Accuracy of HIV Rapid Testing: Results from quality assessments conducted in a Community Based HIV Testing program in high priority areas in South Africa

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INTRODUCTION

HIV testing remains a critical entry point into the cascade of HIV services. The 90-90-90 targets coupled with the 'test and treat' strategies have driven the demand for high volumes of testing in community settings. Rapid expansion of Point of Care Testing (POCT) by non-laboratory staff has resulted, thereby raising concerns on test quality and accuracy. This paper seeks to evaluate the Community Based Counselling and Testing (CBCT) program compliance to quality HIV testing indicators.

METHODS

The CBCT program is implemented in five HIV high-burden districts in Mpumalanga and Eastern Cape provinces. A cross-sectional assessment was conducted using the Stepwise Process for Improving the quality of HIV Rapid Testing (SPI-RT) tool at two time points between 2017 (baseline) and 2018 (midline). The SPI-RT tool is a checklist which evaluates eight domains related to rapid HIV testing using the following scores; level 0 (<40%), level 1 (40 to 59%), level 2 (60 to 79%), level 3 (80 to 89%), and level 4 (>90%). Mixed methods were used in data collection including semi-structured interviews and onsite observations. Microsoft Excel was used to analyse quantitative data while qualitative data were thematically analysed.
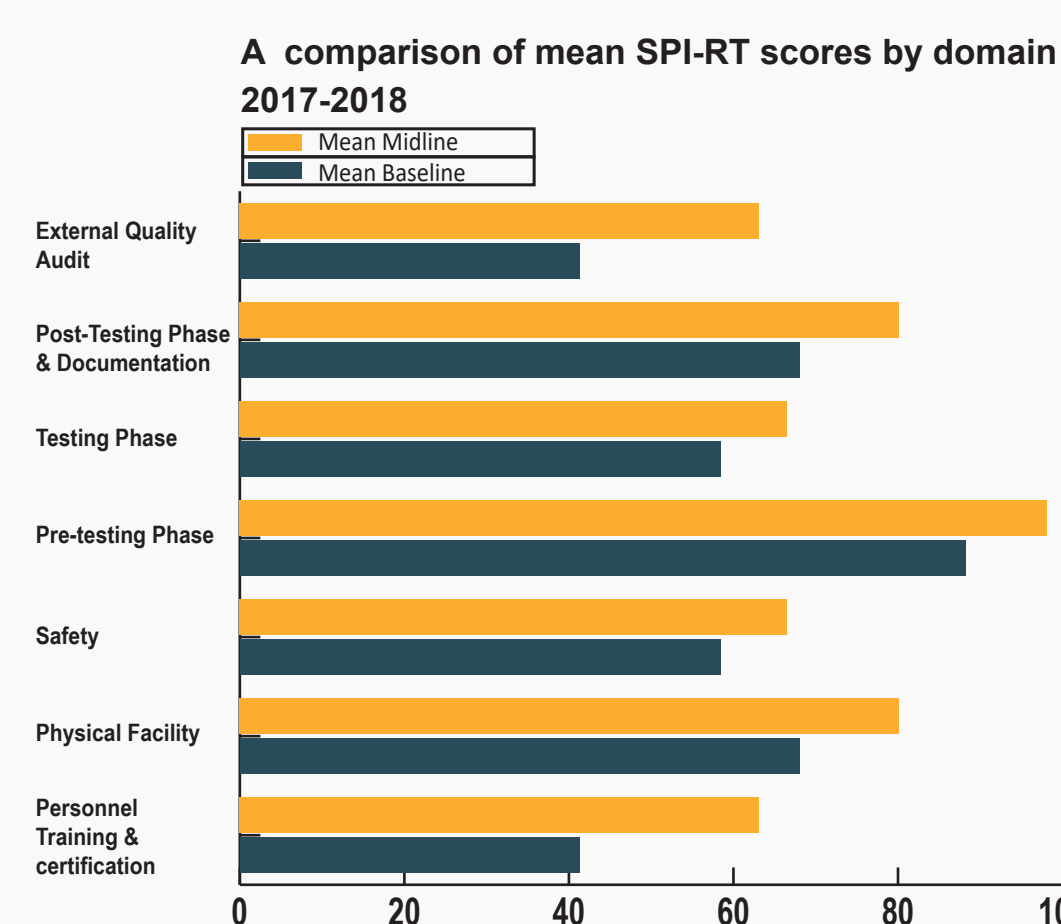
RESULTS

