CTCA
CALIFORNIA TUBERCULOSIS CONTROLLERS ASSOCIATION

CTCA POSITION ON TB TESTING OF SCHOOL-AGE CHILDREN

Introduction

Although progress has been made, tuberculosis (TB) continues to be a significant public health problem; appropriate TB testing followed by treatment of latent TB infection is an important strategy for the control of tuberculosis. A review of the scientific literature[2,3,4,5] indicates that universal TB testing of school aged children is not a cost effective TB Control Program intervention. Direct and indirect costs must be considered when conducting a cost benefit analysis. With diminishing resources it is important to focus on evidenced based interventions that will move California towards TB elimination.

This position statement will discuss the California TB Controllers Association's (CTCA) recommendation that universal TB testing of school-age children be replaced with a TB risk assessment questionnaire and TB testing based on the results of the TB risk assessment.

TB Skin Test Limitations

The test for TB infection currently administered to the vast majority of students is the Mantoux tuberculin skin test (TST). Developed a century ago, the TST continues to be a very valuable tool in determining the presence of TB infection. However, when the TST is applied in low-incidence populations, its positive predictive value is greatly compromised,[1] and test results include a high number of false positives. Data from the LA County (LAC) school mandate clearly creates this effect, as evidenced by the positive predictive value of 0.081 observed among entering kindergarteners in LAC between 2003 and 2009, assuming 80% sensitivity and 85% specificity for the test.[3] When broken down, the positive predictive value for the test was much higher among foreign-born (FB) kindergartners (0.515) versus US-born (0.039), as was the percentage of positive TST results among FB kindergarteners (16.61%) versus US-born (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.

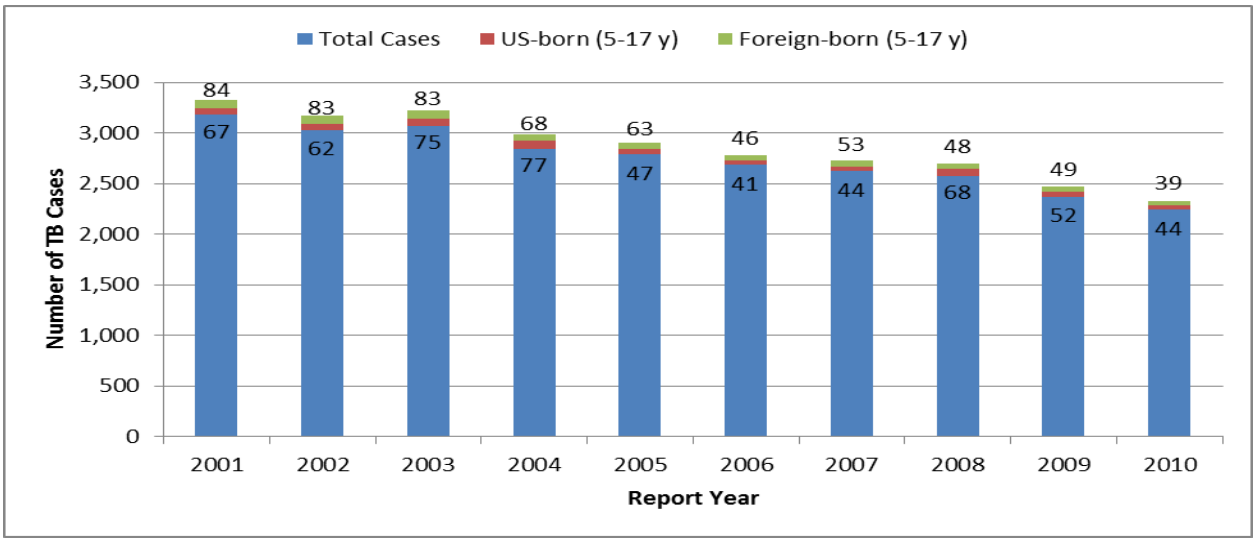
In order to use the TST most effectively and to avoid the administration of unnecessary tests, which create significant social and financial burdens for patients, and potentially hepatotoxic TB infection treatment regimens, which pose preventable risks for those who have false positive TST results, the TST (or any currently-available FDA-approved TB infection test) should be applied routinely only among high-risk populations. This position is consistent with the Centers for Disease Control and Prevention (CDC), U.S. Preventive Services Task Force (USPSTF), American Academy of Pediatrics (AAP), American Thoracic Society (ATS), American Academy of Family Physicians (AAFP), Infectious Diseases Society of America (IDSA), California TB Control Branch (CTCB), and California Children's Medical Services (CMS) by promoting a testing strategy that directs TB testing to high-risk populations,[2,3,4,5,6,7] and encourages children to be seen in medical homes where all their healthcare needs can be met.

