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Tuberculosis Contact Investigation in Schools Toolkit

Tuberculosis Contact Investigation in Schools Toolkit

Introduction

Guidance, tips, and tools for planning and implementing a thorough school contact investigation

Introduction

Although rates of tuberculosis (TB) in the U.S. are considered low, TB contact investigations in school settings remain a significant challenge for many of our public health departments that may rarely need to conduct such an investigation. This Toolkit is designed for health department staff responsible for planning and conducting TB contact investigations (CIs) in school settings. The materials in this toolkit were developed based on lessons learned from CIs in a variety of school settings (elementary, junior high, high schools, and colleges in large and small, urban and rural jurisdictions) throughout California over the past several decades and is an update to a prior version published in 2004.

The goal of this Toolkit is to help health department staff plan and implement a thorough school TB CI by providing a stepwise framework and template/sample tools which can be customized to meet local needs. It assumes that staff using this manual have a working knowledge of standard TB control practices and access to current recommendations for diagnosing and treating latent TB infection (LTBI). TB program resources have been referenced throughout as examples of supporting documentation that may help provide guidance around treatment. The tools and content contained within this document can be adapted to conform with your state TB program guidelines/policies and procedures.

State health department TB programs may have support for contact investigations and outbreaks, including tools, guidelines and sometimes on-site assistance, etc. Contact your state TB program for this kind of support.

About the Toolkit

The toolkit is a step-by-step guide for a school TB CI. Each step has a checklist with helpful tips to consider and the corresponding tools for that step. Not all components of the toolkit are necessarily applicable to all school CIs. The tools include samples of letters, forms, reports, press releases, decision-making charts, and meeting agendas.

How to Use the Toolkit

The tools can be customized to fit many situations. Most of the letters, forms, information sheets, and agendas are headed by [***bold italicized text in royal blue with brackets***] that allows space for adding county specific information as well as dates, locations etc. The [***bold green italicized text with brackets***] identifies what the tool is used for and should be deleted before use. Included in this toolkit is a *School TB CI Database (3.1)* that will help keep all the data collected during the CI organized and easy to access. This data can then be used help decide next steps in the investigation. The spreadsheet can be modified for the particular needs of the CI.

Special Considerations for the School Setting

In addition to the general challenges that a large TB CI presents to a health department, a CI in a school setting poses several specific challenges that are important to consider when planning and carrying out your activities. The following principles should guide your school CI process:

- Coordinate with school district administrators, the school principal, school staff, and school nurse to ensure that the investigation proceeds as quickly and efficiently as possible, minimizing disruption of normal school functions
- Respond to the concerns of worried parents/guardians, students, and staff
- Anticipate and manage media questions and messaging
- Identify resources for translation based on the local school population and the communities from which there are cases
- Decide who needs testing and plan for parental/guardian concern and media messaging
- Protect confidentiality of TB case(s) and contacts (especially difficult in a school setting)
- Ensure CI is completed while school is in session to avoid the time-consuming process of locating and testing students who have graduated, changed schools, or left for a school break or summer vacation
- Determine division of tasks between the health department and the school administration
- Ensure a thorough and complete CI

What Typically Happens in a School CI?

This toolkit presents a 10-step framework for a school CI. Many of these activities happen at the same time so the investigation can be completed quickly and efficiently. Depending on the size and number of staff in the health department, tasks may be divided among a team, or a single individual may be responsible for all activities.

Step 1 – Determine the Need for a School CI

Complete the medical record review and conduct a face-to-face interview with the index case. Gather information about clinical status, infectious period, named close contacts, and locations frequented by the index case during the infectious period.

Step 2 – Establish Communication with the School

Inform school officials about the TB exposure, provide TB education, discuss and stress confidentiality issues, and create an initial plan for testing school contacts, including dates and locations for testing.

Step 3 – Develop the Contact List, Choose a Testing Method, and Determine Testing Dates

Tour the school facilities and evaluate the settings where the index patient spent time to determine sites where transmission was more likely to have occurred, and to prioritize contacts most at risk for exposure. Be sure to include the school's ventilation system in your tour. Gather information from the index case interview and school administration to prioritize and create a list of identified contacts. Priorities are based on the likelihood of infection and the potential hazards to the individual contact if infected (see current *CDC TB Contact Investigation Guidelines* or your state guidelines).

Using the combined information gained through the meetings with the school administration, school site visit, index case interview, and existing health department resources, determine which testing method(s) should be used for evaluating the identified contacts: interferon gamma release assay (IGRA), tuberculin skin test (TST), or both.

Step 4 – Educate Staff, Students, Parents/Guardians and Providers

Inform and educate staff, students, parents/guardians and providers about the TB exposure and the need for testing. *Important note:* Tailor TB education/information session(s) and communications according to the type of test(s) that will be used for evaluating the school contacts (IGRA, TST, or both).

Step 5 – Notify Contacts and Obtain Consent

Send out notification letters, consent forms, health questionnaires, and private provider TB evaluation forms to identified contacts (students and staff).

Step 6 – Conduct Initial Testing Activities

Evaluate high risk and high priority contacts at the school by gathering health histories, performing symptom reviews, administering and measuring TSTs, or drawing blood for IGRA testing.

Step 7 – Provide TB Test Results and Refer for Chest X-rays and Further Evaluation

Provide results to the contacts and refer for additional evaluation those who have a positive test for TB, are at high risk for progression to TB disease, or have TB symptoms. Individuals need to be referred to a specific provider for medical evaluation and chest x-ray.

Step 8 – Expanding the Contact Investigation

Analyze the data you have gathered from the first round of testing and decide whether the investigation needs to be expanded. If transmission has been documented in the high and/or medium priority contacts, the investigation is often expanded to low priority contacts. This step will require sending letters, consent forms, health questionnaires and private provider forms to low priority contacts. Repeat steps 5-7 to complete the evaluation for the expanded contacts. If new contacts are identified as needing evaluation, start the consent and testing process for these contacts and refer them for further evaluation and treatment as needed. If this expansion and/or testing occurs at least 8 weeks after the contacts were exposed to the index patient, these contacts will not need a second round of testing.

