HIV/Recency Integrated Proficiency Testing (PT) Program

An Overview of Nigerian Experience: best practices, quality improvement, and sustainability.

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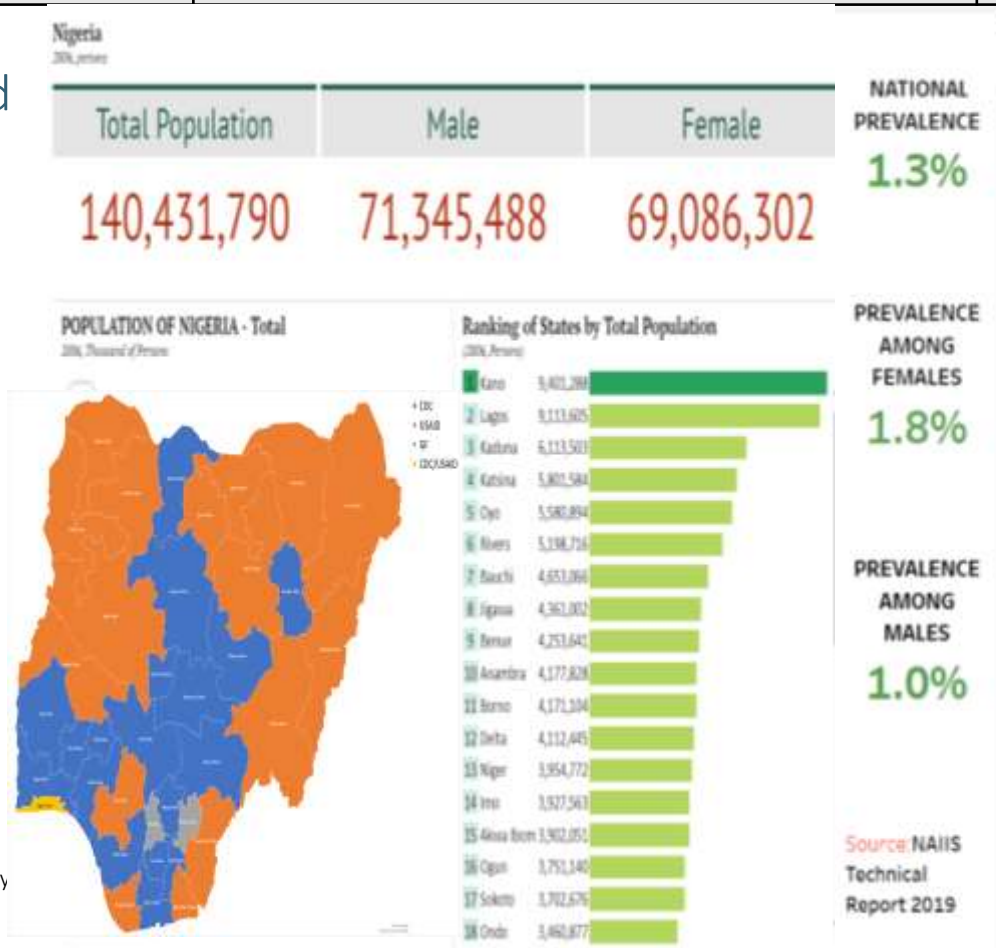
Nigeria: Population, HIV Prevalence and CDC State Coverage

Year	2006 (National Bureau of Statistics)	2019 (National Bureau of Statistics)	2024 Estimate (World Bank)
Population	140,431,790	201,135,262	232,679,478

- US Centers for Disease Control and Prevention (**CDC**) Supports **18 + 1** States in Nigeria.
- Representing **51%** sub-national units(SNUs).
  - ✓ All shades of blue and yellow (in lower map).