Trends in TB Disease and Infection

As TB has become less prevalent in the United States, it has begun to affect several groups disproportionately. Groups that are at elevated risk for 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.[8]

As a whole, school-age children constitute a low-risk population for tuberculosis (TB) disease; a review of data collected by the California Department of Public Health, Tuberculosis Control Branch show a downward trend in the number of TB cases reported in children 5 to 17 years of age (*Fig. 1*).[9] In 2010, 83 TB cases with known nativity were reported in school-age children, representing 3.6% of the total 2,329 California TB cases reported. Of these 83 school-age TB cases, 44 (53%) and 39 (47%) were U.S.-born and foreign-born, respectively.

Figure 1: Number of TB Cases, California and 5- 17 years old by Nativity, 2001-10



However, certain groups of children are at higher risk for TB infection. Children born outside of the United States and in high TB 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. Bennett et al estimated the latent TB infection (LTBI) prevalence in the U.S. population using data collected during the 1999-2000 NHANES.[10] This data suggests that LTBI prevalence is significantly higher in foreign-born students.

	LTBI Prevalence	
	U.S.-born Population	**Foreign-born Population**
Age group, yr	**% (95% CI)**	**% (95% CI)**
1-14	0.3 (0.1-1.1)*	11.9 (5.2-24.8)*
15-24	0.6 (0.2-1.6)*	12.8 (5.1-28.4)*

* Estimates and 95% confidence intervals (CI) are unstable and may not accurately reflect the true proportion because of the small number of individuals in the subgroup.

Adopting a targeted testing policy would prevent unnecessary testing and treatment in many low-risk children. This will allow TB Control Programs to focus their attention and resources on populations at elevated risk for TB infection and disease who would benefit greatly from TB testing and timely treatment. There are other ways to capture pediatric cases (particularly through targeted testing and rigorous case investigation) that are more effective, comprehensive, and evidence-based.[11, 12] Although the infectiousness of TB pediatric cases is minimal due to their lower bacillary load,[13] contact investigations should still be conducted in a school setting for all identified pediatric cases.

Conclusion

The best public health and medical evidence suggests that universal TB testing is neither necessary nor cost-effective. The number of pediatric cases is low, and universal testing results in a number of false positives. This can result in some children being unnecessarily placed on potentially toxic treatment regimens. *California Health and Safety Code, Section 121485* allowed universal testing mandates for school children only if "persons seeking first admission to school are reasonably suspected of having tuberculosis" and if "the examination of the persons for tuberculosis is necessary for the prevention and protection of the public health."[14] This is no longer the case for the population of children entering the majority of schools in California. Each TB Control Program must utilize the epidemiology of TB in their jurisdiction to decide how best to apply this strategy at the local level. In jurisdictions where the TB Controller and/or Public Health Officer determines that there is a need for TB screening, CTCA recommends replacing the universal TB testing of school aged children with a TB risk assessment questionnaire, and conducting TB testing based on the results of the TB risk assessment. This recommendation is consistent with guidelines from numerous expert bodies and will allow the TB Control Programs to work most effectively to detect and control TB in California.

References

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