Step 9 – Conduct Second Round of Testing

The second-round testing will take place 8-10 weeks after the school's last exposure to the index patient. Prepare by using the list of TST/IGRA-negative contacts identified in the first round of testing. You can also include any newly identified contacts or contacts who were not evaluated during the first round of testing. Repeat TB symptom screening and testing of these contacts. Refer them for further evaluation and treatment when indicated (i.e., repeat Step 7).

Step 10 – Analyze and Summarize Results

Complete all follow-up testing and record the results. Analyze the information and provide a summary to the school, parents/guardians and/or the media as needed.

2022 Revised Edition

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Acknowledgments

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Acronyms and Abbreviations

AFB	acid-fast bacilli
BCG	Bacille Calmette-Guérin
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CI	contact investigation
CTCA	California Tuberculosis Controllers Association
CXR	chest x-ray (radiograph)
DOB	date of birth
DOT	directly observed therapy
EMB	ethambutol
FYI	for your information
HD	health department
HVAC	heating, ventilation, and air conditioning
HIPAA	Health Insurance Portability and Accountability Act
HQ	health questionnaire
IGRA	interferon gamma release assay
INH or H	isoniazid
LHD	local health department
LTBI	latent tuberculosis infection
M. tb	*Mycobacterium tuberculosis*
MDR-TB	multidrug-resistant tuberculosis
NAAT	nucleic acid amplification test
ND	not done
PIO	Public Information Officer
PH	public health
PHL	public health laboratory
PMD	private medical doctor
PZA	pyrazinamide

QFT	QuantiFERON (FDA approved –IGRA blood test)
RIF	rifampin
RVCT	Report of a Verified Case of Tuberculosis
RX	medical prescription
TB	tuberculosis
TST	tuberculin skin test
TNF	tumor necrosis factor
WNL	within normal limits

Tuberculosis Contact Investigation in Schools Toolkit

Step-by-Step Guide

Instructions, checklists and helpful tips

Step 1 – Determine the Need for a School CI

The key elements in deciding whether a school CI is warranted are the index patient's infectiousness and the likelihood of transmission at the school. Conduct a medical record review *and* a face-to-face interview with the index patient. Gather information about clinical status, infectious period, named close contacts, and locations frequented by the index patient during the infectious period. Be sure to ask the index patient about any extracurricular and after-school activities. If a school investigation looks likely, inform your TB Controller and check your records for the existence of any policies, memoranda, or other written agreements that have been prearranged with the school district in the event of an extended CI or outbreak.

Checklist

WHAT	WHO	DUE	DONE	TOOLS
Identify a local TB case manager/point person for this investigation				—
Review index patient's medical information to confirm TB diagnosis and infectiousness: • TST/IGRA • CXR • Smear • Culture • HIV status • Symptom history • Other pertinent information				*1.1 TB Index Patient Summary to Determine Infectiousness*
Interview (or re-interview) index patient to determine: • Symptoms and onset dates • Close school contacts • School schedule and activities • Extracurricular activities • Transportation to/from school • Other pertinent information				*1.2 TB Index Patient Interview Outline* *1.1 TB Index Patient Summary to Determine Infectiousness* *1.3 TB Index Case School Schedule*

WHAT	WHO	DUE	DONE	TOOLS
Establish period of infectiousness				*1.1 TB Index Patient Summary to Determine Infectiousness* (pg. 2)
Review all information and decide if a school CI is necessary (see Helpful Tip in this section)				*1.4 School CI Decision Tree*
Provide your supervisor/TB Controller with a summary of the situation				—
Contact your state TB program if assistance is needed				

Helpful Tip

Do not get burned—Confirm!

Before jumping into a large school CI, be sure your index case has TB! Investigations have been conducted around patients being evaluated for TB who later turned out not to be TB cases. You cannot afford to waste precious time and resources. Take time at the beginning to make sure your investigation is necessary. Use a rapid test when possible (e.g., nucleic acid amplification test [NAAT]) to determine whether the patient has TB.

- It will be helpful to know the evaluation results for the close community contacts (e.g., household members, close friends) identified for the index patient. This information may be helpful when deciding if a school contact investigation is necessary.
- Double-check your estimate of the index patient's infectious period. Establishing an accurate infectious period at the start of an investigation is essential to help identify the appropriate contacts to test.
- Of note, children younger than 10 years with tuberculosis are rarely contagious. If the child has extensive pulmonary disease based on chest x-ray, discuss potential for infectiousness with your TB controller.
- Consider having HVAC personnel present during site visit to answer questions about air flow, shared-air rooms, recirculation, number of vents, and filters. They are often able to provide maps of how the air flows, or doesn't, throughout the school.

- It is important to also ask about substitute teachers, volunteers or guest speakers who might have been present at the school during the infectious period. The school's main office would likely have a list of these people. If they were in any of the index patient's classes during the infectious period, they should be interviewed for possible exposure.
- If the index case participated in extracurricular activities such as sports or band, be sure to inquire how they traveled to and from games/rallies. Specifically, ask how they got there, how long they were together on a bus or in a private car, etc.

Step 2 – Establish Communication with the School

An essential initial step in launching a school CI is to gain the understanding and cooperation of school administrators. Early and continuous efforts to establish and maintain trust with school staff will help to ensure smooth coordination of the complex logistics involved in your investigation. Inform school officials about the TB exposure, provide TB education, discuss confidentiality issues, and create an initial plan for testing school contacts, including dates and locations for testing to avoid conflicts with the school calendar. Establish points of contact between the health department and the school to streamline communications.

