

Vuka! Let's unite towards a TB-free world!

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TB
Conference
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**Pooling sputum specimens of
people at high-risk of TB reduces testing
burden without compromising diagnostic
performance. The TUTTPlus Study**

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The TB Crisis:



- Despite being treatable and curable, tuberculosis remains the **deadliest infectious disease** globally

10.7M

New TB Cases

People who developed TB in 2024

8.3M

Diagnosed

People notified through health systems

2.4M

Missed

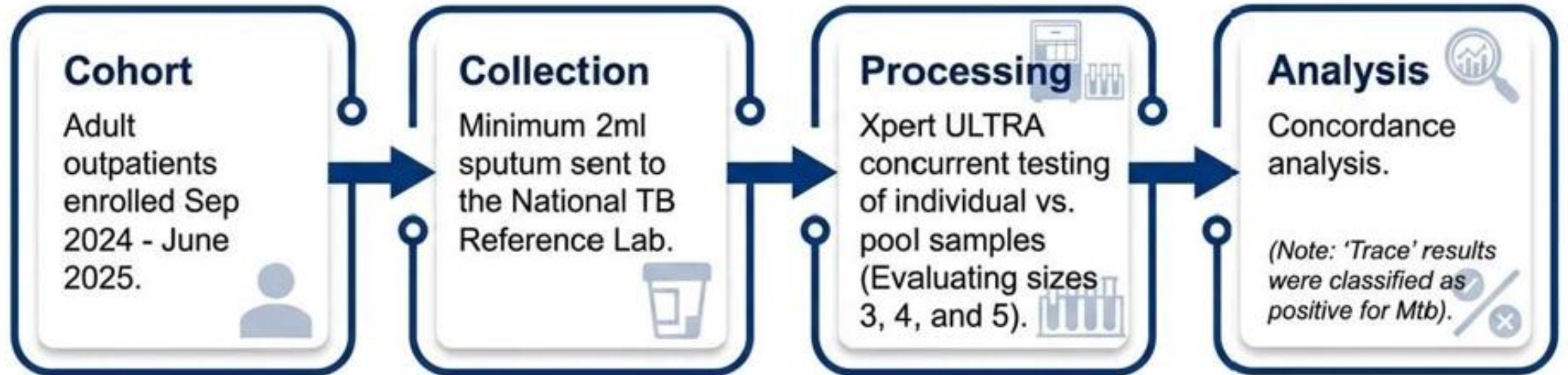
People without formal diagnosis

- Under the End TB Strategy, WHO promotes use of rapid molecular diagnostics to enable timely and accurate TB detection
- Efforts to detect and treat TB are challenged by healthcare access barriers, large sample volumes and testing costs
- Pooling is a well-described method for reducing the total number of laboratory tests required, without substantially compromising test characteristics
- However, effectiveness for broad community TB screening, especially among high-risk TUTT populations is not well understood

