Prevention is the Key to TB Elimination: Find, Treat, and Report LTBI

Screening for Tuberculosis and Treatment of Latent TB Infection (LTBI)

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Updated: 2/5/2021

Who should be screened for tuberculosis?

✓ Close contacts to a person with confirmed infectious TB disease.
✓ People with symptoms of TB (prolonged productive cough, night sweats, weight loss, fatigue, loss of appetite).
✓ People born in or from countries where TB is common.
✓ People living with HIV.
✓ People who regularly use alcohol or injection drugs.
✓ People with other medical risk factors that increase the risk of progression to active disease if infected (e.g., diabetes mellitus, end-stage renal disease, malnutrition, immunosuppressive conditions, certain forms of cancer, such as head & neck, leukemia, or lymphoma).
✓ Residents and employees of high-risk congregate settings (e.g., long term care facilities, correctional facilities, and homeless shelters).
✓ Health care workers who care for people at increased risk for TB disease.
✓ History of BCG vaccination **is not** a contraindication for tuberculin skin testing (TST), although an Interferon-Gamma Release Assay (IGRA) blood test is preferred in these situations.

Table from 2017 Clinical Practice Guidelines: Diagnosis of Tuberculosis in adults and children

GROUP	TESTING STRATEGY	CONSIDERATIONS
Likely to be infected **High** risk of progression (TST≥ 5mm)	**Adults** **Acceptable:** IGRA or TST Consider dual testing where a positive result from either result would be considered positive. **Children ≤5 years of age** **Preferred:** TST **Acceptable:** IGRA or TST Consider dual testing where a positive result from either would be considered **positive.**[1]	Prevalence of BCG vaccination Expertise of staff and/or laboratory Test availability Patient perceptions Staff perceptions Programmatic concerns** ** Examples: individuals that are unable/less likely to return for TST reading and interpretation within 48-72 hours, cost, etc.
Likely to be infected **Low** to **Intermediate** risk of progression (TST≥10mm)	**Preferred:** IGRA where available **Acceptable:** IGRA or TST	
Unlikely to be infected (TST>15mm)	**Testing for LTBI is not recommended** **If necessary:** **Preferred:** IGRA where available **Acceptable:** Either IGRA or TST **For serial testing:** **Acceptable:** Either IGRA or TST Consider repeat or dual testing where a negative result from either would be considered **negative.**[2]	

[1]Performing a second diagnostic test when the initial test is negative is a strategy to increase sensitivity. This may also reduce specificity, but the panel decided this is an acceptable tradeoff in situations in which the consequences of missing LTBI (i.e., not treating individuals who may benefit from therapy) exceed the consequences of inappropriate therapy (i.e., hepatoxicity).

[2]Performing a confirmatory test following an initial positive result is based upon both the evidence that false-positive results are common among individuals who are unlikely to be infected with *M. tuberculosis* and the committee's presumption that performing a second test on those whose initial test was positive will help identify initial false-positive results.

Interpreting a TB Skin Test

≥5 mm is positive for:

- ✔ People living with HIV.
- ✔ A recent contact of a person with TB disease.
- ✔ People with fibrotic changes on chest radiograph consistent with prior TB.
- ✔ People with organ transplants.
- ✔ People who are immunosuppressed for other reasons (e.g., taking the equivalent of >15 mg/day of prednisone for 1 month or longer, taking TNF-α antagonists).

≥10 mm is positive for:

- ✔ People who have come to the United States recently (<5 years) from high-prevalence countries.
- ✔ People born in high-prevalence countries.
- ✔ People who use injection or illicit drugs.
- ✔ Residents and employees of high-risk congregate settings.
- ✔ Mycobacteriology laboratory personnel.
- ✔ People with clinical conditions that place them at high risk.
- ✔ Children <5 years of age.
- ✔ Infants, children, and adolescents exposed to adults in high-risk categories.

≥15mm is positive for anyone, including people with no risk factors.

For individuals with a positive screening test

- ✔ Obtain a chest x-ray.
- ✔ Screen for TB symptoms.
- ✔ People with a positive screening test and no clinical or radiographic evidence of TB disease have latent TB infection.
  - Treatment for LTBI should be initiated. Refer to the table on the back of this card.
  - LTBI is a reportable condition in the state of Indiana. Submit report to the Local Health Department.
- ✔ If the chest x-ray is abnormal or if the patient has TB symptoms, continue the work up until TB disease is ruled out.
  - Obtain 3 consecutive sputum specimens 8-24 hours apart (at least one early morning specimen).
  - Isolate.
  - If TB disease is suspected, report the patient to the Local Health Department. Consult with the regional nurse consultant or TB expert if needed.
  - DO NOT begin a treatment regimen for LTBI until TB disease is ruled out.

Baseline liver function tests (ALT, AST, bilirubin) are not routinely indicated except for

- ✔ People living with HIV.
- ✔ People with a history of chronic liver disease (e.g., hepatitis B or C, alcoholic hepatitis or cirrhosis).
- ✔ People who regularly use alcohol or injection drugs.
- ✔ Anyone who has risk factors for liver disease.
- ✔ People who are pregnant or immediately post-partum period.