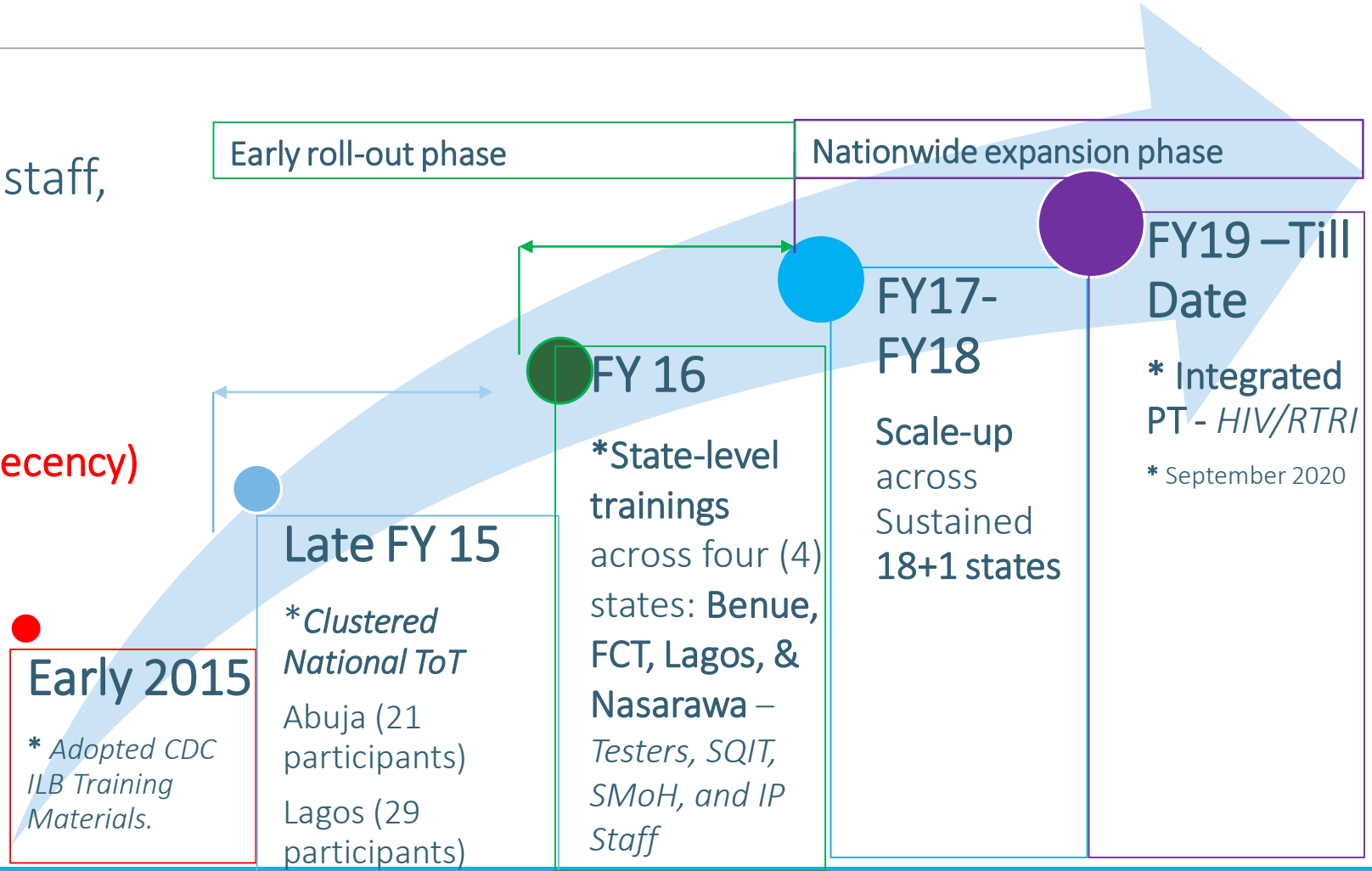


Credit/Sources:

1. National Bureau of Statistics(2024). *Nigeria Total Population.* Available: https://nigeria.opendataforafrica.org/bapijf/total-population. Accessed: May 3, 2024
2. World Bank(2025): *Population, total – Nigeria.* Available https://data.worldbank.org/indicator/SP.POP.TOTL?end=2022&locations=NG&name_desc=true&start=2022&view=map. Accessed: July 7, 2025
3. NACA (2024): *Nigeria Prevalence Rate*. Available: https://naca.gov.ng/nigeria-prevalence-rate/ Accessed: May 11, 2024

