California Pediatric Tuberculosis Risk Assessment

Despite being preventable, tuberculosis (TB) disease continues to cause significant suffering and death in the state of California. Even with modern treatments, more than 1 in 6 Californians with TB die (bit.ly/cdc_tbca_data). TB is also a health disparity in California, with a disproportionate impact on people born outside the United States. **Identifying and treating persons with latent TB infection (LTBI) is the most promising tool to prevent TB disease.**

- **Use this tool to identify asymptomatic children for LTBI testing.**
- **Do not treat for LTBI until active TB disease has been excluded.**

If a patient has symptoms of TB disease, including cough (for more than 2 weeks), fevers, night sweats, weight loss, failure to thrive or malnutrition, lymphadenopathy, weakness, hemoptysis or excessive fatigue or an abnormal chest x-ray consistent with TB disease, they should undergo further workup. **Contact your local TB control program** (https://www.ctca.org/locations.html) **if there is suspicion for active TB disease.**

- **A negative tuberculin skin test or interferon gamma release assay does not rule out active TB disease.**
- **In communities with high rates of TB or households with recent active TB, children might be at higher risk of TB exposure. Consider testing children in households with adults with symptoms of pulmonary TB (e.g. cough >2 weeks, fevers, night sweats).**

LTBI testing is recommended if any of the boxes below are checked.

Only repeat TB testing if there is a new risk factor since last screening

☐ **Birth, travel, or residence** for at least 1 month, or frequent border crossing in a country with an elevated TB rate*

Interferon Gamma Release Assay (IGRA) is preferred over Tuberculin Skin Test (TST), especially for non-U.S.-born persons

☐ **Immunosuppression**, current or planned

HIV infection, organ transplant recipient, congenital or acquired immune deficiency, or treated with biologic agents including TNF-alpha antagonist (e.g., infliximab, adalimumab, etanercept, others), steroids (equivalent of prednisone ≥2 mg/kg/day, or ≥15 mg/day for ≥2 weeks) or other immunosuppressive medication

☐ **Close contact** to someone with infectious TB disease during lifetime

Treat for LTBI if LTBI test result is positive and active TB disease is excluded.

☐ **None;** no TB testing is indicated at this time.

Provider Name: _____

Assessment Date: _____

Patient Name: _____

Date of Birth: _____

For more information about using this tool and for the most current version, go to the TB Risk Assessment page (cdph.ca.gov/tbriskassessment).

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***Countries with elevated TB Risk**
This includes many countries in Asia, Africa, Central America, Eastern Europe, Mexico, the Middle East, and South America. "Elevated TB rate" is defined as greater than or equal to 10 TB cases per 100,000 persons by National TB Controllers Association (bit.ly/tbcontrollers). The World Health Organization (WHO) maintains a list of country-specific annual TB incidence in its Global Tuberculosis Report (bit.ly/who-globaltb-data), as well as a searchable TB country profile based on these data (bit.ly/worldhealthorg_data). A quick approximation is to consider all countries outside of the United States, Canada, Australia, New Zealand, and countries in western and northern Europe to have "elevated" TB rates.

Avoid testing persons at low risk
Routine testing of persons without risk factors is not recommended and may result in unnecessary evaluations and treatment because of falsely positive test results.

Most patients with LTBI should be treated
Most persons with risk factors and a positive IGRA or TST should be treated for LTBI after active TB disease has been excluded with physical exam, symptom screen, chest x-ray and if indicated, sputum collection.

Local recommendations
Local recommendations and mandates should also be considered in testing decisions. Local TB control programs can customize this risk assessment. **Providers should check with local TB control programs for local recommendations.**
A directory of TB Control Programs is available on the CTCA website.
(https://www.ctca.org/locations.html)

Mandated testing and other risk factors
This risk assessment is designed to test children at highest risk in a primary care setting. However, certain other populations may be mandated for testing by statute, regulation, or policy. This risk assessment does not supersede any mandated testing. Testing can also be considered in children with frequent exposure to adults at high risk of TB infection, such as those with extensive foreign travel in areas with high TB rates.

Immunosuppression and other medical conditions
The exact level of immunosuppression that predisposes to increased risk for TB progression is unknown. The threshold of steroid dose and duration used in the Pediatric TB Risk Assessment are based on data in adults and in accordance with ACIP recommendations for live vaccines in children receiving immunosuppression. The American Academy of Pediatrics also recommends TB testing of children who are malnourished, or those with chronic renal failure or diabetes that could also increase risk of TB disease progression.

