

Tulane-led Study Identifies Inexpensive, Effective Test for Tuberculosis in Children

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An international team of researchers comparing recently-developed methods for diagnosing tuberculosis in children in resource-poor countries has concluded that the best test for high-risk children is the microscopic-observation drug-susceptibility (MODS) technique. MODS detects the presence of bacteria causing tuberculosis using microscopes to detect typical growth patterns in culture broth. The team, led by Dr. Richard Oberhelman, Professor of Tropical Medicine, Tulane University School of Public Health and Tropical Medicine, published results of the study in the August issue of *The Lancet Infectious Diseases*.

The availability of inexpensive and updated diagnostic technology is crucial for reducing the incidence of tuberculosis in developing countries. Children account for an estimated 20 percent of cases in high-incidence communities, but the outdated diagnostic tools available to physicians in such settings, including skin tests, chest x-rays and physical examinations, make it difficult to confirm cases of pediatric tuberculosis.

“Diagnosing tuberculosis in children is challenging,” says Oberhelman. “Symptoms of tuberculosis in children are non-specific, specimens for testing are difficult to obtain, and cultures and smears are often negative.”

The team's goal was to identify the most accurate and rapid test for tuberculosis in children in resource-poor areas with limited laboratory capabilities. The study was carried out in two hospitals in Lima, Peru, from 2002 to 2007, with 456 children of age 12 or younger enrolled as subjects. The team compared results of several different tests on specimens from each subject: MODS, Lowenstein-Jensen culture, auramine stain testing and polymerase chain reaction (PCR), a genetic testing method.

The study evaluated the sensitivity and speed of each method. The authors concluded that PCR testing was not specific or sensitive enough for routine diagnosis, although duplicate PCR was useful to identify which high-risk children were most likely to have positive TB cultures. Compared with the Lowenstein-Jensen bacteria culturing method, MODS almost doubled the sensitivity of detecting tuberculosis, diagnosing 20 of 22 patients compared with 13, and in less than half the time (10 days versus 25 days).