Checklist

WHAT	WHO	DUE	DONE	TOOLS
Call the school principal and explain the situation; set up a time to meet with school officials				*2.1 Initial Telephone Talking Points*
Prepare and distribute meeting agenda				*2.2 Agenda for School Administration Meeting*
Conduct a meeting and develop an action plan: • Discuss confidentiality and obtain signed confidentiality forms • Provide a TB and CI overview • Agree on process for obtaining class rosters (electronic is best!) • Decide on TB testing dates and locations • Agree on process for informing staff, students, parents/ guardians, and media • Identify CI team members • Agree on communications between HD and school • Discuss possibility of DOT being conducted on school site by school nurse				*2.2 Agenda for School Administration Meeting* *2.3 TB Fact Sheet* *2.4 Confidentiality Agreement* *2.5 CI Team Member List* *2.6 External Communications Plan*
Set a time for a follow-up meeting or telephone conference, if needed				—

WHAT	WHO	DUE	DONE	TOOLS
If setting up a phone message line, refer to this sample checklist to as a guide to prepare your standard outgoing message				*2.7 Phone Script Checklist for Message Line*

Helpful Tips

Keeping a secret

Protecting the confidentiality of the index patient in a school setting can be extremely difficult. The index patient's identity will need to be disclosed to key school staff in order to gather information about the patient's classes and activities for the CI. Discuss confidentiality with school staff at the outset of the investigation and consider having staff sign a *Confidentiality Agreement (2.4)* pledging not to discuss case information with others. Staff, parents/guardians, and the press often want to know the identity of the index patient. Be prepared with an answer for them that acknowledges their concerns, but firmly protects the patient's right to confidentiality. One approach that helps with public or press interactions is **not** to identify the person as a "student" or "staff member," but to refer to the case as "someone associated with the school." Be careful to not reveal gender; use a gender-neutral phrase such as "the patient" or "the person with TB." This can take some practice!

Make the right contact

When a school CI is necessary, your initial telephone contact will most likely be with the principal to inform the school of the situation. See *Initial Telephone Talking Points (2.1).* During your first meeting with the school, confirm who their point person will be throughout the school CI. In many cases, it will be a school nurse or maybe even someone assigned from the school district who deals with matters such as this district-wide. Having a specified person responsible for dealing with all issues around the school's part of the CI is a key factor to help ensure the CI goes smoothly and is handled professionally. Discuss with the school the best option for answering questions about the CI. The local health department (LHD) can set up a telephone line that is live or recorded or a confidential email to address questions. At the first meeting with the school, suggest that the school identify how they will communicate with students, parents/guardians, and staff (e.g., send letters home with students or mail them, social media, school website, automated calls, blast email, etc.).

Pencil it in

Prior to scheduling the testing dates, review both the LHD's calendar and the school's calendar to make sure there are no conflicts with proposed dates. Check with key staff at the school and at the LHD to ensure that there are enough staff to participate in education sessions, testing and reading days, and other key activities.

Stop the press!

Having a press release ready does not mean that you must use it, but it will enable you to react more quickly and in concert with the school administration if the press makes inquiries. Issuing a joint press release early in the process allows you to control the message and accuracy of the information the public receives.

Step 3 – Develop the Contact List, Choose a Testing Method, and Determine Testing Dates

Gather information from the school to create a list of contacts. Try to obtain class rosters electronically. Ideally, put together a spreadsheet (such as Excel), with names, DOB, a unique identifier such as a school ID, email address, street address, cell phone number (so that texts can be sent), classroom and course name. See *School TB CI Database (3.1)*.

Tour the school facilities and evaluate the settings where the index patient spent time to determine if any areas are more conducive to transmission than others to help identify contacts most at risk for exposure. This is where the HVAC person can be helpful. Settings might include classrooms, gyms, locker rooms, cafeteria and other meeting areas. Check with the school about after school sports or club activities, including any group travel to these activities, that the index patient might have participated in during the infectious period. Assess and assign a high, medium, or low priority to each contact based on amount of exposure, age, and immune status of individual contacts. (Also note any high-risk contacts; see *CDC TB Contact Investigation Guidelines* or your state guidelines.*)*

Once the contacts have been identified, decide which test(s) will be used to evaluate identified contacts (IGRA or TST). This decision will depend on several factors including: history of BCG vaccination, availability and cost of the IGRA, personnel available to assist with testing (staff that can place/read TSTs versus phlebotomists), and how many days are needed to complete the testing.

For consistency, a written protocol signed by the TB Controller or Health Officer provides the clinical recommendation for testing for the specific contact investigation. Make sure a new protocol is written and signed for the repeat testing. See *TB Protocol for On-Site Testing (3.3)*.

Determine testing dates based on school and health department team's availability, school calendar and which testing method(s) will be used.

Checklist

WHAT	WHO	DUE	DONE	TOOLS
Customize School TB CI Database				*3.1 School TB CI Database*
Customize both the "CI School On-Site Testing Plan" and the "TB Protocol for On-Site Testing" for the current situation				*3.2 CI School On-Site Testing Plan* *3.3 TB Protocol for On-Site Testing*

WHAT	WHO	DUE	DONE	TOOLS
Use this form to keep each contact's evaluation information in one place				*3.4 TB Contact Data Collection Form*
Obtain school calendar for current semester activities during the infectious period				—
Identify and evaluate the spaces in which the index patient spent time; determine how conducive the spaces are to TB transmission				*3.5 School Environmental Assessment Form*
Obtain student, teacher, staff, and regular volunteer rosters for index patient's school activities during infectious period: • Classrooms • Cafeteria • Sports teams • Clubs • After school activities/tutoring • Bus/carpool or other transportation				—
Identify LHD staff to do data entry before creating the contact list.				—
Assign a high, medium, or low priority to each contact				*CDC TB Contact Investigation Guidelines* or your state guidelines
Provide list of high and medium priority contacts to data entry staff to start populating the contact database				*3.1 School TB CI Database*
Decide which test will be used to evaluate the contacts: IGRA, TST, or both				—
Determine testing dates				—

Helpful Tips

More is better!

