

## **ABSTRACT**

### **XI Cochrane Colloquium**

**Barcelona, Spain, 26 – 31, October 2003 (accepted for oral presentation)**

#### **Title: Use of meta-regression methods in the evaluation of heterogeneity in meta-analyses of diagnostic studies**

Madhukar Pai, Laura L. Flores, Alan Hubbard, Lee W. Riley, John M. Colford, Jr.  
School of Public Health, University of California, Berkeley, USA

**Objective:** To describe the use of meta-regression in the evaluation of heterogeneity in two separate diagnostic meta-analyses.

**Methods:** We conducted two meta-analyses to determine the accuracy of nucleic acid amplification tests in the diagnosis of 1) tuberculous meningitis (TBM) [N = 49 studies]; and 2) tuberculous pleuritis (TP) [N = 40 studies]. In both meta-analyses, heterogeneity was a major finding. To evaluate heterogeneity, we used the summary receiver operating characteristic curve regression analysis that models the log of the diagnostic odds ratio (DOR) as the dependent variable. The independent variables were components of study quality, and test characteristics defined *a priori*. The regression coefficients were exponentiated and interpreted as relative DOR (RDOR).

**Results:** In the TBM model, case-control studies produced DOR that were 2.97 (95% CI 1.03, 8.50) times higher than cross-sectional studies ( $R^2 = 0.23$ ). In the TP model, case-control design (RDOR 2.7; 95% CI 0.83, 8.93), and use of the IS6110 DNA target sequence (RDOR 2.8; 95% CI 0.88, 8.76) appeared to be associated with heterogeneity ( $R^2 = 0.25$ ).

**Conclusions:** In both meta-analyses, we identified potential sources of heterogeneity using the meta-regression approach. However, in both cases, meta-regression could account for only 25% of the variability in DOR.

Word count: 200