

## Tuberculosis Prevention and Diagnosis

Contact Investigation for the prevention and diagnosis of pediatric TB

PREVENTION/TREATMENT



PREVENTION DIAGNOSTIC TREATMENT

### Contact Investigation

Tuberculosis (TB), a disease caused by *Mycobacterium tuberculosis (Mtb)* and spread from person to person through the air, can be fatal without proper treatment. The first step in effective treatment is diagnosis, which is often difficult to consistently achieve, especially in children. Contact investigation, the systematic evaluation of people who have been exposed to TB through contact with an infected individual, can be an efficient, targeted approach to diagnosing and preventing TB. Contact investigations contribute to early identification of active TB disease, potentially decreasing severity and transmission to others. Furthermore, contact tracing allows identification of people who are latently infected with TB and at high risk for disease activation, who can be treated with preventative therapy. Effective investigation of TB contacts can result in the detection of a significant number of cases that would otherwise not be notified. Despite being included in most national TB policies, contact investigation is not often implemented due to inadequate standards and a lack of health personnel.

### Mechanism of Action

While there are no comprehensive global recommendations for contact investigations, the World Health Organization (WHO) does recommend that children less than 5 years of age who are exposed to infectious cases of TB be evaluated for active TB and considered for treatment of latent TB infection if active TB is excluded. Contact investigations consist of two components: identification and prioritization, and clinical evaluation.

Contact identification and prioritization includes an interview with an infected individual (index case) to obtain the names and ages of contacts and to assess the contacts' risk for having or developing TB. With contacts identified and prioritized, the second component of contact investigation is to perform a clinical evaluation. A clinical evaluation is a systematic process for the diagnosis (or exclusion) of active TB among contacts. Clinical evaluation includes an extensive assessment of TB symptoms and may include additional components, such as a detailed medical history, a physical examination, microbiological assessment of specimens, and radiographic examinations.

### Current Use in Low TB Burden Settings

According to the US Centers for Disease Control and Prevention (CDC), index cases with positive sputum-smear results have the highest priority for contact investigation. Additionally, the WHO recommends that children less than 5 years of age who are household or close contacts of individuals with TB receive a clinical evaluation. If the child does not have active TB, they should be treated for presumed latent TB.

### Application in High Burden Settings

While contact investigations are more commonly performed in high income/low burden settings, they are rarely and inconsistently carried out in resource-limited settings such as high burden TB countries. Despite being included in most national TB policies, contact investigation is not often implemented due to inadequate standards and a lack of health personnel. According to WHO, in high burden settings with competing demands on time and resources, a decision must be taken on whether to undertake contact investigation and how to prioritize cases. WHO recommends conducting contact investigation for household and close contacts when the index case has the following characteristics: a sputum smear-positive pulmonary TB, drug resistant TB, HIV positive, and children less than 5 years old.



### GLOBAL ANNUAL DEATHS ASSOCIATED WITH PEDIATRIC TB:

	NUMBER
Children who acquire TB	at least 1,000,000
Children who die of TB	210,000

## CHARACTERISTICS OF REPRESENTATIVE PRODUCT

	TECHNOLOGY CHARACTERISTICS	OPERATIONAL PARAMETERS	POTENTIAL OPPORTUNITIES FOR IMPROVEMENT
<b>MANUFACTURERS</b>	N/A	N/A	
<b>SKILLS REQUIRED</b>	Intended end user	Health care provider, child	
	Training required	Hours	
	Time required per use	Minutes to hours	
<b>ENVIRONMENT/ INFRASTRUCTURE</b>	Power required	Only if X-ray is performed	
	Waste collection	Sputum samples	
	Complementary technologies required	None	
	Temperature and storage	N/A	
	Maintenance	None	
	Other	Data collection forms, reporting system	Standardization of data collection forms and reporting systems
<b>COST</b>	Device cost (approximate)	N/A	
	Cost/course (approximate)	N/A	
<b>OTHER</b>	Portability	N/A	
	Regulatory	Included in most TB program policies	Lack of consistency and enforcement
	Efficacy	Limited information	

Sources:

Centers for Disease Control and Prevention. Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis, Recommendations from the National Tuberculosis Controllers Association and CDC. 2005. Available from: <http://www.cdc.gov/Mmwr/preview/mmwrhtml/tr5415a1.htm>

World Health Organization. Recommendations for Investigating Contacts of Persons with Infectious Tuberculosis in Low- and Middle-income Countries. 2012. Available from: [http://apps.who.int/iris/bitstream/10665/77741/1/9789241504492\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/77741/1/9789241504492_eng.pdf).