

## Patient Management With Previous Positive TB Tests or Treatment

<b>Guidance for Contacts with Previous Positive TST/IGRA and/or Previous TB/TBI</b>	
<b>If evaluation or test results show that a contact has</b>	<b>Then take this action or these actions</b>
A prior positive TB skin test, with or without prior treatment	Test with an IGRA if the contact is age 2 or older; the IGRA is equally sensitive and more specific for TB infection.
A prior positive TB blood test and has NOT been treated for TB infection	The decision to treat should be made on an individual basis. Considerations for the decision include: <ul style="list-style-type: none"> <li>• medical conditions and risk factors putting the contact at risk for TB disease</li> <li>• the duration and intensity of exposure</li> </ul>
A prior positive TB blood test and HAS been treated for TB infection	The decision to treat again should be made on an individual basis. Considerations for the decision include: <ul style="list-style-type: none"> <li>• medical conditions and risk factors putting the contact at risk for TB disease</li> <li>• the duration and intensity of exposure</li> </ul>
A history of prior treatment for TB	The decision to treat again should be made on an individual basis. Considerations for the decision include: <ul style="list-style-type: none"> <li>• previous treatment for TB infection (TBI)</li> <li>• medical conditions and risk factors putting the contact at risk for TB disease</li> <li>• the duration and intensity of exposure</li> </ul>
Symptoms consistent with TB disease	Fully evaluate for TB disease
No symptoms consistent with TB disease, negative or indeterminate TST or IGRA	Immuno-compromised or <5 years old <ul style="list-style-type: none"> <li>• Evaluate with a physical examination and CXR; TST and IGRA may not be valid due to compromised or immature immune system.</li> <li>• If CXR or physical exam is indicative of TB disease, treat for TB disease.</li> <li>• If not, provide window prophylaxis until 10 weeks after last exposure to infectious person, and then test again.</li> </ul>
No symptoms consistent with TB disease, newly positive TST or IGRA	Immuno-compromised or <5 years old <ul style="list-style-type: none"> <li>• Evaluate with a physical examination and CXR.</li> <li>• If CXR or physical exam is indicative of TB disease, treat for TB disease.</li> <li>• If not, provide full course of LTBI treatment even if previously treated.</li> </ul>
No symptoms consistent with TB disease, negative or indeterminate TST or IGRA	Normal immune system <ul style="list-style-type: none"> <li>• Test again 10 weeks after last exposure to infectious person.</li> </ul>
No symptoms consistent with TB disease, positive TST or IGRA	Normal immune system <ul style="list-style-type: none"> <li>• May provide full course of LTBI treatment; decision to treat must be based on thorough evaluation of contact's health and risk factors.</li> </ul>
<b>Definitions of abbreviations:</b> CXR = chest X-ray; LTBI = latent tuberculosis infection; TB = tuberculosis; TST = tuberculin skin test; IGRA = interferon-gamma release assay	

Source: Centers for Disease Control and Prevention (CDC), National Tuberculosis Controllers Association. Guidelines for the investigation of contacts of persons with infectious tuberculosis: recommendations from the National Tuberculosis Controllers Association and CDC, and guidelines for using the QuantiFERON®-TB Gold test for detecting *Mycobacterium tuberculosis* infection, United States. *MMWR*, 2005;54(No. RR-15):19.

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<b>TB Screening of Persons with Previous Positive Test/TBI/TB Disease</b>	
If person has:	Then take these actions:
<p>Documented Prior Positive Test Results (TST/IGRA)</p>	<ul style="list-style-type: none"> <li>• Educate about the signs and symptoms of TB disease</li> <li>• Administer TB symptom screening and risk assessment questionnaire</li> <li>• Symptomatic individuals should be fully evaluated for TB disease                             <ul style="list-style-type: none"> <li>❖ obtain a chest x-ray</li> <li>❖ collect sputum specimens if patient is coughing or if CXR abnormal</li> </ul> </li> <li>• Follow-up TSTs or IGRAs and serial chest radiographs are unnecessary for:                             <ul style="list-style-type: none"> <li>❖ Persons who have a positive test result for TB infection</li> <li>❖ Persons who have had TB disease ruled out</li> <li>❖ Persons who refuse or are unable to receive treatment for TBI</li> <li>❖ Persons who have completed treatment for TB infection (TBI) or disease</li> </ul> </li> </ul>
<p>Previous Tuberculosis Infection or Disease</p>	<ul style="list-style-type: none"> <li>• Do TST or IGRA only if there is no documentation of a prior test</li> <li>• Educate about the signs and symptoms of TB disease</li> <li>• Administer TB symptom screening and risk assessment questionnaire</li> <li>• Symptomatic individuals should be fully evaluated for TB disease                             <ul style="list-style-type: none"> <li>❖ obtain a chest x-ray</li> <li>❖ collect sputum specimens if patient is coughing or if CXR is abnormal</li> </ul> </li> <li>• Obtain prior treatment status of a patient with a history of TB infection (TBI) or disease including detailed documentation of:                             <ul style="list-style-type: none"> <li>❖ drugs taken</li> <li>❖ duration of treatment</li> <li>❖ history of adverse reactions</li> <li>❖ reasons for discontinuing treatment</li> <li>❖ and prior drug susceptibility results</li> <li>❖ drug-resistance pattern of the source case who infected this person if known</li> </ul> </li> </ul>

