UCSF Benioff Children's Hospital Oakland

Guideline for Evaluation & Treatment of Pediatric Latent Tuberculosis Infection

What is latent tuberculosis infection (LTBI)?

LTBI is defined as infection with *Mycobacterium tuberculosis* (TB) without evidence of active TB disease. A person with LTBI has a positive tuberculin skin test (TST) or positive interferon-gamma release assay (IGRA), such as QuantiFERON (QFT), without signs/symptoms or physical exam findings of active TB and without evidence of active TB on chest radiograph.

Who should be tested for LTBI (see link to California Tuberculosis Risk Assessment for Pediatrics in references)?

TB risk assessment should be performed initially at approximately 6-12 months of age and annually thereafter. Only those children with a new risk factor should undergo TB testing. TB risk assessment questions include:

- Birth, travel, or residence in a country with an elevated TB rate for at least 1 month (any country other than US, Canada, Australia, New Zealand, or a country in western or northern Europe)?
- Immunosuppression (current or planned)?
- Close contact to someone with infectious TB disease (during lifetime)?

Which TB test should be performed when a new TB risk factor is identified?

Age	Type of TB Test
<2 years of age	**Preferred:** TST (consider QFT or other IGRA only after consultation with Pediatric ID)
≥2 years of age	**Preferred:** QFT or other IGRA (advantages: 1 visit, less variability, unaffected by prior BCG) Acceptable: TST (if patient is not BCG-vaccinated or if QFT/other IGRA not available or repeatedly indeterminate or if cost of IGRA is an issue)

Testing Tips:

- Perform TB test prior to any planned immunosuppression (e.g., prolonged systemic steroids, TNF-alpha antagonists, organ transplant, etc.).
- When increased sensitivity for diagnosing LTBI is sought (e.g., in very high-risk patients), TST and QFT (or other IGRA) can be done *simultaneously*, with a positive result from either being diagnostic.

What is considered a "positive" TB test?

TST Result	Interpretation (depends on risk factors)	
≥ 5 mm	Positive if:	Contact with active case of infectious TB Abnormal CXR or exam consistent with TB Immunocompromised (HIV, steroids, etc.)
≥ 10 mm	Positive for:	All other persons in California
QFT Result	**Interpretation**	
≥0.35 IU/mL	Positive:	TB infection likely
<0.35 IU/mL	Negative:	TB infection unlikely
Indeterminate	Test failure	Consider repeating test

What is the appropriate evaluation if the TB test is "positive"?

Evaluate patient for active TB disease with:

- Review of systems
- Physical examination
- Chest radiograph (2 views)

If there is concern about active TB, do **not** start TB medications and consult Pediatric ID.

Proceed to treatment for LTBI only after active TB is ruled out.

What is the treatment for LTBI?

Preferred (due to higher completion rates): rifampin

Age <28 days: 10 mg/kg PO once daily for 4 months
Age ≥28 days: 15-20 mg/kg PO once daily for 4 months (see rifampin dosing table on next page)

Weight		Rifampin (age ≥28 days)		
Kilograms	Pounds	150 mg capsule	300 mg capsule	Total milligrams
Up to 7.4	Up to 16.5	½ (approximate)		75 mg
7.5-9.9	16.5-22	1		150 mg
10-14.9	22-33	1 ½ (approximate)		225 mg
15-19.9	33-44		1	300 mg
20-24.9	44-55	2½ (approximate)		375 mg
25-29.9	55-66	3		450 mg
30 and over	66 and over		2	600 mg

- Assess for drug interactions (e.g., contraceptives).
- Forewarn patients of orange discoloration of body fluids (including urine, feces, saliva, sweat, and tears).
- Patients should remove soft contact lenses as permanent staining may occur.
- If an extemporaneous liquid formulation of rifampin (10 mg/mL) is used, mix well before each dose.

Acceptable (lower cost if uninsured): isoniazid 10-15 mg/kg PO once daily for 9 months

Weight		Isoniazid		
Kilograms	Pounds	100 mg tab	300 mg tab	Total milligrams
3-5	6.6-11	½		50 mg
5-7.5	11-16.5	¾ (approximate)		75 mg
7.5-10	16.5-22	1		100 mg
10-15	22-33		½	150 mg
15-20	33-44	2		200 mg
Over 20	Over 44		1	300 mg

- Tablets are preferred because INH liquid suspension commonly causes GI distress due to sorbitol content. However, for young infants, INH liquid suspension (50 mg/5 mL) can be considered.
- Consider vitamin B6 (pyridoxine) supplementation for breastfed infants, children/adolescents with milk- and meat-deficient diets, HIV-positive patients, and patients with INH-associated paresthesia. Once daily dosing:
  Infant: 6.25 mg (¼ of 25 mg tablet) Toddler: 12.5 mg (½ of 25 mg tablet) School-aged child: 25 mg tablet

Acceptable (for children ≥2 years): isoniazid/rifapentine PO once weekly for 12 weeks (consider after consultation with Pediatric ID)

isoniazid (age- and weight-based dosing with max: 900 mg/dose)

Age 2-11 years:	25 mg/kg/dose once weekly (rounded to nearest 50 mg/100 mg)
Age ≥12 years:	15 mg/kg/dose once weekly (rounded to nearest 50 mg/100 mg)

rifapentine (weight-based dosing with max: 900 mg/dose)

10-14 kg:	300 mg once weekly
14.1-25 kg:	450 mg once weekly
25.1-32 kg:	600 mg once weekly
32.1-50 kg:	750 mg once weekly
>50 kg:	900 mg once weekly

Treatment Tips:

- For those unable to swallow pills or capsules, pills may be crushed or capsules may be opened. Powder or fragments should be layered in a small amount of thick, sweet vehicle (e.g., fruit sauce, chocolate pudding, Nutella, baby food).
- Dispense 1-month supply (=30 days) at a time.

What monitoring is recommended during LTBI treatment?

Perform monthly clinic evaluations:

- Check weight and provide monthly refills adjusted for current weight
- Assess medication adherence
- Monitor for signs/symptoms of TB disease
- Monitor for medication toxicity (obtain LFTs only if additional risk factors for hepatotoxicity or signs/symptoms of hepatotoxicity)

Perform end-of-treatment clinic evaluation:

- Verify completion of treatment:
  - Rifampin: 4 months (120 doses) of rifampin within a 6-month period
  - Isoniazid: 9 months (270 doses) of isoniazid within a 12-month period (6 months within a 9-month period is sufficient)
  - Isoniazid/rifapentine: ≥11 weekly doses within a 16-week period
- Provide anticipatory guidance:
  - Inform patient to avoid future TB testing (repeat TST/IGRA will likely remain positive and provides no new information)
  - Educate about signs/symptoms of TB disease and need for regular symptom reviews (CXR needed only if concerning signs/symptoms develop)
- Provide written documentation of treatment completion (see Latent TB Infection Evaluation/Treatment Record)

References

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