## Table 2: Patient Outcomes Related to the Tuberculosis Diagnostic Cascade from Clinical Trials of Xpert Impact

| Study Name | Population | Follow-up time (days) | Diagnostic Yield (% of study enrollees with either microscopy or Xpert-confirmed TB)[a] | | | Time from Sample Collection/Enrollment to Result (days) | | | Time from Sample Collection/Enrollment to TB Treatment Initiation for Any Reason (days) | | | Reported TB Treatment Initiation Risk during Follow-up | | | Empiric TB Treatment Rates (% of enrollees treated for TB by study end without bacteriologic confirmation) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Micro | Xpert | *p* | Micro | Xpert | *p* | Micro | Xpert | *p* | Micro | Xpert | *P* | Micro | Xpert | *p* |
| TB-NEAT[9] | Presumptive TB patients (outpatients) | 56 | **15%** | **24%** | **<0.0001** | **0 (0-6)** | **0 (0-0)** | **0.005** | **1 (0-4)** | **0 (0-3)** | **0.0004** | 42% | 43% | 0.64 | **26%** | **17%** | **0.0001** |
| XTEND[10,20,29] | Presumptive TB patients (outpatients) | 182 | **7.8%** | **9.2%** | **0.05** | NA | NA | NA | NA[b] | NA[b] | NA[b] | 12.5% | 10.8% | 0.79 | **4.4%**[c] | **2.3%**[c] | **NA**[c] |
| Brazil Stepped Wedge[11,21] | Presumptive TB patients (outpatients) | NA | **9.7%** | **14.2%** | **<0.001** | NA | NA | NA | **11.4** | **8.1** | **0.040** | 17.5%[d] | 20.8%[d] | NA[d] | 10.4%[e] | 9.8%[e] | NA[e] |
| Zimbabwe RCT[14] | ART enrollees (outpatients) | 182[f] | 7% | 9% | 0.29 | 6 | 2 | 0.07 | 8 | 5 | 0.25 | 21% | 20% | 0.80 | 15%[g] | 11%[g] | NA[g] |
| South Africa single clinic CRT[12] | Presumptive TB patients (outpatients) | 182 | **17%**[h] | **26%** | **<0.001** | NA | NA | NA | **8** | **4** | **0.013** | **23%**[i] | **28%**[i] | **0.013** | **9.8%**[i] | **5.2%**[i] | **0.0025** |
| Uganda Pre-post trial[13] | Presumptive TB patients (hospitalized) | 60 | 37% | 43% | 0.20 | **1** | **0** | **<0.001** | **1** | **0** | **0.06** | 81% | 85% | 0.42 | **15%** | **7%** | **0.047** |
| SA ICU RCT[15] | Presumptive TB patients (hospitalized – admitted to ICU) | 90 | **6%** | **18%** | **0.012** | **12.1** | **0.2** | **0.0004** | 0.7 | 0.3 | 0.4788 | 14% | 22% | 0.13 | **7.8%**[j] | **3.6%**[j] | **NA**[j] |
| Indonesia Pre-post trial[16] | Patients with presumptive drug-resistant TB (outpatients) | NA | **65.2%**[k] | **80.2%**[k] | **<0.001**[k] | **75.0**[l] | **1.0**[l] | **0.001**[l] | **88.0**[m] | **16.0**[m] | **<0.001**[m] | **39.3%**[n] | **58.5%**[n] | **<0.001**[n] | NA | NA | NA |

Abbreviations: NA, not available; Micro, microscopy; TB, tuberculosis; ART, antiretroviral therapy; SA, South Africa; ICU, intensive care unit; RCT, randomized controlled trial; CRT, cluster randomized trial; NA, not available; MDR, multi0drug resistant; RR, rifampicin resistant

[a] Following study enrollment, sputum samples were obtained from all study enrollees, except in the Zimbabwe RCT where sputa were obtained only from symptomatic ART enrollees. Diagnostic yield represents yield of bacteriologically-confirmed TB from these sputum samples collected soon after study enrollment.

[b] In XTEND, authors reported median time from enrollment to TB treatment only for those who were bacteriologically confirmed as having TB (10 days in microscopy arm vs 7 days in Xpert arm). No p-value was provided but the text suggests the difference was not statistically significant.

[c] Calculated from published data: 102 (4.4%) of 2,332 presumptive TB patients in the microscopy arm and 54 (2.3%) of 2,324 presumptive TB patients in the Xpert arm started empiric TB treatment. No statistical test was published. However, among TB patients, the percentage with microbiological confirmation was higher in the Xpert than microscopy arms (78.4% vs. 65.0%, p=0.07).

[d] Calculated from published data: 2,050 (17.5%) of 11,705 presumptive TB patients in the microscopy phase and 2,610 (20.8%) of 12,522 presumptive TB patients in the Xpert phase started TB treatment. No published statistical test.

[e] Calculated from published data: 906 (7.7%) of 11,705 presumptive TB patients in the microscopy phase and 1,009 (8.1%) of 12,522 presumptive TB patients in the Xpert phase started empiric TB treatment without microbiology results. 313 (2.7%) of 11,705 presumptive TB patients in the microscopy phase and 216 (1.7%) of 12,522 presumptive TB patients in the Xpert phase started empiric TB treatment with negative microbiological results. No published statistical test.

[f] Although follow-up was for 6 months (182 days) after ART initiation, data presented in this table represent diagnostic yield, time-to-diagnosis, time-to-TB-treatment, TB treatment initiation rates and empiric TB treatment rates in the time from study enrollment to ART initiation.

[g] Calculated from published data: among all ART enrollees, the percentage given empiric TB treatment was similar between the microscopy arm (31 (15%) of 210) and Xpert arm (23 (11%) of 214). No published statistical test. However, among TB treatment patients, the % treated on empiric grounds was high in both Xpert (54%) and microscopy (69%) arms, p=0.12.

[h] In the microscopy arm, limited use of culture contributed to diagnostic yield estimates as some smear-negative patients had positive culture.

[i] Although follow-up was 182 days, TB incidence risk reported in this analysis was over 3 months (90 days).

[j] Calculated from published data: 9 (7.8%) 115 ICU presumptive TB patients in the microscopy arm and 4 (3.6%) of 111 ICU presumptive TB patients in the Xpert arm were prescribed empiric TB treatment. No statistical test published. However, among patients started on TB treatment, empiric TB treatment was higher in the microscopy than Xpert arms (56% vs. 17%, p=0.015)

[k] Among patients at risk for MDR-TB, diagnostic yield of TB increased from 65.2% pre-intervention to 80.2% in the Xpert phase (p<0.001).

[l] Time from registration to release of RR TB result declined from 75.0 days to 1.0 days after Xpert implementation, p<0.001.

[m] Time from registration to initiation of treatment for RR-TB decreased from a median of 88.0 days to 16.0 days, p<0.001)

[n] The percentage that were considered to have RR TB who started second-line TB treatment increased from 39.3% in the baseline phase to 58.5% in the Xpert phase (p<0.001).