Overview of RTCQI Implementation in Nigeria

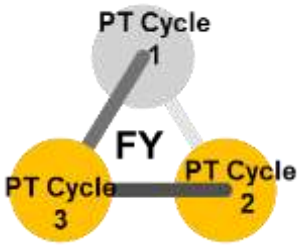
- CDC-led National trainings.
- IP-led State level trainings for: IP staff, SMoH, SQIT and HIV testers.
- RTCQI Implementation:
  - ✓ **DTS-Based integrated PT – (HIV & Recency)**
  - ✓ SPI-RT Audit (using Version 4.0)
  - ✓ Quality Control (QC)
  - ✓ Worksheet Analysis
  - ✓ Test service point Certification
  - ✓ Site visit and monitoring



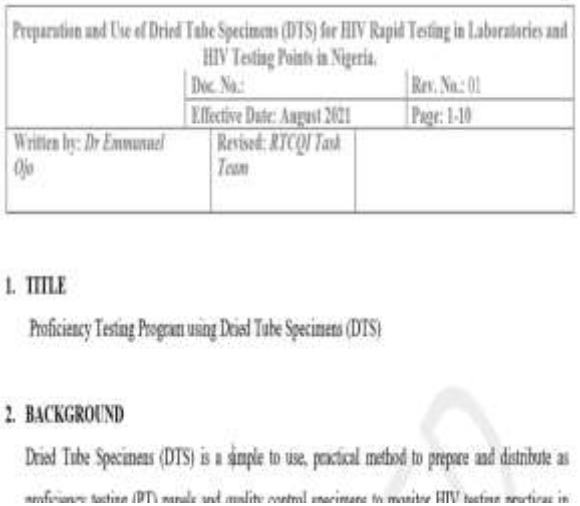
Proficiency Testing (PT) Program Structure and Scope

- **DTS based Integrated– HIV and Recency PT program.**
- Phased decentralization QC & PT panel production.

- Monitor panel production across states
- Review PT outcome across IPs.



- Integrated 3 Cycles/fiscal year - *reported in Jan, May, and Sept.*
- Targets all HIV Testers and Sites



Preparation and Use of Dried Tube Specimens (DTS) for HIV Rapid Testing in Laboratories and HIV Testing Points in Nigeria.

	Doc. No.:	Rev. No.: 01
	Effective Date: August 2021	Page: 1-10
Written by: *Dr Emmanuel Ojo*	Revised: *RTCQI Task Team*	

1. TITLE

Proficiency Testing Program using Dried Tube Specimens (DTS)

2. BACKGROUND

Dried Tube Specimens (DTS) is a simple to use, practical method to prepare and distribute as

- Harmonized SOPs for PT.