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### Chest X-ray Evaluation (See terms below)

- Stable abnormality
  - ❖ No change from previous radiographs
  - ❖ Fully calcified, discrete, nodular lesions without fibrosis likely represent granulomas and pose a lower risk for future progression to TB disease
  - ❖ Persons with evidence suggestive of healed, primary TB disease (*i.e.*, calcified solitary pulmonary nodules, calcified hilar lymph nodes, and apical pleural capping) are not at increased risk for TB disease
- Fibrotic Lesions vs. “Old TB”
  - ❖ “Old” TB cannot be differentiated from active TB disease based on radiographic appearance alone
  - ❖ Persons who have lesions consistent with findings of “old” TB disease on a chest radiograph and have a positive TST reaction or positive IGRA result should be considered high-priority candidates for treatment of TBI, but only after TB disease is excluded by obtaining three respiratory specimens for AFB smear, PCR and culture.

### Common Terminology on a Radiologist’s Report

CXR Radiology Term	Meaning
<b>Consolidation</b>	Often referred to as an ill-defined opacity
<b>Cyst/cavity</b>	Focal spaces or “holes” in the lung; both indicate the absence of lung tissue; a cavity being more likely to be TB, and generally indicative of greatest infectiousness
<b>Granuloma</b>	A small, calcified nodule, usually not indicative of active disease
<b>Interstitial opacity (including infiltrates)</b>	Fibrosis: may or may not be active disease and requires further evaluation Miliary: many tiny nodules resembling millet seeds scattered throughout Nodule: well-defined opacity Parenchymal opacity: usually not indicative of active disease Peribronchovascular thickening
<b>Lymphadenopathy</b>	Enlarged lymph nodes seen as soft tissue densities: usually more indicative of active disease in a child
<b>Nodule/mass</b>	Discrete opacity measuring 2 to 30 mm; a nodule greater than 30 mm is considered a mass often indicative of a carcinogenic process

## Patient Management With Previous Positive TB Tests or Treatment

### Bacille Calmette-Guérin Vaccine (BCG)

- IGRA is the preferred diagnostic test in individuals with a history of BCG vaccination as it does not react to BCG vaccination. Patients will tend to believe a blood test over a skin test.
- A history of BCG vaccination is not a contraindication for tuberculin skin testing, nor does it influence the indications for a TST
- Administer and measure TSTs in BCG vaccinated individuals in the same manner as in those with no previous BCG vaccination
- Tuberculin reactivity caused by BCG vaccination wanes with time but can be boosted with a TST
- BCG-vaccinated individuals with a positive IGRA or a TST reaction  $\geq 10$  mm of induration should be considered for TB infection treatment, especially any of the following:
  - ❖ Individuals continually exposed to populations with a high prevalence of TB (e.g., some healthcare workers, employees and volunteers at homeless shelters, and workers at drug treatment centers)
  - ❖ Individuals who were born in (or have lived in) a country with a high prevalence of TB
  - ❖ Individuals exposed to someone with infectious TB, particularly if that individual has transmitted TB to others
  - ❖ Evaluate these patients for symptoms of TB. If a patient has symptoms of TB disease, obtain a chest x-ray, and collect sputum specimens if the patient is coughing or if the CXR is abnormal

### Resources:

**Tuberculosis Nursing: A Comprehensive Guide to Patient Care, Second Edition 2011, 217 pgs**

<http://www.tbcontrollers.org/resources/tb-nursing-manual/>

**Core Curriculum on TB: What the Clinician Should Know, CDC 6<sup>th</sup> edition 2013**

[http://www.cdc.gov/tb/education/corecurr/pdf/corecurr\\_all.pdf](http://www.cdc.gov/tb/education/corecurr/pdf/corecurr_all.pdf)

**Treatment of Tuberculosis and Tuberculosis Infection in Adults and Children, 149. pp 1359-1374, 1994 (being revised)** <http://www.thoracic.org/statements/resources/mtpi/tbchild1-16.pdf>

**Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection, MMWR 6-9-2000**  
MMWR 2000;49(N0.RR-6) <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4906a1.htm>

**Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, MMWR 12-16-2005** <http://www.cdc.gov/mmwr/PDF/rr/rr5415.pdf>

**Treatment of Tuberculosis, MMWR 6-20-2003** <http://www.cdc.gov/mmwr/PDF/rr/rr5211.pdf>

**Red Book.** American Academy of Pediatrics. 29<sup>th</sup> Edition. 2012