

Xpert MTB/RIF and Xpert MTB/RIF Ultra assays for active tuberculosis and rifampicin resistance in children

Kay AW, González Fernández L, Takwoingi Y, Eisenhut M, Detjen AK, Steingart KR, Mandalakas AM. Cochrane Database of Systematic Reviews 2020. DOI: 10.1002/14651858.CD013359.pub2.

Background: Xpert MTB/RIF and Xpert Ultra are WHO-recommended rapid molecular tests to detect TB and rifampicin resistance in adults and children.

Objectives: To determine the accuracy of tests in symptomatic children for diagnosing pulmonary (PTB), lymph node (LTB), tuberculous meningitis (TBM), and rifampicin resistance.

Selection criteria: Cochrane analysis of randomized trials, cross-sectional trials & cohort studies (till 29 April 2019) evaluating Xpert MTB/RIF or Xpert Ultra in children <15 years.

Baseline dataset: 49 studies included (299 data sets describing ~70,000 children).

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



Xpert MTB/RIF and Xpert MTB/RIF Ultra assays

Results:

Reference standards: culture



Pooled sensitivity (SS) and specificity (SP)	Xpert	Xpert Ultra
Detection of PTB		
Sputum specimens	SS 65%, SP 99%	SS 73%, SP 97%
Gastric aspirate	SS 73%, SP 98%	SS 46%, SP 97%
Stool specimens	SS 61%, SP 98%	--
Nasopharyngeal specimens	SS 46%, SP 98%	--
Detection of TBM		
For cerebrospinal fluid	SS 54%, SP 94%	No studies of Xpert Ultra identified
For lymph node TB aspirate or biopsy	SS 90%, SP 90%	
Detection of rifampicin resistance	SS 90%, SP 98%	

Authors' Conclusions

• Xpert MTB/RIF sensitivity varies by specimen type

- Gastric aspirate > sputum and stool > nasopharyngeal

Specificity in all specimens > 98%

• In comparison with this, Xpert Ultra sensitivity in sputum is higher

• Xpert MTB/RIF was accurate for detection of rifampicin resistance

• Xpert MTB/RIF was sensitive for diagnosing lymph node tuberculosis

• For children with presumed TBM, treatment decisions should be based on entire clinical information, treatment should not be withheld solely on an Xpert result

Key Message: This Cochrane review suggest Xpert tests have potential to be used to detect TB and rifampicin resistance in children

EXPERT COMMENT



“The results of the review suggest Xpert tests have the potential to be used to detect TB and rifampicin resistance. The risk of missing a diagnosis of PTB and rifampicin resistance with Xpert is low. More studies are needed for TBM in children and a composite decision has to be relied upon currently. The area has potential for research especially in endemic countries”

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Reference

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