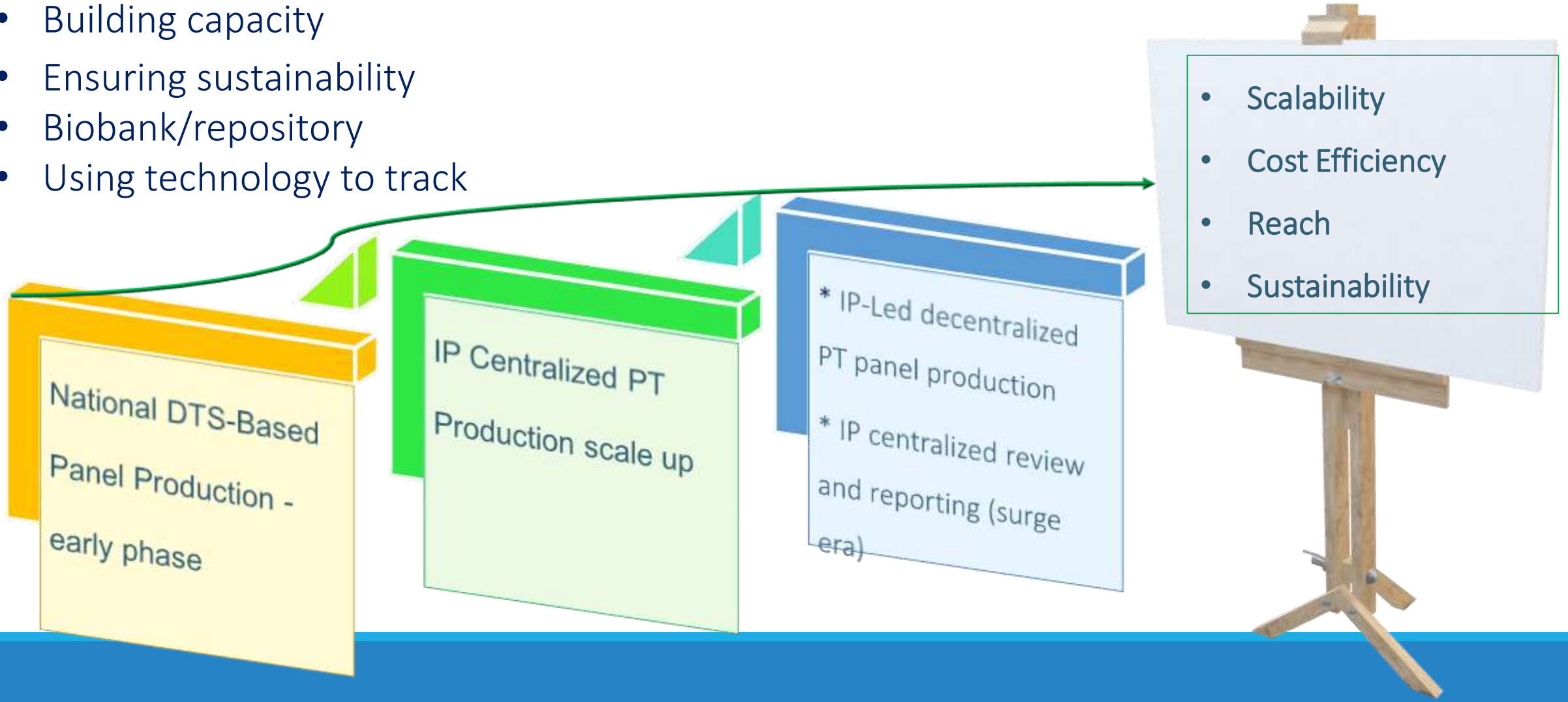
- Leveraged on electronic platforms

- PT results returned within 2 weeks of panel distribution.
- Report provided within 4 – 5 weeks from PT result submission.
- Report determines applicable actions – *retraining, testing or cessation of testing.*

- Annual PT Reference Results Development.

Evolution of Strategies for PT Panel Production

- Building capacity
- Ensuring sustainability
- Biobank/repository
- Using technology to track



Proficiency Testing (PT) Preparatory Activities

- Identify and develop a master list of sites and certified testers expected to participate and complete PT.
- Identify Lab space and trained Lab staff for PT panel preparation activities
- Review supply list required and ensure there is adequate amount in stock for panel prep. Take note of HIV and RTRI kit lot numbers and expiry dates.
- Complete an inventory of plasma units in your specimen bank. Plan to harvest more, if necessary.
- Develop the Integrated PT panel ID codes.
- Plan for printing of Integrated PT ID on cryo labels.
- Develop an Integrated PT Data Management platform.

Proficiency Testing Documents and Tools

Laboratory PT Documents

- DTS QC and PT panel preparation SOP
- Blood bank screening results form.
- HIV positive blood units' collection record sheet.
- Proficiency Testing Reference Results Form.
- RTRI Proficiency Testing results form.

Data Management Tools

- PT data collection form (paper or electronic).
- A reference/expected results table that specifies the expected result for each of the 5 PT specimens.
- Facility feedback form shared back to facilities.
- PT summary report/dashboard for end-users to view.

