OF NON-O.C. RESIDENTS

A. Obtain disposition on completion status of each individual referred to another health jurisdiction for contact evaluation.

VIII. DOCUMENTATION AND RECORD KEEPING

A. Maintain documentation in accordance with HCA/PDS Records Control Schedule 26D.

B. Use the Diagnostic and Treatment Summary form to collect data for QADM.

IX. QUALITY ASSURANCE AND DATA MANAGEMENT

A. Maintain the contact databases:
   1. Enter test and examination results of initial and repeat contact screening
   2. Provide reports upon request

B. Compile and submit ARPE to CDPH-TBCB

C. Provide preliminary, follow-up and final statistical analyses for each congregate setting contact investigation and other reports upon request.
SAMPLE INITIAL LETTER

Dear

Recently you may have been in contact with an individual who has active tuberculosis (TB) disease. To protect your health, The County of Orange Health Care Agency strongly recommends that you have a TB skin test and a chest x-ray as soon as possible. You can obtain your TB skin test, chest x-ray and any needed follow up free of charge at the County of Orange Health Care Agency Pulmonary Disease Services Clinic in Santa Ana (see map and hours below). To expedite your visit, appointments are available. Please bring this letter with you when you come to the clinic.

If you prefer, you may go to your family doctor for the TB skin test and chest x-ray. Please ask the doctor to fill out the lower part of this letter and mail or fax it to the County of Orange Health Care Agency no later than (enter date two weeks from date letter will go out).

If you choose to have your TB screening at the county clinic and would like to make an appointment, or have any questions, please call (case manager’s name) at (phone number) or the nurse on duty at (phone number).

NAME OF PATIENT: __________________________ Date of Birth: __________________________ Gender: Male/Female (circle)

Date Mantoux Tuberculin Skin Test (TST) or Interferon-γ Release Assay (IGRA) performed: __________________________

Date TST read __________________________ Results ______ mm induration (≥ 5mm is positive for TB contacts)

IGRA results: __________________________________________________________ (Please attach report)

Chest x-ray date: __________________________ (Please attach report)

Treatment of latent TB infection start date (if applicable): __________________________

Medication prescribed (if applicable): __________________________ Dose and frequency: __________________________

Physician’s name and phone number: __________________________________________________________

(enter index case number)
COUNTY OF ORANGE
HEALTH CARE AGENCY
PULMONARY DISEASE SERVICES

SAMPLE REMINDER LETTER

Dear

You were recently notified that you were exposed to a person with active tuberculosis (TB) disease, and to protect your health, a TB skin test was recommended. To date, the County of Orange Health Care Agency has received no record indicating you received a TB skin test. Because it can take 8-10 weeks after the exposure to develop a positive TB skin test, it is very important to have the TB skin test. If you were not tested when you were first notified about this exposure, it is not too late to be tested now. You can obtain your TB skin test and any needed follow up free of charge at the County of Orange Health Care Agency Pulmonary Disease Services Clinic in Santa Ana (see map and hours below). To expedite your visit, appointments are available. Please bring this letter with you when you come to the clinic.

If you prefer, you may go to your family doctor for the TB skin test. Please ask the doctor to fill out the lower part of this letter and mail or fax it to the County of Orange Health Care Agency no later than (enter date two weeks from date letter will go out).

If you choose to have your TB screening at the county clinic and would like to make an appointment, or have any questions, please call (case manager’s name) at (phone number) or the nurse on duty at (phone number).

TUBERCULOSIS (TB) CONTACT SCREENING RESULTS: PHYSICIAN REPORTING FORM

Please complete the following information regarding TB skin testing of this patient and mail or FAX the results to:
County of Orange Health Care Agency/Pulmonary Disease Services, 1725 W. 17th St., Room 101E, Santa Ana, CA 92706
ATTN: (case manager’s name) TELEPHONE: FAX:

Name of Patient: __________________________ Date of Birth: ______________ Gender: Male/Female (circle)

Date Mantoux Tuberculin Skin Test (TST) or Interferon-γ Release Assay (IGRA) performed: ________________________________

Date TST read ___________________________ Results ______ mm induration (≥ 5mm is positive for TB contacts)

IGRA results: ___________________________ (Please attach report)

Chest x-ray date: ___________________________ (Please attach report)

Treatment of latent TB infection start date (if applicable): ___________________________

Medication prescribed (if applicable): ___________________________ Dose and frequency: ___________________________

Physician’s name and phone number: ___________________________

(enter index case number)
Dear

You were recently tested for tuberculosis (TB) because you were exposed to a person with active TB disease. Your TB skin test was negative at that time. However, because it can take 8–10 weeks after exposure to develop a positive TB skin test, it is very important to repeat the TB skin test now. You can obtain your repeat TB skin test and any needed follow up free of charge at the County of Orange Health Care Agency Pulmonary Disease Services Clinic in Santa Ana (see map and hours below). To expedite your visit, appointments are available. Please bring this letter with you when you come to the clinic.

