



Updated TB Screening Requirements for the School-Aged Population

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BACKGROUND

Tuberculosis (TB), a bacterial disease transmitted from person to person through the air, has affected humans for centuries and continues to be a problem worldwide, with 9.4 million incident cases in 2009.¹ In order to understand the risk associated with TB, it is important to note the distinction between TB infection and TB disease. **TB infection** is an asymptomatic and non-infectious state where the TB bacteria are present in the body, but contained by the body's immune system. **TB disease** is a symptomatic and infectious state where the TB bacteria are no longer contained by the immune system and have spread throughout the lungs and possibly other parts of the body.

Despite the continued presence of TB in the United States with 11,545 TB cases reported in 2009 (case rate of 3.8 per 100,000), cases have been steadily decreasing since a peak in 1992, when 26,673 cases were reported (10.4 per 100,000).² The experience of Los Angeles County (LAC) parallels that of the nation, with a record low of 674 TB cases reported in 2010 (6.8 per 100,000) compared with a peak of 2,198 cases reported in 1992 (25.6 per 100,000).³

For many years (since 1986), LAC Department of Public Health (DPH) has required all children entering kindergarten or attending an LAC school from outside California for the first time to undergo a test for TB infection and to submit documentation of the test result before starting school. This requirement is based on a 1980 law granting local health officers the authority to require TB testing for schoolchildren (*CA Health and Safety Code 121485*). DPH implemented the school requirement as a method of epidemiological assessment of TB at the community level to determine baseline infection rates and to monitor them over time.

POSITION STATEMENT

After analysis of the trends in TB infection and disease in LAC's school-aged population and review of the most updated evidence-based public health and medical guidelines, DPH is replacing the current "Universal Testing" approach with a "Universal Screening and Targeted Testing" approach in which only those students identified as having an elevated risk for TB would be tested. For the purposes of this approach, **screening** refers to the performance of a risk assessment to determine whether risk factors are present, and **testing** refers to the application of a diagnostic test. Additionally, a **case** is defined as a patient diagnosed with active TB disease (not TB infection).

EXPLANATION AND SUPPORTING EVIDENCE

TB Skin Test Limitations

The test for TB infection currently administered to the vast majority of students is the Mantoux tuberculin skin test (TST). The TST can be a valuable tool in determining the presence of TB infection, however, when applied in low-incidence populations its predictive value is greatly compromised and test results include a high number of false positives.⁴ The current school testing approach clearly shows this effect, as evidenced by the positive predictive value of 0.081 observed among entering kindergarteners in LAC between 2003 and 2009.³ When broken down, the positive predictive value for the test was much higher among foreign-born (FB) kindergarteners (0.515) versus US-born ones (0.039), as was the percentage of positive TST results among FB kindergarteners (16.61%) versus US-born ones (0.76%). Unfortunately, because the TST's specificity is compromised by its reaction to BCG, a vaccine administered to children in many countries outside of the United States, it is unclear what percentage of the FB students who tested positive via the TST were actually infected with TB, another significant limitation of the TST.

In order to use the TST most effectively and to avoid the administration of unnecessary tests and related treatments and costs, the TST (or any currently-available FDA-approved TB infection test) should be applied routinely only among higher-risk populations. This approach aligns LAC's school-testing policies with the guidelines of the following expert health organizations by promoting a testing strategy that directs TB testing to high-risk populations.^{5,6,7,8,9,10:}

- Centers for Disease Control and Prevention (CDC)
- United States Preventive Services Task Force (USPSTF)
- American Academy of Pediatrics (AAP)
- American Thoracic Society (ATS)
- American Academy of Family Practice (AAFP)
- Infectious Diseases Society of America (IDSA)
- California Department of Public Health, Tuberculosis Control Branch (CDPH, TBCB)
- California Children's Medical Services (CMS), Child Health and Disability Prevention (CHDP)

Trends in TB Disease and Infection

TB has become less prevalent in the United States, yet continues to affect several groups disproportionately. Groups that are at elevated risk of becoming infected with TB and/or developing active TB disease after infection include people born in high prevalence areas of the world, low-income groups with poor access to health care, people who inject illegal drugs, people with certain medical conditions, and people who come into contact with high-risk groups.¹¹