Dried Tube Specimen (DTS) - A practical alternative for PT program

Proficiency Testing (PT) Package Contents

PT Package Component:

- 5 panel tubes
- 1 Buffer
- 2 transfer pipettes

Forms:

- Instruction sheet
- DTS job aid
- Results form

RAPID TEST FOR RECENT INFECTION PT RESULT FORM

Name of Testing Site	
Testing Site Code	
Tester Name	

Date samples received	
Date samples re-hydrated	
Date samples tested	

	HIV Rapid Testing				Rapid Test for Recent Infection	
Name of Test						
Lot number						
Expiry Date (dd/mm/yy)						
PT Panel ID	Circle Individual Test Results			Circle Final Status	Tick when present	Circle Correct Result
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐C ☐V ☐LT	LT Recent INCL INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐C ☐V ☐LT	LT Recent INCL INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐C ☐V ☐LT	LT Recent INCL INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐C ☐V ☐LT	LT Recent INCL INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐C ☐V ☐LT	LT Recent INCL INV

NR = Non reactive R = Reactive INV = Invalid NEG = Negative POS = Positive IND = Indeterminate
C = Control Line V = Verification/Test Line LT = Long-Term Line INCL- RTRI Inconclusive

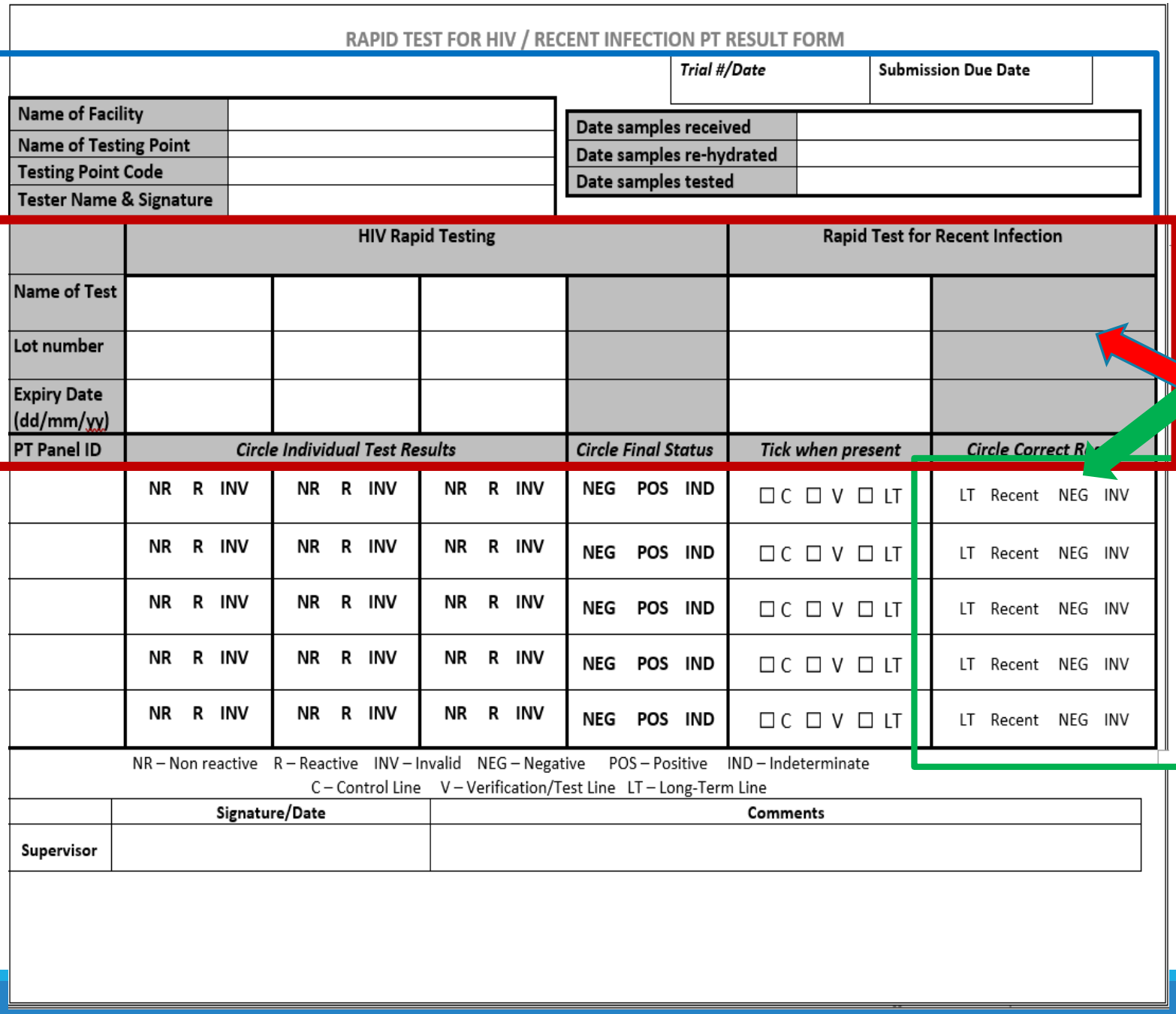
	Signature/Date	Comments
Supervisor		

Effective Date: April 2019

PT package

Integrated PT panel composition

PT Sample IDs	HIV RDT	Rapid Testing for Recent HIV Infection
