prevalent serotypes: >70% for types 1, 3, 7and 5, 50% for type 9 and <50% for types 12, 8 and 6. From 2014 on, disappearance of serotype 1 and a significant decrease in serotype 7 were observed.

***Conclusion.*** A 70% compliance to the diagnostic algorithm for IPD was observed. PAgT detects C-polysaccharide (teichoic acid) on the pneumococcal cell wall. Differences in concentration for the individual serotypes have been described and may account for the varying sensitivity in our dataset. Introduction of 10/13-valent childhood pneumococcal vaccines (2014) in Belgium has changed the overall serotype distribution, also possibly leading to a shift in PAgT performance. A dynamic validation of PAgT accuracy remains warranted.

***Disclosures.*** **All authors:** No reported disclosures.

## 2000. Rapid, Point-of-care Diagnosis of Tuberculosis with Novel Truenat Assay: Cost-Effectiveness and Budgetary Impact Analysis for India's Public Sector

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***Background.*** Point-of-care (POC) tuberculosis (TB) diagnostics may dramatically improve TB outcomes. Truenat is a new, battery-powered RT-PCR device that rapidly detects TB and rifampin resistance. Due to its portability, it may be valuable in peripheral healthcare settings. We evaluated the cost-effectiveness of Truenat in peripheral laboratories (designated microscopy centres [DMCs]) and public healthcare facilities in India.

***Methods.*** We used the CEPAC-International microsimulation model to compare four TB diagnostic strategies for adult, HIV-negative patients with suspected TB: (1) sputum smear microscopy in DMCs (SSM); (2) Xpert MTB/RIF in DMCs (Xpert); (3) Truenat in DMCs (Truenat DMC); and (4) Truenat in public healthcare facilities (Truenat POC). We projected life expectancy (LE), costs, incremental cost-effectiveness ratios (ICERs), and 5y budget impact of full scale-up. A strategy was cost-effective if its ICER was <US$990/year of life saved (YLS) (i.e., <50% of India annual per capita GDP). Model inputs included: TB prevalence, 20%; sensitivity for TB detection, 92% for Xpert and 89% for Truenat; costs per test, $12.70 for Xpert and $13.20 for Truenat; linkage to care after diagnosis, 84% for DMC-based tests and 95% for POC. We varied these parameters in sensitivity analyses.

***Results.*** Compared with SSM, other strategies increased TB case detection by >6%; Truenat POC increased LE by ~0.3 years with ICER $210/YLS (Table 1). Compared with Xpert, Truenat DMC decreased LE and cost, but Truenat POC improved LE by 0.05 years and was cost-effective. In multi-way sensitivity analysis at 5 years horizon, Truenat POC, at 89% diagnostic sensitivity and linkage to care >86%, was cost-effective and sometimes cost-saving compared with Xpert (Figure 1). The cost-effectiveness of Truenat, relative to Xpert, depended on the interplay of sensitivity and linkage to care. Public-sector implementation of Truenat POC increased healthcare expenditures by $360 million compared with full scale-up of Xpert (Figure 2). Treatment costs, not diagnostic test costs, accounted for most of the difference.

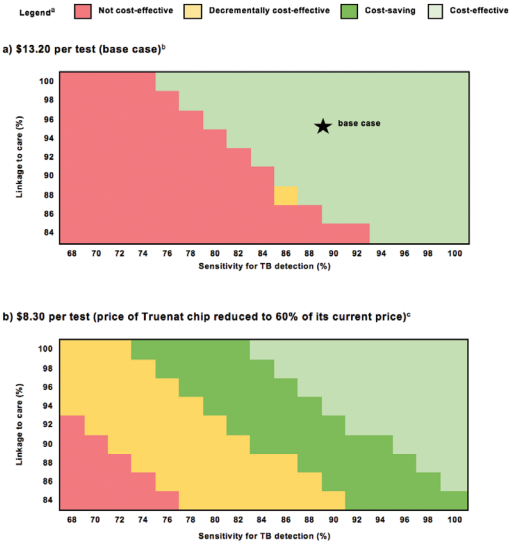
***Conclusion.*** When used at the point of care, Truenat for TB diagnosis should improve linkage to care, increase LE, and be cost-effective compared with SSM or Xpert and, thus, should be more widely utilized in India.

