

Patient Management With Previous Positive TB Tests or Treatment

Guidance for Contacts with Previous Positive TST/IGRA and/or Previous TB/TBI	
If evaluation or test results show that a contact has	Then take this action or these actions
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"> • medical conditions and risk factors putting the contact at risk for TB disease • the duration and intensity of exposure
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"> • medical conditions and risk factors putting the contact at risk for TB disease • the duration and intensity of exposure
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"> • previous treatment for TB infection (TBI) • medical conditions and risk factors putting the contact at risk for TB disease • the duration and intensity of exposure
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"> • Evaluate with a physical examination and CXR; TST and IGRA may not be valid due to compromised or immature immune system. • If CXR or physical exam is indicative of TB disease, treat for TB disease. • If not, provide window prophylaxis until 10 weeks after last exposure to infectious person, and then test again.
No symptoms consistent with TB disease, newly positive TST or IGRA	Immuno-compromised or <5 years old <ul style="list-style-type: none"> • Evaluate with a physical examination and CXR. • If CXR or physical exam is indicative of TB disease, treat for TB disease. • If not, provide full course of LTBI treatment even if previously treated.
No symptoms consistent with TB disease, negative or indeterminate TST or IGRA	Normal immune system <ul style="list-style-type: none"> • Test again 10 weeks after last exposure to infectious person.
No symptoms consistent with TB disease, positive TST or IGRA	Normal immune system <ul style="list-style-type: none"> • May provide full course of LTBI treatment; decision to treat must be based on thorough evaluation of contact's health and risk factors.
Definitions of abbreviations: 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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TB Screening of Persons with Previous Positive Test/TBI/TB Disease	
If person has:	Then take these actions:
<p>Documented Prior Positive Test Results (TST/IGRA)</p>	<ul style="list-style-type: none"> • Educate about the signs and symptoms of TB disease • Administer TB symptom screening and risk assessment questionnaire • Symptomatic individuals should be fully evaluated for TB disease <ul style="list-style-type: none"> ❖ obtain a chest x-ray ❖ collect sputum specimens if patient is coughing or if CXR abnormal • Follow-up TSTs or IGRAs and serial chest radiographs are unnecessary for: <ul style="list-style-type: none"> ❖ Persons who have a positive test result for TB infection ❖ Persons who have had TB disease ruled out ❖ Persons who refuse or are unable to receive treatment for TBI ❖ Persons who have completed treatment for TB infection (TBI) or disease
<p>Previous Tuberculosis Infection or Disease</p>	<ul style="list-style-type: none"> • Do TST or IGRA only if there is no documentation of a prior test • Educate about the signs and symptoms of TB disease • Administer TB symptom screening and risk assessment questionnaire • Symptomatic individuals should be fully evaluated for TB disease <ul style="list-style-type: none"> ❖ obtain a chest x-ray ❖ collect sputum specimens if patient is coughing or if CXR is abnormal • 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"> ❖ drugs taken ❖ duration of treatment ❖ history of adverse reactions ❖ reasons for discontinuing treatment ❖ and prior drug susceptibility results ❖ drug-resistance pattern of the source case who infected this person if known

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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
Consolidation	Often referred to as an ill-defined opacity
Cyst/cavity	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
Granuloma	A small, calcified nodule, usually not indicative of active disease
Interstitial opacity (including infiltrates)	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
Lymphadenopathy	Enlarged lymph nodes seen as soft tissue densities: usually more indicative of active disease in a child
Nodule/mass	Discrete opacity measuring 2 to 30 mm; a nodule greater than 30 mm is considered a mass often indicative of a carcinogenic process

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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 ≥ 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 6th edition 2013

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. 29th Edition. 2012