

Determining the Need for a Contact Investigation and Prioritizing Public Health Response

Contact investigations are complicated undertakings that require hundreds of interdependent decisions, the majority of which are made on the basis of incomplete data and dozens of time-consuming interventions.

The investigation of those exposed to infectious cases of active tuberculosis (TB) disease is an important strategy in the control and elimination of TB in the United States. Whenever a new TB case or suspect is identified, public health action should be taken to determine the need for a contact investigation as well as to prioritize the identification and evaluation of persons exposed.

This document is a guideline and a tool to assist public health staff in prioritizing response based on characteristics of the index case, the vulnerability of those exposed and the potential sites where transmission may have occurred. It cannot cover all possibilities that might be encountered in each investigation. A decision to expand an investigation to lower risk contacts is based on the results of testing those at highest risk for acquiring TB infection or progressing to active disease.

Using Table 1, locate the row that best describes the case characteristics of the client for whom a contact investigation is being considered.

1. Locate the row in column one that corresponds to the index case characteristics. Identify and evaluate the high priority contacts listed in the selected row. Include contacts from all potential transmission sites, not just the client's 'home'.
2. **Sputum smear negative cases:** *A smear negative case with cavitory disease requires an investigation and prioritizing contacts the same as for a smear positive case* (MMWR-Vol.54/RR-15.pg 12, Fig 2). Additionally, an index case assessment may lead to the conclusion that a more extensive investigation is warranted than would normally be conducted for a client with negative sputum smears. Information to analyze includes: duration of symptoms, radiography, treatment with any antibiotics (especially flouroquinolones), and any medical care visits (including physicians, clinics, emergency rooms and hospital admissions) for potentially related symptoms.
3. **Table 2** provides guidance for time limits in various size settings to determine if a contact should be included in the investigation based on cumulative exposure time.
 - a. For some exposed persons, the cumulative length of environmental exposure determines an individual's need for evaluation even if no other risk factor is present.
 - b. These are approximate time-frames. A review of environmental factors such as room size, ventilation, and number of persons in the space is used to determine the priority for contacts in all investigations.
4. Analyze the results of the initial round of testing after all identified high priority contacts have been evaluated or evaluation attempts have been exhausted AND treatment has been initiated or initiation attempts have been exhausted. If results indicate a higher than expected positivity rate, expand the investigation to medium priority contacts. Resources must be available to adequately evaluate and offer treatment to any additional lower priority contacts.
5. Contact TB Control for technical assistance related to any contact investigation (804) 864-7906.

Table 1

Assignment of Contact Evaluation Priority Based on Case Characteristics			
Case Characteristics	Investigation and Evaluation Priority		
Pulmonary, pleural or laryngeal	High Priority	Medium Priority	Low Priority
<p>Any of the following scenarios:</p> <ul style="list-style-type: none"> • AFB smear positive • Cavitory lesion on CXR 	<ul style="list-style-type: none"> • Household contacts • Anyone under 5 yrs old • Contacts with Medical Risk Factors: HIV, TNF alpha blockers, ESRD, long-term steroid use, cancer treatments or other immune compromising condition • Contacts exposed during a medical procedure: Bronchoscopy, sputum induction or autopsy • Contacts in a congregate setting (LTC, Detention facility) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Contacts exceeding environmental exposure limits for high priority contacts (See Table 2) 	<ul style="list-style-type: none"> • Anyone 5-15 yrs old who does not meet one of the high priority criteria <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Contacts exceeding environment exposure limits for medium priority contacts (See Table 2) 	<p>Anyone other than those listed; only considered if expansion is warranted</p>
<ul style="list-style-type: none"> • Smear negative • ABN CXR consistent with TB/non-cavitory • Might be NAA and/or AFB culture positive 	<ul style="list-style-type: none"> • Anyone under 5 yrs old • Contacts with Medical Risk Factors: HIV, TNF alpha blockers, ESRD, long-term steroid use, cancer treatments or other immune compromising condition • Contacts exposed during a medical procedure: Bronchoscopy, sputum induction or autopsy 	<ul style="list-style-type: none"> • Household contacts • Contacts in a congregate setting (LTC, Detention facility) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Contacts exceeding environmental exposure limits for medium priority contacts (See Table 2) 	<p>Anyone other than those listed; only considered if expansion is warranted</p>
<p>Any of the following scenarios:</p> <ul style="list-style-type: none"> • Suspected TB with Abn CXR, not consistent with TB • AFB neg., rapid test neg., culture neg. 	<p>None</p>	<ul style="list-style-type: none"> • Household contacts • Anyone under 5 years old • Contacts with Medical Risk Factors: see above <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Contacts exposed during a medical procedure: see above 	<p>Anyone other than those listed; only considered if expansion is warranted</p>
Extra-pulmonary	High Priority	Medium Priority	Low Priority
<ul style="list-style-type: none"> • Non-pulmonary TB with pulmonary disease ruled out 	<p>None</p>	<p>None</p>	<p>None</p>

Source: MMWR 2005;54 (No. RR-15)

Table 2

VDH recommendations for the cumulative time needed during the infectious period to assign the priority of contact based on environmental exposure				
Space size	Example	High Priority	Medium Priority	Low Priority
Very small	Car, small office, 150 sq. ft.	8 or more hours	4 to less than 8 hours	Less than 4 hours
Small/medium	Classroom, meeting room	24 or more hours	8 to less than 24 hours	Less than 8 hours
Medium/large	Cafeteria, small church	50 or more hours	24 to less than 50 hours	Less than 24 hours
Large	Gymnasium, auditorium	100 or more hours	50 to less than 100 hours	Less than 50 hours
<i>The less time exposed → the lower the potential for transmission → the lower the priority for evaluation of the contact</i>				