Collect as much information as possible at the beginning so that you do not have to go back later for that one piece of information you wish you had. Collecting data from the school electronically (i.e., Excel spreadsheet) will make data management easier. When class rosters are obtained for the infectious period, make sure you know room number, period number, length of classes, names of the teachers, substitute teachers, student teaching assistants, and volunteers. Also obtain a list of the students who were in classrooms immediately following the index case. This critical information can help you decide later whether to expand the CI and, if expansion is needed, where you should focus your efforts. The most efficient strategy for determining which data to collect is to decide how the data will be used by your TB program. You can then use the data collection tools to support this effort (e.g., contact rosters, number of contacts needing testing, etc.). Consider using a database to manage this information. See *School TB CI Database (3.1).*

- Social media can be a helpful source of information during a contact investigation. Using social media can help with identifying additional (unnamed) contacts, and with verifying work/school/congregate exposure sites or school sports events/rallies, etc. In outbreak and genotype cluster investigations, the use of social media can help with identifying and confirming epidemiologic links.

- TB genotyping is a tool that can add value to conventional contact investigations. TB genotyping may reveal unsuspected transmission relationships between TB patients and identify unknown or unusual transmission settings (e.g., school buses, extracurricular activities) instead of traditional settings like home, classroom, and work.

Something is in the air

- The movement of staff and students between different classrooms can complicate school CIs. If the index patient is in **elementary school**, they generally spend most of their day in one classroom with the same students. If the patient attends **middle or high school,** it is likely they change classes throughout the school day, potentially exposing different students and teachers with each classroom change. The patient's school schedule should be obtained during the patient interview and should be verified with the school administration. Remember to ask about other areas of the school where the patient may have spent time (e.g., cafeteria, gym, and clubs). Once you have the patient's school schedule, tour the school facilities to determine how favorable the spaces are to TB transmission.

Things to consider on the school tour:

- Number of air returns in the room
- Number of vents to room
- Is HVAC operational?
- Was HVAC always operating during infectious period?
- Is the air shared with any other rooms?
- How much fresh air vs re-circulated air is in air exchanges?
- How often are filters changed?

It is strongly recommended to have the school's HVAC personnel present during the site visit to answer questions about air flow, shared air rooms, recirculation, and filters. They are often able to provide maps of how the air flows, or doesn't, throughout the school.

Depending upon the characteristics of the settings, consider testing only those who had the most hours of exposure (e.g., shared multiple classes) or the most intense exposure.

The heat is on!

Prioritizing contacts into high, medium, and low risk provides a systematic approach for setting limits and establishing priorities for tracing contacts based on their level of exposure and their risk status of progressing to active disease if infected. Although this approach is the standard method of a CI, the health department might be pressured to test more people than is medically necessary because of parental/guardian concern or media coverage. Mass testing is not usually recommended because it diverts resources away from testing and treating those most at risk for TB infection and disease. However, in rare circumstances, it may be deemed necessary to test everyone. Because of this possibility, it's important to focus on educating staff and parents/guardians before testing.

Decision time: IGRAs or TSTs?

Once the decision is made regarding IGRA or TST, the correspondence, communication and education offered should be tailored to that test. IGRA- or TST-specific tools have been created for most steps in this toolkit and will be helpful in cutting down the confusion and questions around the contact investigation. However, some TB programs have both testing methods available for the flexibility and comfort of evaluating contacts. Tools for both tests are provided in this toolkit.

Determine testing dates

It will be important to include school officials when determining dates for testing. They will be familiar with the school calendar and will know which days to avoid due to school holidays or

academic priorities. Another important consideration is which testing method will be used. If using TST it will be important to not schedule testing day close to the weekend as TB skin tests need to be read 48 -72 hours after placement.

Step 4 – Educate Staff, Students, Parents/Guardians and Providers

Inform the school community of the TB exposure and the need for testing in informational letters tailored for staff, students, parents/guardians, and providers. These letters can be helpful in alleviating anxiety and fears and will likely generate concern and questions. It will be important to dedicate one person or telephone line and/or email address for handling parent/guardian and staff inquiries related to the TB exposure. Also, be sure to give clear direction about how to handle any press inquiries.

Consider holding informational sessions with parents/guardians and staff that allows the TB program staff to address concerns and questions. Be sure to provide interpreters for the languages of this community.

Checklist

WHAT	LANGUAGES	WHO	DUE	DONE	TOOLS
Set up telephone line, email address, or website within the TB program to address calls or questions from parents/guardians and the public					–
Send out FYI letter to ALL parents/guardians, students, and staff informing them of the TB exposure and planned testing at the school. Be sure to include the date and time of any educational sessions planned					*4.1 FYI Letter to Parents/ Guardians* *4.2 FYI Letter to Staff* *2.3 TB Fact Sheet*
Send letter to health providers servicing the community to inform them of the TB exposure and to provide guidance for contact evaluation, treatment and follow-up					*4.3 General Letter to Healthcare Provider*

WHAT	LANGUAGES	WHO	DUE	DONE	TOOLS
Issue joint press release referred to in Steps 2 and 3 and hold press conference (as needed)					*4.4 Sample Press Release*
Hold an educational meeting for staff, parents/guardians, and students					*4.5 Flyer for Parent/ Guardian/ School Staff Meeting* *4.6 Agenda for Parent/ Guardian/ School Staff Meeting* *4.7 Talking points Parent/ Guardian Meeting*

Helpful Tips

Be culturally appropriate – Don't forget to translate/interpret

Being culturally appropriate in communicating with students and parents/guardians is an important step to gaining trust and cooperation. It is also a federal and often state legal requirement. Keep in mind that knowledge and beliefs about TB causes and treatment will vary. If the CI is being done at a school that has a large population of one or more cultures, do your homework, identify important information to include, and ask who are trusted community leaders who can be communication resources and can increase attendance at informational meetings.

