

Cost comparison analysis of RT-LAMP for additional Tuberculosis case detection in India



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Policy Brief

Summary

India's high TB burden underscores the urgent need for diagnostic tools that are both accurate and affordable. This HTA compares RT-LAMP with Truenat to evaluate its diagnostic performance and economic impact, aiming to support policy decisions on adopting low-cost, high-accuracy diagnostic methods under the NTEP. RT-LAMP demonstrated higher sensitivity (89.4%) and specificity (94.1%) than Truenat (88.3% and 73.8%, respectively). It also costs significantly less per test ₹484 compared to ₹911. Moreover, RT-LAMP detected three additional true positive TB cases per 1,000 presumptive patients and identified 151 more true negative cases, indicating greater reliability in ruling out TB. These results suggest that RT-LAMP is both clinically effective and economically more favorable than Truenat. Given its accuracy and affordability, RT-LAMP may serve as a valuable additional diagnostic tool under NTEP, particularly in resource-limited settings where Truenat is currently used.

Problem Statement

India bears a high burden of tuberculosis (TB), demanding rapid, accurate, and affordable diagnostic tools.¹ Truenat, though widely used, is costly and has low specificity.² Real-Time Loop-Mediated Isothermal Amplification (RT-LAMP) offers improved sensitivity and specificity at a lower cost, presenting a promising alternative.^{3,4,5} However, its cost compared to Truenat remains underexplored. This Health Technology Assessment (HTA) evaluates RT-LAMP's diagnostic and economic performance compared to Truenat. The findings aim to inform policy decisions regarding the adoption of lower-cost, high-accuracy diagnostic methods for TB within the National TB Elimination Programme (NTEP).

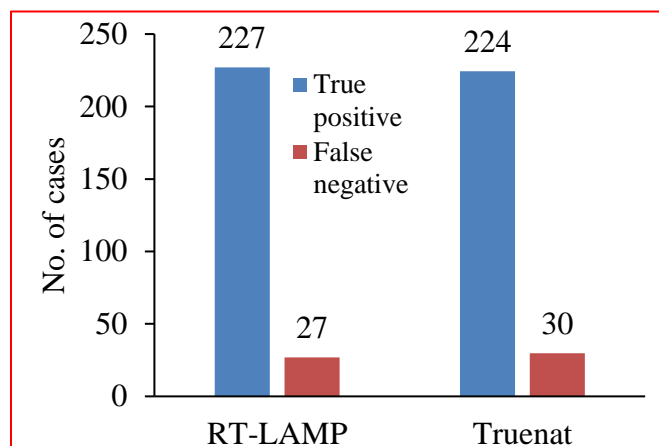
Diagnostic accuracy RT-LAMP and Truenat diagnostic tests to detect pulmonary TB cases

	Sensitivity 95% CI	Specificity 95% CI	PPV (%)	NPV (%)
RT-LAMP	89.36 (76.90-96.45)	94.06 (90.77-96.44)	83.8	96.3
Truenat	88.30 (86.10-90.30)	73.80 (71.60-75.90)	53.4	94.9

Base case results of TB case detection by RT-LAMP and Truenat for 1000 presumptive TB cases

	Cost per test	Total no. of cases [95% CI]	Cost diff	No. of cases (%)
True positives				
RT-LAMP	484	227 [195-245]	-427	3 (1)
Truenat	911	224 [219-229]		
True negatives				
RT-LAMP	484	702 [677-719]	-427	151 (27)
Truenat	911	551 [534-566]		

Number of true positive cases detected and number of cases missed by RT-LAMP and Truenat



Recommendations

- ❖ RT-LAMP is a better and more affordable diagnostic tool than Truenat for detecting M.tb.
- ❖ Its lower cost and higher accuracy can ease the health system's financial burden and support early diagnosis.
- ❖ Policymakers may implement RT-LAMP as add on tool to existing diagnostics like Truenat, particularly in decentralized or peripheral health facilities.

References

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The policy brief is based upon the Health Technology Assessment on RT-LAMP based diagnostic tools for additional Tuberculosis case detection in India and can be found on the link:<https://dhr.gov.in/sites/default/files/>