Travel outside the U.S.
Travel to countries with an elevated TB rate may be a risk for TB exposure, with risk being highest in circumstances such as exposure to healthcare facilities, prisons, or refugee camps; extended duration in a location with high prevalence of TB; or likely contact with persons with infectious TB. The duration of at least one consecutive month to trigger testing is intended to identify travel most likely to involve TB exposure. **Tests for TB infection can be falsely negative within the 8 weeks after exposure, so are best obtained at least 8 weeks after a child's return.**

IGRA preference in non-U.S.-born children
Because IGRA has increased specificity for TB infection in children vaccinated with BCG, IGRA is preferred over the TST for children of all ages born outside the United States. **A negative TB test (IGRA or TST) is especially unreliable in infants younger than 3-4 months of age**.

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Negative test for LTBI does not rule out active TB

It is important to remember that a negative TST or IGRA result does not rule out active TB disease. A negative TST or IGRA in a patient with active TB disease can be a sign of extensive disease. Any suspicion for active TB disease or extensive exposure to TB should prompt an evaluation for active TB disease, including physical exam, symptom review, and 2-view chest x-ray. Using both TB tests can increase sensitivity for TB detection in children with TB.

When to repeat a risk assessment and testing

Risk assessments should be completed for new patients, patients thought to have new potential exposures to TB since last assessment, and during routine pediatric well- child visits. Repeat risk assessments should be based on the activities and risk factors specific to the child. Children who volunteer or work in health care settings might require annual testing and should be considered separately. Re- testing should only be done in persons who previously tested negative and have new risk factors since the last assessment (unless they were <3 months of age at the time of testing). In general, new risk factors would include new close contact with an infectious TB case or new immunosuppression, but could also include new extended travel outside the United States.

Symptoms that should trigger evaluation for active TB

Patients with any of the following symptoms that are otherwise unexplained should be evaluated for active TB disease: cough for more than 2-3 weeks, fevers, night sweats, weight loss, failure to thrive or malnutrition, lymphadenopathy, weakness, hemoptysis or excessive fatigue.

How to evaluate for active TB disease

Evaluate for active TB disease with a chest x-ray, symptom screen, and if indicated, induced sputum or gastric aspirate acid fast bacilli (AFB) smears, cultures and nucleic acid amplification testing. A negative tuberculin skin test or interferon gamma release assay does not rule out active TB disease.

Emphasis on 3 or 4 month regimens for treating LTBI

Three or four-month rifamycin-based regimens for treating latent TB infection have been shown to be as effective as 9 months of isoniazid, and are more likely to be completed. Use of these shorter regimens is preferred in most patients, although the 12 week regimen is not recommended for children <2 years of age or children on antiretroviral medications. Drug-drug interactions and contact to drug resistant TB are typical reasons these regimens cannot be used.

LTBI treatment regimens

CDC recommends the following three LTBI regimens as preferred for most patients. Please see CDC LTBI guidelines (https://www.cdc.gov/tb/topic/treatment/ltbi.htm) for dosages and clinical considerations in choosing a regimen.

Medication	Frequency	Duration
Rifampin (15-20mg/kg/day)	Daily	4 months
Isoniazid + rifapentine	Weekly	12 weeks
Isoniazid + rifampin	Daily	3 months

CDC dosing for isoniazid and rifapentine: LTBI Treatment Infographic (bit.ly/cdc-ltbitreatment).

Declining recommended LTBI treatment

If patient or patient's caretakers decline treatment, this should be documented. Recommendations for treatment should be made at future encounters. If treatment is later accepted, TB disease should be excluded and chest x-ray repeated if it has been more than 6 months from the initial evaluation for children 5 years or older and 3 months for children less than 5 years of age, in patients with immunosuppression, or if there has been recent close contact to someone with infectious TB.

Abbreviations

BCG= Bacillus Calmette-Guérin
IGRA=interferon gamma release assay LTBI= latent TB infection
TST= tuberculin skin test

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Resources

Fact Sheets for LTBI Regimens, Isoniazid+Rifapentine, Rifampin, and Isoniazid are available on the TBCB LTBI Treatment page (www.cdph.ca.gov/LTBITreatment).

- CDC LTBI Provider Resources. (bit.ly/ltbi_provider_resource)
- California Department of Public Health Tuberculosis Control Data and Resources. (bit.ly/tb_control_data)
- National TB Controllers Association's Testing and Treatment of Latent Tuberculosis Infection in the United States: Clinical Recommendations (bit.ly/ltbi_recommendations)
- American Academy of Pediatrics, Red Book Online, Tuberculosis is available on the Red Book Online website (publications.aap.org/redbook)