Almost everywhere in California and in many other states, there are non-English-speaking parents/guardians of students. Build adequate time into your schedule for the translation of letters, consent forms, questionnaires, and fact sheets. Consider a proactive approach and have standard forms translated ahead of time into languages common to your area. If you have meetings with parents/guardians, have the appropriate language interpreter(s) present. Health departments and school districts can work together to identify resources for translation and interpretation as needed for the local school population and the communities from which there are cases.

A note in time saves nine

Health department TB programs are often hesitant to provide information to parents/guardians, staff and the media early in a school investigation because plans have not been finalized and they might be worried about creating unnecessary concern. However, getting information out quickly, even if it is not comprehensive, can increase the community's trust in the health department and reduces the need for additional communications in the long-term. Consider sending out an FYI letter to all parents/guardians and staff as soon as you discover the need for a school CI, particularly if you anticipate this will become a high-profile situation. Meetings can be very effective in some communities for providing detailed information to interested parents/guardians. It is always better for them to hear the correct information from you first, especially if you include trusted community leaders. Many schools have parent engagement specialists or parent group leaders who can be helpful to identify trusted leaders and can help get information to parents through the most effective format.

Update the press!

At this point in the investigation consider releasing an updated press release.
Possible topics to include:

- Estimated numbers of school contacts to be tested
- Update on school TB testing (time/date/place)
- TB program's contact information for questions related to TB testing

If there are print or broadcast media in local community languages, consider sending press statements to them, or arranging for an interview on TV or radio.

[NOTE: Some indigenous languages are unwritten, or schools in indigenous communities' home countries were not taught in those languages. So, many immigrants from these communities may not be literate. In this situation, local indigenous language TV or radio may be the best way to disseminate accurate information. Some larger indigenous immigrant communities are from Laos (Hmong), Guatemala (Mam, Kiche, Caqchikel), Mexico (Mixteco, Zapoteco, Triqui), or Burma (Karen).]

Step 5 – Notify Contacts and Obtain Consent

Now that you have chosen which testing method you will use, send contact notification letters along with consent forms, health questionnaires, and the Private Provider TB Evaluation form. Consider sending out an FYI letter and TB fact sheet to parents/guardians and staff of non-contacts as well. This may help to reduce the amount of telephone calls from concerned parents/guardians and staff who are unclear as to whether they or their child were exposed to TB. It is important that contacts understand their risk and why they are being tested, and that others understand why they have not been identified as needing testing.

Checklist

WHAT	WHO	DUE	DONE	TOOLS
Select which letter to send (IGRA or TST) and customize it with the school's name, address, and testing information before sending.				*5.1a Letter to Parents/ Guardians of Contacts IGRA* *5.1b Letter to Parents/ Guardians of Contacts TST*
Mail out TB exposure packets to student contacts. Include: • Information letter • Consent form • TB fact sheet • Student Health Questionnaire • Option for Private Provider TB Testing • Private Provider TB Evaluation Form for parents/guardians of student contacts				*5.2a Parent/ Guardian Consent Form IGRA* *5.2b Parent/ Guardian Consent Form TST* *5.3 Health Questionnaire (Student)* *2.3 TB Fact Sheet* *5.9a Option for Private Provider TB Testing Form (Student)* *5.10 Private Provider TB Evaluation Form*

WHAT	WHO	DUE	DONE	TOOLS
Distribute TB exposure packets to staff contacts. Include: • Information letter • Adult Consent form • TB fact sheet • Adult Health Questionnaire (staff) or student contacts who are over 18 years old • Option for Private Provider TB Testing • Private Provider TB Evaluation form				*5.4a Letter to Staff Contacts IGRA* ***OR*** *5.4b Letter to Staff Contacts TST* *5.5a Adult/Staff Consent Form IGRA* ***OR*** *5.5b Adult/Staff Consent Form TST* *5.6 Health Questionnaire (Adult/Staff)* *2.3 TB Fact Sheet* *5.9b Option for Private Provider TB Testing Form (Staff)* *5.10 Private Provider TB Evaluation Form*
Mail out letters and TB fact sheets to parents/guardians of non-contacts				*5.7 FYI Letter to Parents/ Guardians of Non-Contacts* *2.3 TB Fact Sheet*
Distribute letters and TB fact sheets to staff non-contacts (or student non-contacts who are over 18 years old)				*5.8 FYI Letter to Staff of Non-Contacts* *2.3 TB Fact Sheet*
If unable to get parent/guardian consent for testing, check whether state regulation exists to enable student to provide own consent (e.g., CA Code 6926)				*5.11 California Code 6926*

Helpful Tips

Combine and save time!

When you send out the TB exposure packet to parents/guardians of contacts, include all necessary forms (see *Step 5 Checklist*). Note that the consent form includes both initial and follow-up TSTs or IGRAs as well as a chest x-ray (CXR) if needed. This eliminates the need for multiple consent forms from parents/guardians.

Options for notifying contacts and ways to address their immediate concerns

School information is often sent home with students, but sometimes doesn't make it all the way home! To make sure your information is getting to the parents/guardians of the students, consider mailing the TB packet and having the school generate mailing labels for you. Work with the school beforehand to decide how payment for the mailing will be handled. Another approach to ensure the information gets to the parents/guardians is to use the school's email system. Most schools now have a way for parents/guardians to keep up to date online (e.g., school website). You may need to send information both ways. Also consider sending information to parents/guardians via Facebook Messenger or some secure social media platform, if available, since parents may not have email. Whichever method you choose, work closely with the school so that parents/guardians are notified and kept in the loop.

If the school or local health department is setting up a webpage or telephone line to answer questions, include how to access both of these in your information letter or social media posts.