A comparison of the two QA assessments established that all districts scored better at midline (71.7%±1.22) compared to baseline (61.3%±1.32); a statistically significant increase of 10.3% (95%CI: 6.7%-13.9%;p<0.000). Major improvements were found in external quality audit (63.1%vs 41.3%; p<0.0002) and post-testing phase and documentation (80.1%vs 68%; p<0.000) as there were advances made in proficiency testing (PT) enrolments and use of registers during testing. Physical facility (47.5% vs 45.1%; p<0.000) and safety (78.4% vs 68.4%; p<0.000) had minor increases observed. Qualitative findings listed deficiencies noted such as poor cold chain maintenance, unclean testing areas, improper use of protective clothing, improper waste segregation and poor HIV testing technique among some counsellors.

Overall SPI-RT score by Year and District

Legend: Average score % 2017, Average score % 2018
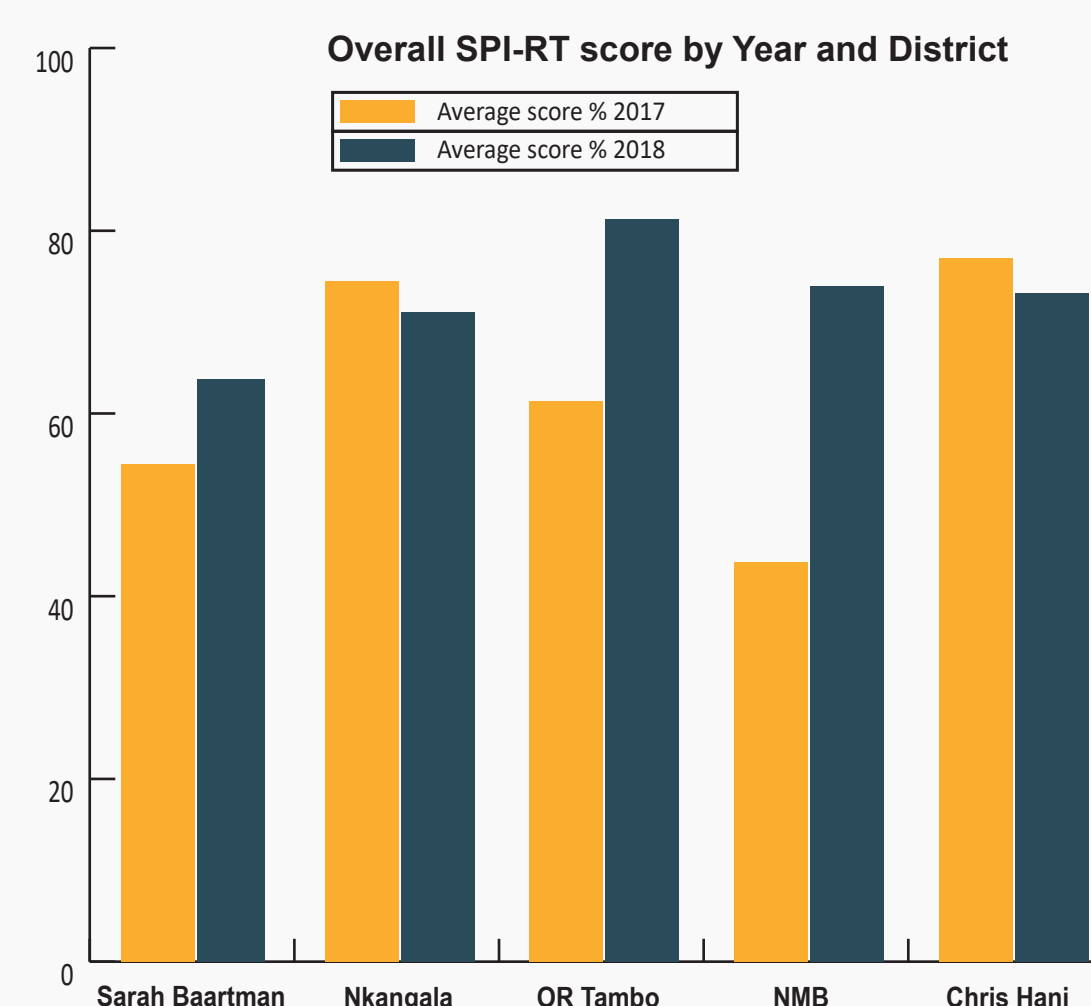
Average SPI-RT score by district; 2017-2018