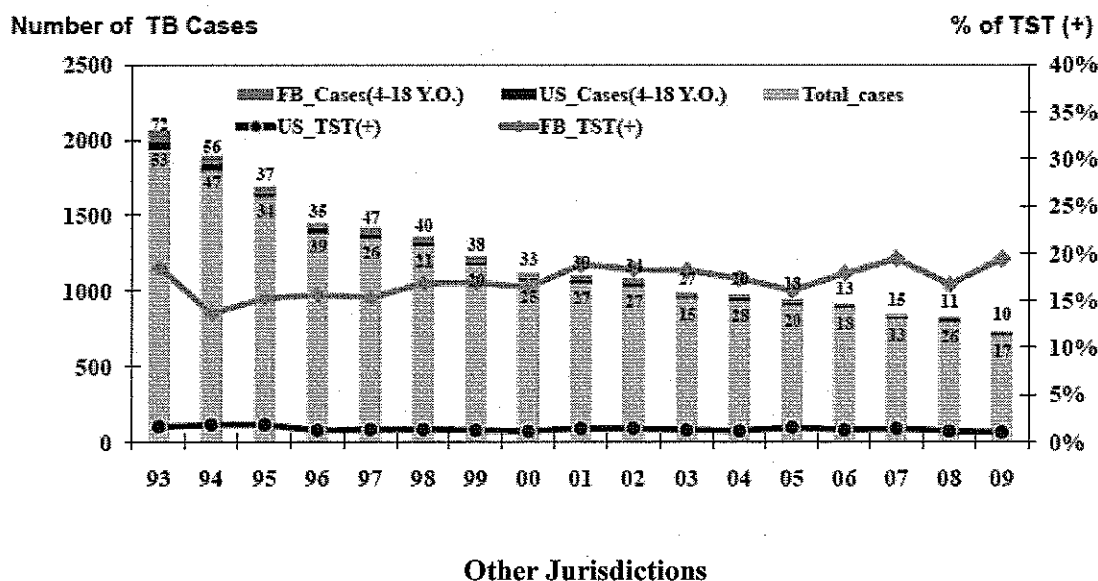
As a whole, school-age children constitute a low-risk population; a review of data collected from schools shows both a low case count and infection rates that have not changed significantly during the years of mandated testing (*Fig. 1*). In fact, out of the 674 TB cases in LAC in 2010, only 25 (3.7%) were under the age of 15, yielding a case rate (1.2 per 100,000) far below the LAC case rate (6.9 per 100,000) that year.³ Out of the 251 school-aged TB cases between the ages of 4 and 18 from 2003 to 2009, only 21 (8.4%) were identified through the school mandate, and of those only 2 were sputum smear positive, which is a way to determine infectivity. Data from 2003-2010 reveal that a total of 152,112 first-time school entrants were tested from ages 11-18, but of the 164 cases of TB disease in this age group (2003-2010), only 14 cases (8.5%) were identified by screening. *In 2010 alone, there was only one case*

identified that was attributable to the current school testing policy. The remaining cases were identified after seeking medical attention due to TB symptoms or due to an abnormal chest X-ray.

However, certain groups of children are at higher risk for TB infection. Children born outside of the United States and in high-prevalence regions of the world (usually considered all countries other than the U.S., Canada, Australia, New Zealand, and the countries of Western Europe) demonstrate increased risk for TB infection; among entering kindergarteners in LAC, 16.61% of foreign-born students test positive for TB infection while only 0.76% of U.S.-born students have a positive result.³ This data suggests that TB infection prevalence is significantly higher in foreign-born students, and this higher prevalence leads to a higher positive predictive value for the TST in foreign-born students. Several other risk factors have also been associated with TB infection, including contact with an infected adult and extended travel to a high-incidence country^{12,13}

The replacement of the universal testing approach with a universal screening, targeted testing policy would prevent unnecessary testing and treatment in many low-risk children, who represent about 87% of children tested.³ (Out of the 1,026,937 children tested between 2003 and 2009 due to the school mandate program, 890,326 were US-born). By changing its policy regarding the school requirement, DPH will be better able to focus attention and resources on populations at elevated risk for TB infection and disease who would benefit greatly from TB testing and timely treatment.

Figure 1: TB Skin Test Results among New School Entrants (K – 12) and TB Cases (4 – 18 years old) in Los Angeles County, 1993 – 2009. (Note: FB refers to foreign-born while US refers to U.S.-born.)



Almost all of LAC's neighboring counties that had at one time instituted a universal TB testing program for schoolchildren have now revised their policies to reflect current CDC guidelines. Counties that have revised mandates and moved from universal testing to targeted testing include Orange, Riverside, Santa Barbara, and San Francisco. Several other counties never instituted mandatory TB testing for students, including San Bernardino, San Diego, San Joaquin, and Ventura. On a national level, New York City, the area with the highest TB morbidity in the country, amended its health code in 1996 to eliminate TB testing requirements for new elementary school entrants.

NEW APPROACH

In order to adopt an approach that incorporates targeted testing, the DPH TB Control Program plans to execute the following implementation plan, summarized below:

Timeline	Action
February 2012	Begin educational outreach to medical providers, schools and community members about the policy change. For schools and parents, information about accessing and establishing a regular source of care will be included, along with information about where to refer children.
July 2012	Implement revised universal screening, targeted testing into the existing California State physical examination requirement for children entering first grade. Health providers, as part of this routine health assessment, would screen students and only test them for TB if a risk factor is present, according to AAP Red Book guidelines.
August 2012	Provide technical assistance to schools and providers regarding new policy.
September 2013 – onward	Evaluate effectiveness of universal screening and targeted testing policy. Modify policy as needed to ensure that high risk children are getting tested.

The role of schools in maintaining documentation of TB screening would involve collecting the CHDP form entitled “Report of Health Examination for School Entry” (PM 171 A) for all children entering first grade. This form is something that schools already routinely collect, and they would be amended slightly to indicate the date on which TB screening took place (as opposed to testing). The form used in the clinic during this routine CHDP assessment is the PM 160, and it is used by the provider to note whether or not placement of a test for TB infection (TST or IGRA) was indicated.

To ensure that physicians are actually conducting the pre-entry TB screenings and, if needed, the necessary testing and follow-up, the TB Control Program will monitor screening data with CHDP. The TB Control Program will also work with schools, providers and relevant stakeholders to emphasize the need for and importance of the first grade school entry physical exam requirement.

Extensive efforts will be made to ensure that physicians have access to and are acquainted with screening, testing and follow-up clinical guidelines. The TB Control Program plans to engage in extensive outreach to providers in the form of presentations, newsletter article publications, and website postings.

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