Age of consent

It's likely that some students may forget to bring in their signed consent forms on testing day. A phone call to the parent or guardian can sometimes remedy this. In a situation where it is not possible to reach a parent or guardian to confirm consent, a student who is 12 years of age or older in California can consent for themself (similar legislation may exist in other states). See CAL FAM CODE 6926: California Code – Section 6926 (5.11). This California regulation indicates that, in California, a minor who is 12 years of age or older may consent to medical care related to the diagnosis or treatment of an infectious, contagious, or communicable disease. *Keep in mind that some students may forget to bring their consent forms, so have blank consent forms on hand.*

Step 6 – Conduct Initial Contact Evaluation Activities

Once high and medium priority contacts at the school have been identified, it is best to set up a testing day at the school site. During the testing, health department staff will evaluate the contacts by reviewing the completed health questionnaires, performing symptom reviews, and administering either a TST or drawing blood for an IGRA. Allow at least 2 days for placing and reading TSTs and at least one day for drawing blood for IGRAs. The amount of time needed to complete the testing will depend on which type of test is chosen, the number of contacts who need to be tested, and the number of clinical staff available to assist with the testing.

With help from the school, identify a space onsite where contacts can be tested. Careful planning and preparation can help ensure that important details are not forgotten and as many contacts as possible are ready and available to be evaluated on testing day. Provide all involved staff with a written on-site testing plan. See *CI School On-Site Testing Plan (3.2)*.

If students or staff choose to go to their private providers for evaluation, have them bring a completed *Option for Private Provider TB Testing Form (5.9a/5.9b)* and a completed health questionnaire on testing day. Identify who will be responsible for ensuring results are obtained from the contacts who are tested through their private provider.

TB Testing Day Checklist

WHAT	WHO	WHEN	DONE	TOOLS	
				IGRA	TST
Review the customized documents that you created in Step 3 with team before testing begins. (i.e., *TB Protocol for On-Site Testing Plan* and *TB Protocol for On-Site Testing)*				*See Step 3*	
Prepare testing day logistics: • initial TST placement OR blood draw dates • time • testing location(s) • testing team lead • testing team members					
Gather supplies ahead of time and transport supplies on testing day				*6.1a IGRA Materials Checklist*	*6.1b TST Materials Checklist*

WHAT	WHO	DUE	DONE	TOOLS	
				IGRA	TST
Check-in contacts as they arrive				*Hard Copy of the 6.2 School Contact Roster*	*Prefilled 6.2 School Contact Roster*
Find missing students and refer to testing location				—	
Collect and verify completion of consent forms				*Blank Consent Forms (Step 5)*	
Collect and verify completion of health questionnaires (HQs) (for those being tested onsite)				*Blank HQ's (Step 5)*	
Review HQ and perform symptom review on each contact				—	
Place TSTs and provide information about when and where contacts should return for TST reading. -OR- Draw blood for IGRAs and provide information on how contacts or parents will be informed of test results.				—	*6.3 Reminder Slip for TST Reading*

Helpful Tips

Preparation pays off!

To save time and prevent mistakes, make sure the contact roster being used includes all available data on each contact before initial testing begins. Take a hard copy of the contact roster, generated from the School TB CI Database if used, to the testing site so that additional information can be updated or added as contacts are tested. By the end of the day, you will be able to review the contact roster to determine which contacts did not show up for testing. If possible, use a laptop or tablet onsite with the contact roster loaded so data can be entered directly.

Arrange for privacy

When setting up the testing stations, consider separate rooms or other means of providing privacy, such as the use of privacy screens to create a private space. Doing so can make students and staff feel more comfortable and underline the commitment to confidentiality.

To test or not to test?

In large-scale CIs, it's not unusual for non-contacts who are concerned about TB exposure to show up for testing. Refer to your program's policy for guidance on administering TSTs or drawing blood for IGRAs on non-contacts. In some cases, it can be beneficial to have test results on non-contacts. TB test results of non-contacts can be used as comparison data to help determine whether transmission has likely occurred. Non-contacts should complete the same health questionnaire as the contacts, but their results should be kept separate. ***Be sure to include the index case in the testing process if they have returned to school. Doing so will help keep the identity of the index case confidential.***

Never too much help

Although they are not trained to do symptom reviews, place TSTs, or draw blood for IGRAs, school staff can be helpful during a large CI. Ask school administration for assistance with keeping the students calm and orderly. School staff can also assist with getting students out of class or finding them if they do not show up for testing and can direct contacts to the mobile chest-x-ray unit if used. Some health departments have had great success mobilizing their incident command or asking their emergency preparedness team to assist with organizing and staffing larger school CIs. Make sure a specific person is designated to oversee each step and each activity location.

Occupational Health

Because TB at a school site is an occupational exposure for staff members, they could also be tested by their occupational health or private provider instead of being tested at the school. It will be helpful to identify a contact person for the occupational health provider(s) and have that person meet with these providers to ensure they collect the data you are interested in. This way you will have the information needed to fill out the contact roster completely.

Step 7 – Provide TB Test Results and Refer for Chest X-rays and Further Evaluation

Once testing is complete and results are available, refer contacts for further evaluation including a medical exam and chest x-ray if the contact has: a positive TB test result, risk factors for progression to active TB disease, or TB symptoms. Contacts that need this additional evaluation should be referred to the local health department or to their private provider.

In certain situations, it can be helpful to have a mobile chest x-ray service available onsite on TST reading day if TSTs are the test of choice.