PT - 1	HIV-1 Positive	HIV-1 Recent
PT - 2	HIV-1 Positive	HIV-1 Recent
PT - 3	HIV-1 Positive	HIV-1 Long-term
PT - 4	HIV-1 Negative	
PT - 5	HIV-1 Negative	



RAPID TEST FOR HIV / RECENT INFECTION PT RESULT FORM

Trial #/Date	**Submission Due Date**

Name of Facility	
Name of Testing Point	
Testing Point Code	
Tester Name & Signature	

Date samples received	
Date samples re-hydrated	
Date samples tested	

	HIV Rapid Testing				**Rapid Test for Recent Infection**	
Name of Test						
Lot number						
Expiry Date (dd/mm/yy)						
PT Panel ID	***Circle Individual Test Results***			***Circle Final Status***	***Tick when present***	***Circle Correct R***
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐ C ☐ V ☐ LT	LT Recent NEG INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐ C ☐ V ☐ LT	LT Recent NEG INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐ C ☐ V ☐ LT	LT Recent NEG INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐ C ☐ V ☐ LT	LT Recent NEG INV
	NR R INV	NR R INV	NR R INV	NEG POS IND	☐ C ☐ V ☐ LT	LT Recent NEG INV

NR – Non reactive R – Reactive INV – Invalid NEG – Negative POS – Positive IND – Indeterminate
C – Control Line V – Verification/Test Line LT – Long-Term Line

	Signature/Date	**Comments**
Supervisor		

Scoring Criteria:

I. Correct Documentation: 10%
- Algorithm compliance – 5%
- Kit information – 2%
- Testing point details – 1%
- Tester details – 1%
- Testing process (i.e., reconstitution testing dates) – 1%