District	Average SPI-RT score	
	Baseline (2017)	Midline (2018)
Sarah Baartman	54.5	63.8
Nkangala	74.5	71.1
OR Tambo	61.3	81.3
NMB	43.7	73.9
Chris Hani	77	73.2

A comparison of mean SPI-RT scores by domain 2017-2018

Legend: Mean Midline, Mean Baseline

Domains: External Quality Audit, Post-Testing Phase & Documentation, Testing Phase, Pre-testing Phase, Safety, Physical Facility, Personnel Training & certification

Average SPI-RT score by district; 2017-2018

	Mean	
	Baseline	Midline
External Quality Audit	41.3	63.1
Post-testing Phase & Documentation	68	80.1
Testing phase	58.4	66.5
Pre-testing Phase	88.2	98.1
Safety	68.4	78.4
Physical Facility	45.1	47.5
Personnel Training & certification	59.8	67.8
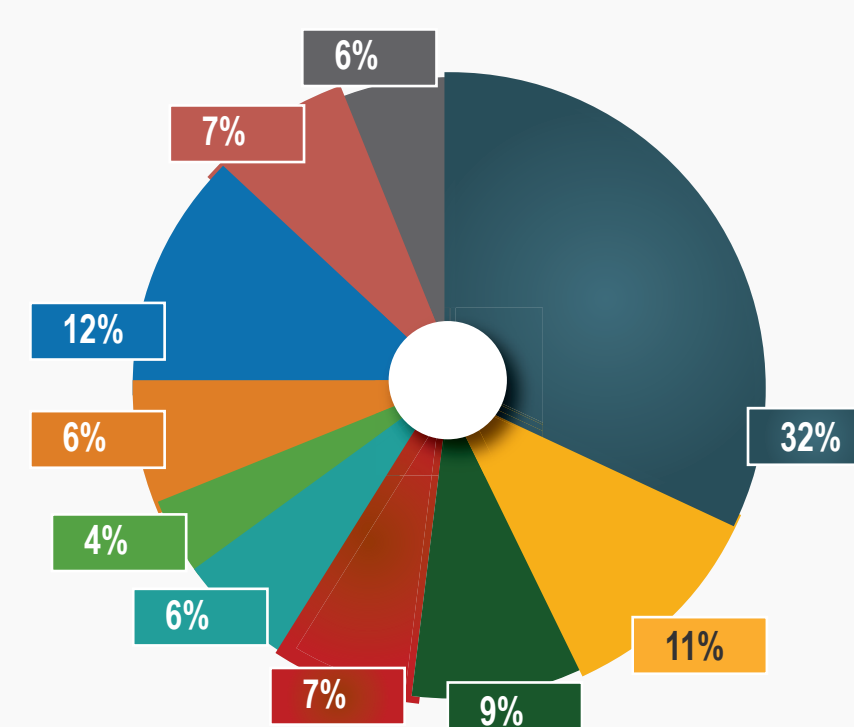
Identified gaps during HIV testing phase; 2018

Cold chain not maintained	32%
Testing area not cleaned	11%
Safety protocols not followed	9%
Improper waste segregation	7%
Lack and inconsistent use of PPE	6%
Accidental exposure not well managed	4%
Reactive results not confirmed	6%
Lack of testing skills	12%
No timer used	7%
Incorrect testing procedure	6%
Total	100%

CONCLUSION

Key gaps identified can have huge impacts on HIV test results. Quality assurance activities need to be embraced by all in order to ensure the validity and integrity of HTS. Continuous training, upskilling and mentoring is required to ensure compliance with recommended HIV testing protocols.

Keywords: Quality assurance, HIV testing, diagnostic accuracy, proficiency testing, SPI-RT

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