If you prefer, you may go to your family doctor for the TB skin test. Please ask the doctor to fill out the lower part of this letter and mail or fax it to the County of Orange Health Care Agency no later than (enter date two weeks from date letter will go out).

If you choose to have your TB screening at the county clinic and would like to make an appointment, or have any questions, please call (case manager’s name) at (phone number) or the nurse on duty at (phone number).

TUBERCULOSIS (TB) CONTACT SCREENING RESULTS: PHYSICIAN REPORTING FORM

Please complete the following information regarding TB skin testing of this patient and mail or FAX the results to:
County of Orange Health Care Agency/Pulmonary Disease Services, 1725 W. 17th Street, Room 101E, Santa Ana, CA 92706
ATTN: (case manager’s name) TELEPHONE: (phone number) FAX:

Name of Patient: __________________ Date of Birth: ______________ Gender: Male/Female (circle)

Date Mantoux Tuberculin Skin Test (TST) or Interferon-γ Release Assay (IGRA) performed: ____________________________

Date TST read ______________ Results ______ mm induration (≥ 5mm is positive for TB contacts)

IGRA results: ____________________________ (Please attach report)

Chest x-ray date: __________________________ (Please attach report)

Treatment of latent TB infection start date (if applicable): ________________________________

Medication prescribed (if applicable): __________________ Dose and frequency: __________________

Physician’s name and phone number: ________________________________________________

(index case number)
SAMPLE DISMISSAL LETTER

Dear

The County of Orange Health Care Agency recently notified you that you were exposed to a person with active tuberculosis (TB) disease, and recommended that you obtain a TB skin test. To date, we have not received your TB test results. The TB skin test is very important; a positive test means you are infected with the TB germ. If your test is positive, you have an opportunity to follow up now and protect your health.

If you have already been tested, please fax or mail your results to: County of Orange Health Care Agency, Pulmonary Disease Services, 1725 W. 17th Street, Room 101E, Santa Ana, CA 92706, attention: (case manager’s name and phone number). If you have not yet been tested, it is not too late. You can obtain the TB skin test and any needed follow up free of charge at the County of Orange Health Care Agency, Pulmonary Disease Clinic, 1725 W. 17th Street, Room 101E, Santa Ana, CA 92706, Monday through Friday, from 8 a.m. to 4 p.m. (closed for lunch: 12-1pm) No TB skin testing on Thursdays. To expedite your visit, appointments are available. Please bring this letter with you when you come to the clinic.

If you prefer, you may go to your family doctor for your TB skin test. Please ask your doctor to fill out the lower part of this letter and fax the results to the County of Orange Health Care Agency by.

This is the last reminder you will receive from our clinic. If you do not respond by (enter date two weeks from date letter will go out) your records will be closed. However, please go to a public health clinic or to your family doctor if you develop any of the following signs or symptoms of active tuberculosis disease: Persistent cough (more than three weeks), coughing up blood, fever (more than 2-3 weeks), hoarseness, loss of appetite, unexplained weight loss, or night sweats (unrelated to weather).

If you choose to have your TB screening at the county clinic and would like to make an appointment, or have any questions, please call (case manager’s name and phone number) or the nurse on duty at (714) 834-8790.

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TUBERCULOSIS (TB) CONTACT SCREENING RESULTS: PHYSICIAN REPORTING FORM
Please complete the following information regarding TB skin testing of this patient and mail or FAX the results to: County of Orange Health Care Agency/Pulmonary Disease Services, 1725 W. 17th Street, Santa Ana, CA 92706
ATTN: (case manager’s name) TELEPHONE: FAX:

Name of Patient: ___________________________________________ Date of Birth: ________________ Gender: Male/Female (circle)
Date Mantoux Tuberculin Skin Test (TST) or Interferon-γ Release Assay (IGRA) performed: _______________________
Date TST read _____________ Results _____ mm induration (≥ 5mm is positive for TB contacts)
IGRA results: _________________________________ (Please attach report)
Chest x-ray date: ______________________________ (Please attach report)
Treatment of latent TB infection start date (if applicable): ________________________________
Medication prescribed (if applicable): __________________________________________________________________________
Dose and frequency: __________________________________________________________________________
Physician’s name and phone number: __________________________________________________________________________
(enter index case number)