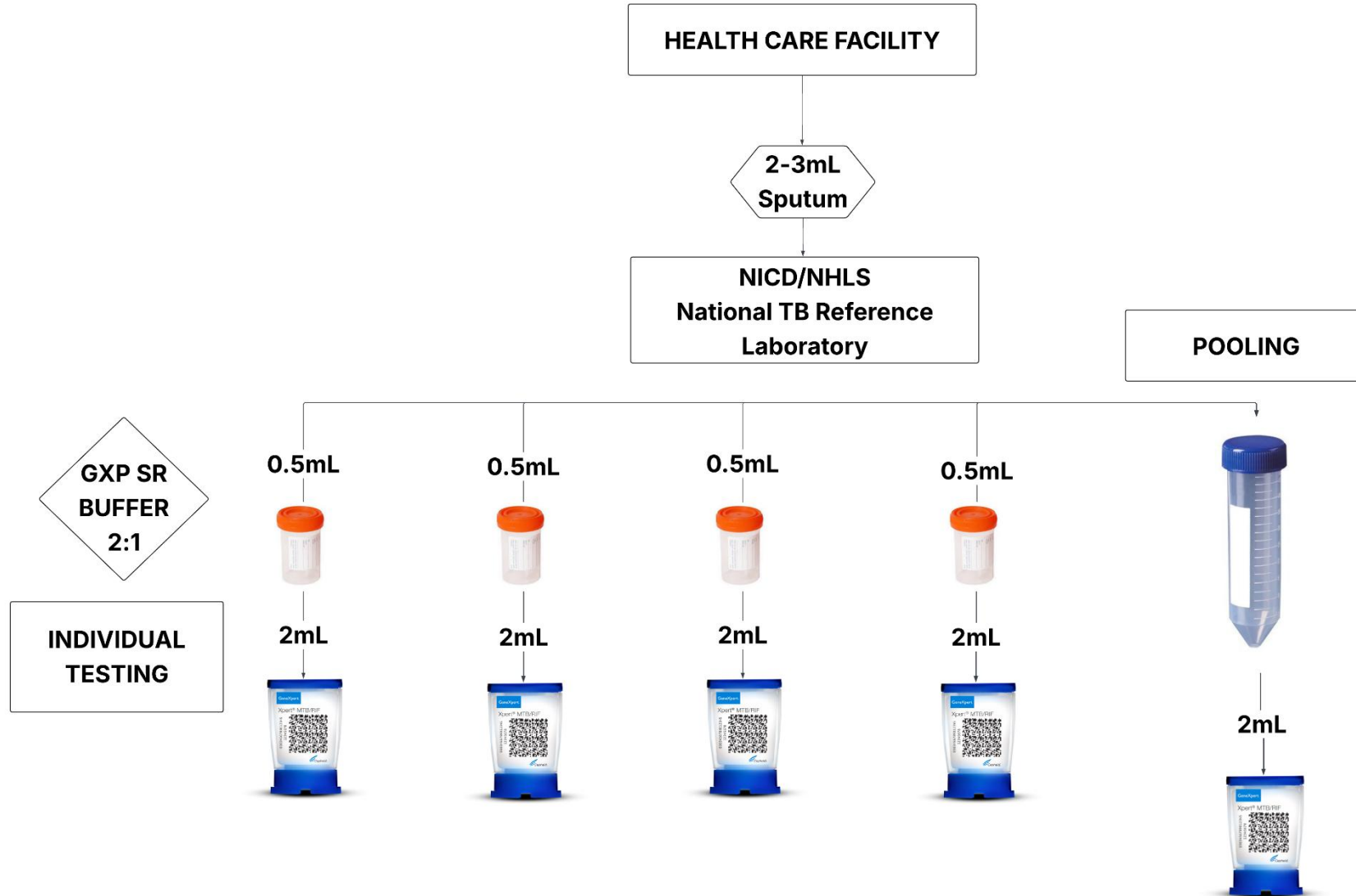
STUDY AIM

- 
- To assess concordance between pooled and individual Xpert MTB/RIF Ultra results
 - Determine optimal pool size/s

METHODS



WORKFLOW



PARTICIPANT CHARACTERISTICS



Factor	Level	Value
N*		2559
Gender	F	1808 (70.7%)
	M	751 (29.3%)
Age, mean (SD)		39.9 (11.5)
Is this person living with HIV?	No	564 (22.0%)
	Yes	1995 (78.0%)
WHO4SS	No	1966 (76.8%)
	Yes	593 (23.2%)
Province	Limpopo	26%
	Western Cape	36%
	KwaZulu- Natal	38%

CONCORDANCE

4 vs 3 vs 5

Symptomatic

95.5% vs 93.6% vs 84.6%

HIV-negative

94.6% vs 50.0% vs 83.3%

Asymptomatic

99.5% vs 97.6%

PLWH

97.8% vs 97.8% vs 80.0%

Optimal Pool Size Finding

A pool size of 4 consistently achieved the highest accuracy across groups.

- Individual Positivity Rate = 3.82%
- ERROR RATE (Individual) = 0.76%
- ERROR RATE (Pool) = 2.74%
 - errors driven by instrument error 2008 (syringe pressure)

LABORATORY IMPLEMENTATION & EXPERIENCE



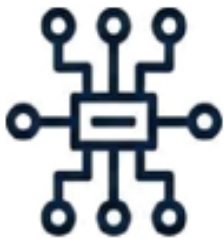
Throughput

Operators successfully managed 4 batches per shift (48 samples or 16 pools in an 8-hour cycle).



Safety

Contamination risks were low: zero instances of contamination were observed during the study.



System Accuracy

Integrating a worksheet-based system via the Lab Information System (LIS) improved traceability and reduced manual error.



Current Limitation

The study was limited to the Xpert platform. Wider implementation requires platform adaptability.

CONCLUSION



- Ultra-testing of pooled sputum specimens is an accurate and feasible TB diagnostic strategy, particularly with pool sizes of 4 among people living with HIV and asymptomatic individuals
- This approach could increase TB testing capacity in resource-limited settings by reducing turnaround time and helping to close the diagnostic gap that leaves millions without access to life-saving treatment

Acknowledgements



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BETTER TOGETHER.



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saam vorentoe

Gates Foundation