Recommended Treatment Regimens for Latent TB Infection

	DRUG	DURATION & FREQUENCY	MAXIMUM DOSE	OTHER
PREFERRED	Isoniazid (INH)^ and Rifapentine (RPT)^^ (3HP)	Once Weekly for 3 months (12 weeks) Total Doses: 12	Adults and Children 12 years of age and over: **INH:** 15 mg/kg rounded to nearest 50 or 100 mg; 900 mg maximum (max) **RPT:** 10.0 – 14.0 kg; 300 mg 14.1 – 25.0 kg; 450 mg 25.1 – 32.0 kg; 600 mg 32.1 – 49.9 kg; 750 mg ≥ 50.0 kg; 900 mg max Children aged 2-11 years: **INH:** 25 mg/kg; 900 mg max **RPT:** see above	- Completion of therapy is defined as completing at least 11 weekly doses of treatment within 16 weeks. - Doses should be given at least 72 hours apart if weekly scheduled dosing variations occur. - Not recommended for pregnant women or women expecting to become pregnant during the treatment period.
	Rifampin (RIF)+ (4R)	Daily for 4 Months Total Doses: 120	Adults: 10 mg/kg; 600 mg max Children: 15-20 mg/kg*; 600 mg max	- Completion of therapy is defined as 120 daily doses within 6 months
	Isoniazid^ and Rifampin+ (3HR)	Daily for 3 Months Total Doses: 90	Adults: **INH:** 5 mg/kg; 300 mg max **RIF:** 10 mg/kg; 600 mg max Children: **INH:** 10-20 mg/kg#; 300 mg max **RIF:** 15-20 mg/kg; 600 mg max	- Completion of therapy is defined as 90 daily doses within 4 months
ALTERNATE	Isoniazid^ (6H/9H)	Daily for 6 Months (Total Doses: 180) **OR** Daily for 9 Months (Total Doses: 270)	Adults: 5 mg/kg; 300 mg max Children: 10-20 mg/kg#; 300 mg max	- Completion of therapy for the 6-month regimen is defined as 180 doses within 9 months. - Completion of therapy for the 9-month regimen is defined as 270 doses within 12 months.
	Isoniazid^ (6H/9H)	Twice Weekly for 6 Months (Total Doses: 52) OR Twice Weekly for 9 Months (Total Doses: 76)	Adults: 15 mg/kg; 900 mg max Children: 20-40 mg/kg#; 900 mg max	- Directly Observed Preventative Therapy (DOPT) must be used for twice-weekly therapy. - Completion of therapy for the 6-month regimen is defined as 52 twice-weekly doses within 9 months. - Completion of therapy for the 9-month regimen is defined as 76 twice-weekly doses within 12 months.

^ INH is formulated as 100-mg and 300-mg tablets. INH liquid is commercially available but is not well tolerated by many children and is not generally recommended.

^^ RPT is formulated as 150-mg tablets in blister packs that should be kept sealed until use.

+RIF is formulated as 150-mg and 300-mg capsules.

Note 1: Directly-Observed Preventative Therapy (DOPT) is recommended for window prophylaxis treatment (see Note 2). DOPT should be considered for people who are at especially high risk for TB disease or who may have difficulty with treatment adherence. Decisions as to whether to use DOPT should be made on a case-by-case basis. Please consult with the regional nurse consultant as needed.

Note 2: Children younger than 5 years old and immunocompromised people exposed to someone with infectious TB, for whom TB disease has been ruled out, should be placed on LTBI treatment while waiting for post-exposure testing. This is called window prophylaxis treatment. Criteria for discontinuing window prophylaxis treatment can be viewed at http://www.cdc.gov/tb

Note 3: All treatment must be modified if the patient is a contact of an individual with drug-resistant TB disease. Consultation with a TB expert is advised if the known source of TB infection has drug-resistant TB.

Note 4: For people living with HIV/AIDS, please visit http://aidsinfo.nih.gov to view latest guidelines. Some rifamycins should not be taken with certain antiretrovirals. Consult with a TB expert or pharmacist if necessary.

Note 5: Pyridoxine (vitamin B6), 25-50 mg/day is given with isoniazid containing regimens such as 6H, 9H, and 3HR and at 50 mg/week with 3HP to people with risk factors for neuropathy (e.g., pregnant women, breastfeeding infants, individuals living with HIV, people with diabetes, alcoholism, malnutrition, or chronic renal failure, or people of advanced age) to prevent neuropathy. For people who develop peripheral neuropathy, experts recommend increasing pyridoxine dose to 100 mg/day.

*The American Academy of Pediatrics acknowledges that some experts use rifampin at 20-30 mg/kg for the daily regimen when prescribing for infants and toddlers (Source: American Academy of Pediatrics. Tuberculosis. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. Red Book: 2018 Report of the Committee on Infectious Diseases. 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:829–53).

#The American Academy of Pediatrics recommends an INH dosage of 10–15 mg/kg for the daily regimen and 20–30 mg/kg for the twice weekly regimen.