

ABSTRACT

OBJECTIVE: To determine the diagnostic accuracy of tuberculosis (TB) nucleic acid amplification tests (NAATs) in urine samples for individuals with active pulmonary tuberculosis (PTB). **DESIGN:** Systematic review and meta-analysis. Electronic databases and reference lists were searched without age or setting restrictions up to May 2015. Eligible articles examined *Mycobacterium tuberculosis* NAATs in urine samples for PTB diagnosis in patients with sputum culture as the reference standard, and reported sufficient data to separately calculate sensitivity or specificity. **RESULTS:** Eight studies, including 1212 participants from seven countries with a mean age ranging from 28 to 48 years, were included. Polymerase chain reaction (PCR) with insertion sequence (IS) 6110, *rpoB* or *cfp32/hf6* as gene targets was used for NAATs. The pooled sensitivity and specificity was respectively 0.55 (95%CI 0.36-0.72) and 0.94 (95%CI 0.78-0.99), with slightly higher sensitivity in human immunodeficiency virus positive individuals, at 0.59 (95%CI 0.20-0.89). Sensitivity was higher in sputum microscopy-positive than -negative individuals. Storage temperatures below -70°C , centrifuge speed <5000 rpm and IS6110 increased sensitivity on meta-regression. **CONCLUSIONS:** Urine *M. tuberculosis* PCR for active PTB diagnosis had high specificity but modest sensitivity (55%). Optimizing specimen handling, gene targets or PCR techniques may improve diagnostic accuracy. Reproducibility data are needed.