**Table 1: Clinical impact, costs, and cost-effectiveness of TB diagnostic strategies among patients with suspected TB seeking care in India's public sector.**

| | TB Case Detection | | Lifetime Outcomes | | | | |
|---|---|---|---|---|---|---|---|
| | | | Life-years | | Costs (2017 US$) | | |
| Strategy | Total TB[a] (%) | MDR-TB[a] (%) | Undisc. | Disc. (3%/y) | Undisc. | Disc. (3%/y) | ICER (US$/YLS)[e] |
| SSM | 11.9 | 0.7[b] | 31.06 | 18.52 | 100 | 90 | --- |
| Truenat DMC | 18.5 | 2.1[c] | 31.44 | 18.74 | 150 | 140 | dominated[f] |
| Xpert | 18.8 | 2.3[c] | 31.45 | 18.75 | 150[d] | 140[d] | dominated[f] |
| Truenat POC | 18.5 | 2.1[c] | 31.54 | 18.80 | 160 | 150 | 210 |

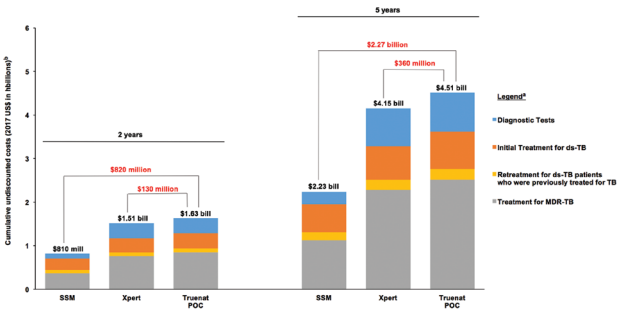
TB: tuberculosis. MDR-TB: multidrug-resistant tuberculosis. SSM: sputum smear microscopy. DMC: designated microscopy centre. POC: point-of-care. LE: life expectancy. Undisc: undiscounted. Disc. (3%/y): discounted 3%/year. ICER: incremental cost-effectiveness ratio. YLS: year of life saved.
[a]Proportion of patients with suspected TB who were correctly detected by each strategy. True TB prevalence among tested patients was 20%.
[b]In the diagnostic algorithm for SSM, smear-positive results are followed by culture and drug-susceptibility testing for patients with history of TB treatment.
[c]Rifampin resistance detected by Truenat or Xpert is presumed to be diagnostic for MDR-TB.
[d]Lifetime cost of Xpert is higher than lifetime cost of Truenat DMC, but appears similar due to rounding.
[e]ICERs calculated based on discounted LE and costs, using exact numbers and rounded to the nearest $10.
[f]"dominated": weakly dominated (higher ICER than a strategy offering more life-years).

**Figure 1: Multi-way sensitivity analysis heat maps of the incremental cost-effectiveness ratio of Truenat POC strategy relative to Xpert at 5-year horizon.** Each panel displays different costs of Truenat, including the scenario (b), in which the price of the Truenat chip is negotiated to 60% of its current price for the public sector. Sensitivity of Truenat for TB detection (%) increases from left to right on the horizontal axes. The probability of patients linking to treatment upon receiving a positive test result for TB increases up the vertical axes.




TB: tuberculosis. POC: point-of-care.
[a]"Cost-saving": Truenat POC results in higher clinical benefit (i.e., life-years accrued) and lower cost compared to Xpert.
"Cost-effective": Truenat POC results in higher clinical benefit and higher costs compared to Xpert, but with ICER <$990/YLS (<0.5x 2017 Indian annual per capita GDP)—that is, less than $990 is spent per year of life saved.
"Decrementally cost-effective": Truenat POC results in lower clinical benefit and lower costs compared to Xpert, but with ICER >$990/year of life lost (YLL)—that is, at least $990 is saved per year of life lost.
"Not cost-effective": Truenat POC results in either (1) higher clinical benefit and higher costs compared to Xpert, with ICER >$990/YLS or (2) lower clinical benefit and lower costs compared to Xpert, with ICER <$990/YLL.
[b]This cost accounts for Truenat test chip and workstation, costs of labor, infrastructure, and other materials. Price of each test chip is $12.40, and price of workstation varies from $7,420 to $14,150, depending on the ability to run multiple chips simultaneously. Price of the workstation able to run 4 chips simultaneously was incorporated into base case cost. These are current price estimates for India's public sector and may change based on volume commitment by the government.
[c]60% was chosen based on historic precedent of price negotiations for the Xpert cartridge, in which a volume commitment of >3 million cartridges per year reduced Xpert's cartridge price to 60% of its base price for India and other approved countries.

**Figure 2: Budget impact analysis over 2 and 5 years.** Budget impact analysis of full public sector implementation of SSM, Xpert, and Truenat POC strategies over 2- and 5-year time horizons. Cumulative costs (2017 US$, billions) are on the vertical axis. This analysis assumes that 7.9 million adults in India are tested each year for symptoms suggestive of TB.




ds-TB: drug-susceptible tuberculosis. MDR-TB: multidrug-resistant tuberculosis. SSM: sputum smear microscopy. POC: point-of-care.
[a]Each category is associated with a specific frequency of clinic visits and rate of hospitalization, as evidenced by published guidelines and/or epidemiological data.
These clinical costs are incorporated into the budget impact projection for each category.
[b]All calculations were made using exact numbers before being rounded to the nearest $10 million for display in this figure.

***Disclosures.*** **All authors:** No reported disclosures.

## 2001. Susceptibility of *Aerococcus urinae* to Fluoroquinolones: Broth Microdilution and Gradient Diffusion

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