

IAC Study Shows Importance of Repeat Tuberculosis Testing in International Adoptees

Results from one of the first research projects to emerge from the Cincinnati Children's Hospital Medical Center International Adoption Center (IAC) were presented at the Pediatric Academic Societies' Annual Meeting in Washington, DC in May 2005. Indi Trehan, MD, MPH, a pediatric resident at Cincinnati Children's analyzed data from children seen in the International Adoption Center from November 1999 through April 2004.

The study was conducted to see if the current recommendations from the American Academy of Pediatrics (AAP) adequately identified all internationally adopted children with tuberculosis. The AAP recommends that all internationally adopted children be screened for tuberculosis using a tuberculin skin test (TST), shortly after arrival to the US and if malnutrition is suspected, to retest once the child is better nourished.

The concern is that malnourished children may not be able to respond to the test adequately (a term called anergy). The problem is that the definition of "malnourished" is not provided in these recommendations, likely because it is often difficult for clinicians or researchers to agree upon a definition. In addition to malnutrition, there are other reasons to repeat testing at a later date. It is possible that given the long incubation period of tuberculosis, retesting several months after arrival may identify additional children who have tuberculosis. Thus, it has been the practice of the IAC to screen all children for tuberculosis shortly after arrival to the US and then again 3 or more months later if the initial TST was negative.

We conducted this study to see if doing this repeat testing would identify additional children infected with tuberculosis who were initially felt to be free of infection. The study was approved by the Cincinnati Children's Institutional Review Board using a limited data set agreement. Children were included in the study if a TST was placed at the IAC within 2 months after arrival to the US.

Of the 548 children in the study, many countries were represented: Russia (35%), China (20%), Guatemala (13%), Eastern Europe (10%), Kazakhstan (7%), South Korea (6%) as well as several other countries. The initial testing found 110 (20%) of children to have a positive TST (≥ 10 mm of induration). Of the 416 children who initially tested negative, nearly half returned ($n=203$) and of those, 19% had positive TSTs.

The prevalence of tuberculosis infection varied by birth country, ranging from 6% in Korean adoptees to 36% in Guatemalan children. In our preliminary analyses, there did not appear to be any difference in likelihood of having tuberculosis by the age of the child at testing, except those very young infants (<6 months of age) were less likely to have a positive skin test compared to older children. Many children with arrival weights

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in the normal range on the US growth chart had a positive TST on repeat testing, suggesting malnutrition alone should not be the only reason for repeating an initially negative TST. Additional analyses are underway to determine if using different definitions for malnutrition would affect the results.

The discovery that a large proportion of children who initially test negative, but later are found to have tuberculosis infection is concerning since tuberculosis disease is potentially life-threatening, especially in young children and can be highly contagious. It is important that all internationally adopted children with tuberculosis infection be identified at the earliest time possible so that disease in that child and spread of the disease to the child's family and community can be prevented. Isoniazid is an extremely safe and effective therapy that prevents progression of tuberculosis infection to disease. Repeat TSTs identifies many children that would otherwise be missed. By identifying these children and treating them with isoniazid, tuberculosis disease in our children and our community will be prevented.

We are fortunate to be able to conduct studies such as this at the IAC. Numerous people have made this study possible. In addition to Dr. Trehan's hard work in analyzing the data, students from our Summer High School Intern Program have abstracted data each summer so that we can examine our data to answer these important questions. Dr. Trehan is preparing the manuscript for this work so that the results will be published. It is likely that the results of our study will provide the information needed so that the AAP recommendations can be updated. Also, the results from our study may be applicable to other immigrant populations. It will be important that this study be done in other immigrant populations to see if additional children and adults with tuberculosis are identified with repeat testing.

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