TST Reading Day

Initial TST Reading Date(s): _____

Reading location(s): _____

Reading team lead: _____

Reading team members: _____

TST READING DAY Checklist Date: _____ Time: _____

WHAT	WHO	DUE	DONE	TOOLS
Gather supplies ahead of time and transport supplies on day of reading				*7.1 TST Reading Materials Checklist*
Check-in contacts as they arrive using the Contact Roster				*Copy of the School TB CI Database*
Find missing students and refer to reading location				—
Measure and record TSTs on the completed Student Health Questionnaire				*Students' completed HQs*

WHAT	WHO	DUE	DONE	TOOLS
Provide letter to student/staff documenting TST results				*7.2a Negative TST Result Letter (Student)* *7.2b Negative TST Result Letter (Staff)* 7.3a *Positive TST Result and CXR Referral Letter (Student)* 7.3b *Positive TST Result and CXR Referral Letter (Staff)*
Provide TST results to data entry staff				—

Chest X-ray Checklist

WHAT	WHO	DUE	DONE	TOOLS
Verify the need for the CXR (positive IGRA or TST, symptoms, or other risk factors)				—
Make CXR referrals (student/staff) • Refer to mobile x-ray unit (if using) • Make phone calls to schedule appointments at clinic • Mail referral letters				*See IGRA/TST positive result and CXR referral letters above*

Providing IGRA Test Results Checklist

WHAT	WHO	DUE	DONE	TOOLS
Obtain IGRA results. Before providing results to students and staff, make copies to attach to HQs.				*Populated School TB CI Database with IGRA results*
Call parents/guardians of the students with positive test results. Be prepared to answer questions and provide educational information. Mail negative IGRA results to parents/guardians of students.				*7.4a Negative IGRA Result Letter (Student)* *7.5a Positive IGRA Result and CXR Referral Letter (Student)* *7.6a Indeterminate IGRA Result Letter (Student)*
Call staff with positive IGRA test results. Be prepared to answer questions, provide educational information, and make referrals to providers for evaluation for LTBI treatment. Mail negative IGRA results to parents/guardians of students.				*7.4b Negative IGRA Result Letter (Staff)* *7.5b Positive IGRA Result and CXR Referral Letter (Staff)* *7.6b Indeterminate IGRA Result Letter (Staff)*

Private Provider Follow-Up and Data Entry Checklist

WHAT	WHO	WHEN	DONE	TOOLS
Obtain and review completed HQs and TST/IGRA results for private provider patients				*Completed and returned 5.10 Private Provider TB Evaluation Form* *Populated School TB CI Database*
Follow-up with parents/guardians of contacts that have incomplete HQs or NO current TB test information using the student/staff contact information provided by the school. Follow-up with staff who went to their own PMDs				*5.3 Health Questionnaire Student* *5.6 Health Questionnaire Adult/Staff* *5.10 Private Provider TB Evaluation Form*
Once TB test results are received from the private provider, enter the results on the student/staff health questionnaire				*Partially completed Health Questionnaires for both students and adult/staff (5.3 & 5.6)* *Completed Private Provider TB Evaluation Form*
Provide completed health questionnaires to the data entry staff for entry into the database. Enter any other data from onsite testing, lab reports and CXR reports.				*Populated School TB CI Database* *IGRA Lab result slips* *Completed HQs for both students and staff*

Helpful Tips

Data management

To successfully conduct a contact investigation, investigators need to have skills in data management and data analysis. This is because contact investigations typically involve a large amount of demographic, medical, and epidemiologic information that needs to be systematically collected, organized, and analyzed. When conducting a contact investigation, public health programs need to determine: 1) Which data needs to be collected and why; 2) Who is responsible for collecting the data and how it will be collected; 3) How data is to be managed and safeguarded. Data management during a TB contact investigation can be very time consuming. Therefore, the benefits of having the data must justify the level of effort and resources required.

Onsite mobile chest x-ray

Depending on the situation, it may make the most sense to plan for an onsite mobile chest x-ray unit the day of the TST readings. This can be costly, so if your school population is likely to have a high positivity rate, it may be more practical to plan otherwise. Additional funding may be available through your state health department.

TST reading day

Plan ahead and ask school administrators to provide a staff person to assist with finding students that fail to return for TST readings. This person should have access to class lists in order to pull the student out of class to have TST read, if needed.

Staff time is valuable

Evaluations that are completed by private providers or done offsite will require additional staff time to gather the results. This task should be done in the health department office once higher priority activities have been completed. Review your department protocols to determine if a verbal report from a private provider is sufficient or if a hard copy of TST/IGRA and CXR reports is needed.

Test turn-around times

IGRA results can take 24 hours to a week to become available while TSTs can be read in 48 – 72 hours. This information is important to share with parents/guardians and school staff to avoid confusion.

Step 8 –Expanding the Contact Investigation

Analyze the data you have gathered from the first round of TSTs/IGRAs to determine if TB transmission has occurred. Contact the state TB program for epidemiologic support and/or to consult about results analysis (see Step 10).

Important questions to be answered include the following:

- Have any of the identified high or medium priority contacts developed active TB disease?
- How many documented converters have been identified? (For a definition of conversion, see *Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis: Recommendations from the National Tuberculosis Controllers Association and CDC*, p. 14, or refer to your state TB contact investigation guideline where it may be defined.)
- Is the level of LTBI among the high and medium priority contacts more than one would expect to find in the community at large?
- What are the evaluation results for the index case's close community contacts, (e.g., household members, close friends)? Results/conversions/transmission that is proven outside of the school can also inform the decision whether to expand the contact investigation within the school. Many times, smaller contact investigations outside of the school will have results that come back sooner.

Data about the percentage of non-contacts with positive TST reactions, if available, can be a useful comparison to the percentage of contacts with positive TSTs. Using the *CI Expansion Decision Tree (8.3),* decide if the investigation needs to be expanded.

Decision to Expand the CI Checklist

WHAT	WHO	DUE	DONE	TOOLS
Confirm that all data is entered and generate data reports and compare actual TST results with expected results				*See, School TB CI Database*
Report results to school administration				*8.1 Tuberculosis CI Summary Report*
Issue press release (as needed)				*8.2 Sample Press Release - Report of Results*
Determine if there is evidence of TB transmission at the school and decide if the CI should be expanded				*8.3 CI Expansion Decision Tree*

If transmission has been documented in the high and medium priority contacts and the decision is made by the CI team to expand the contact investigation, send letters, consent forms, health questionnaires, and private provider forms to the next group of contacts and to any high/medium priority contacts that were missed during the initial testing. Repeat steps 5-7 to complete the evaluation for the expanded contacts and refer them for further evaluation and treatment as needed. **If this group of expanded contacts are tested at least 8 weeks after the contacts were exposed to the index case, these contacts will not need a second round of testing.**

Expanding the CI Checklist

WHAT	WHO	DUE	DONE	TOOLS
Refer to the lists that the school provided to identify who the expanded contacts are and send letters, consent forms, health questionnaires, and private provider letters.				*8.4a IGRA Letter to Parents/ Guardians of Expanded Group of Contacts* ***OR*** *8.4b TST Letter to Parents/ Guardians of Expanded Group of Contacts* *5.2a Parent/ Guardian Consent Form IGRA* ***OR*** *5.2b Parent/ Guardian Consent Form TST* *8.5a IGRA Letter to Staff of Expanded Group of Contacts* ***OR*** *8.5b TST Letter to Staff of Expanded Group of Contacts* *5.5a Adult/Staff Consent Form IGRA* ***OR*** *5.5b Adult/Staff Consent Form TST* *5.3 Health Questionnaire (Student)* ***OR*** *5.6 Health Questionnaire (Staff)* *5.10 Private Provider TB Evaluation Form*

WHAT	WHO	DUE	DONE	TOOLS
Enter newly identified expanded contacts into School TB CI database				*School TB CI Database*
Follow Step 6 to complete evaluation for group of expanded contacts				*Use forms from Step 6*
If this new group of contacts is tested less than 8 weeks after the break in contact, generate a list of TST/IGRA negative contacts who need to be retested and move to Step 8 for second round of testing				*School TB CI Database*
Identify the low priority contacts to be tested (see Helpful Tip)				See current *CDC TB Contact Investigation Guidelines* or your state guidelines.

Helpful Tip

Clearing the air

Consider testing low priority contacts who may have occupied a room during the period immediately after the index patient had a class or activity there during the infectious period. For example, if the index patient attended their first period class in room 101, consider testing the students and staff who occupied room 101 during second period. Factors such as room size and ventilation can affect transmission.

Assess whether your program has sufficient resources for this expansion. It can be helpful to discuss additional resources and surge capacity with other public health programs and your state TB program.

This is a second chance

Take the time to review and identify which students and staff failed to complete their evaluation during the initial testing and get them tested this time. If additional contacts are identified after the initial testing is held, use this expanded testing to get this group of contact evaluated. Most likely these contacts will only need to be tested once as they are being identified 8 weeks or more from last exposure to the index patient.

If transmissions rates are high, consider following up with parents/guardians and/or providers of student contacts with incomplete evaluation, to encourage testing as well as treatment for LTBI when indicated.

Update providers if drug resistance identified

Keep providers informed of any drug sensitivity updates of the index case. If providers are treating for LTBI it is essential that they have this info to know whether they need to change the LTBI regimen.

Encourage short-course LTBI treatment to maximize completion

Encourage providers to use short course treatment options and to contact the county for any guidance or consultation as needed.

Step 9 – Conduct Second Round of Testing

Prepare for a second round of testing for all high and medium priority contacts (and low priority contacts if included) that were TST/IGRA negative on first round of testing and who were tested prior to 8 weeks after last exposure. Follow Steps 5-7 to ensure that the proper contacts are notified and that your second round of testing goes smoothly. Use the letters in this step to remind contacts about their retesting.

Checklist

WHAT	WHO	DUE	DONE	TOOLS
If no expansion is needed:				
Confirm the need for a second round of testing				—
Communicate with school administration and set date(s) for a second round of testing				—
Generate a contact roster to identify all TST/IGRA negative contacts who need to be retested (include all contacts who received a test prior to 8 weeks after last exposure)				*See School CI TB Database*
Mail letters to parents/guardians of contacts (*no need to send Parent/*Guardians *Consent letters, the initial consent form covered the second testing)*				*9.1a IGRA 2nd Round Test Parent/ Guardian Reminder Letter* ***OR*** *9.1b TST 2nd Round Test Parent/ Guardian Reminder Letter* *9.2a IGRA 2nd Round Test -Staff Reminder Letter* ***OR*** *9.2b TST 2nd Round Test -Staff Reminder Letter - Staff* *5.10 Private Provider TB Evaluation Form*

Helpful Tip

Clearest evidence of transmission

The second-round testing of contacts that had negative results in the first round is a crucial step to identify any converters. Conversions identified during second-round testing are clear evidence of transmission from the index case. Evidence of conversions will need to be carefully analyzed to determine if additional expansion of the CI is warranted (refer to Step 8 again).

Double your efficiency!

It can save time and resources, in some situations, to test the newly identified contacts for an expanded CI (as decided in Step 8) at the same time as the second-round testing for contacts that initially tested negative during the first round of testing.

Step 10 – Analyze and Summarize Results

Complete all follow-up testing, record the results, and enter into the database if using. Analyze the information and provide a summary to the school, parents/guardians and/or the media as needed. Use this analysis to determine if further expansion of the contact investigation is needed.

Checklist

WHAT	WHO	DUE	DONE	TOOLS
Generate a list of missing information from the CI database.				*School TB CI Database*
Evaluate contacts who have been missed, if possible. Steps 5-7 cover this.				*Tools in steps 5-7*
Input information into customized CI database.				*School TB CI Database*
Generate CI summary reports				*10.1 CI Summary Report*
Share summary report with interested parties				*10.2 Final Results Letter*
If necessary, issue a final press release.				—
To improve the next CI, convene a meeting with all health department and school staff who participated. Discuss what worked and what activities need to be changed, added or removed.				Refer to your *customized CI School On-Site Testing Plan* and to your customized *TB Protocol for On-Site Testing*

Helpful Tip

To collect or not collect

Data collection allows management of care and follow-up of individual patients and contacts, provides the opportunity for epidemiologic analysis of your current investigation as well as investigations overall, and allows you to evaluate your program using performance indicators that reflect your program's CI performance objectives.