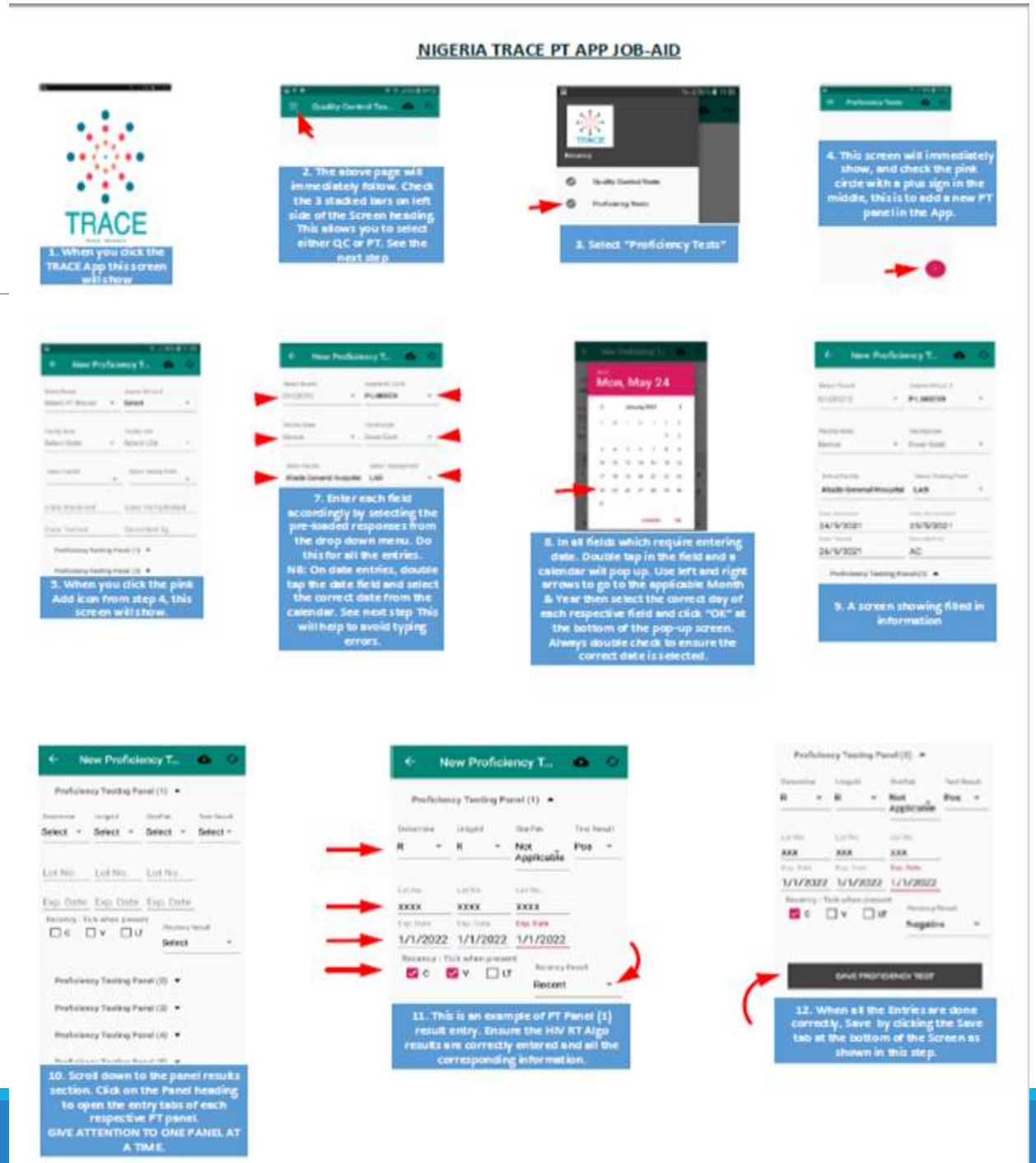
II. Correctly identifying all samples: 90%

Automatic Failures:
- Same test kit is used for confirmatory or tie breaker
- Use of different test kit not approved per country algorithm
- Use of expired test kits
- Kit information (kit name, lot # , exp date) not provided

The passing mark is 90% (based on getting all 5 samples correct)
- If a HIV testing lab/point misses 1 sample, the HIV testing lab/point still fails the PT cycle.

Job aid for Uploading PT Results on NDR

Manually transferring paper-based PT Results to electronic form via the TRACE App.



Recency PT and Routine HIV PT program Integration.

PT Reference Results are preloaded into the NDR prior to each PT Cycle/Round

PT Data is entered by facility staff into the TRACE App from the register. The PT round selection separates one cycle results from the other

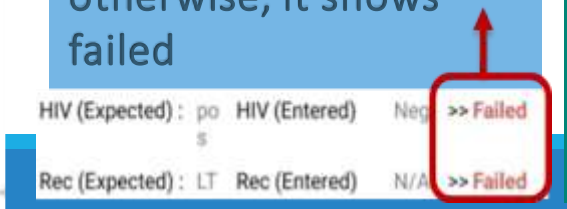
Scenario: HIV Negative panel, Recency N/A

Synchronization button on TRACE App– used to synchronize data from Trace App to NDR

NDR preloaded PT reference result for HIV and Recency. Available to tester only when the result is submitted

HIV and Recency PT results entered by facility staff

The result for each panel shows pass if entered result matches the preloaded results, otherwise, it shows failed



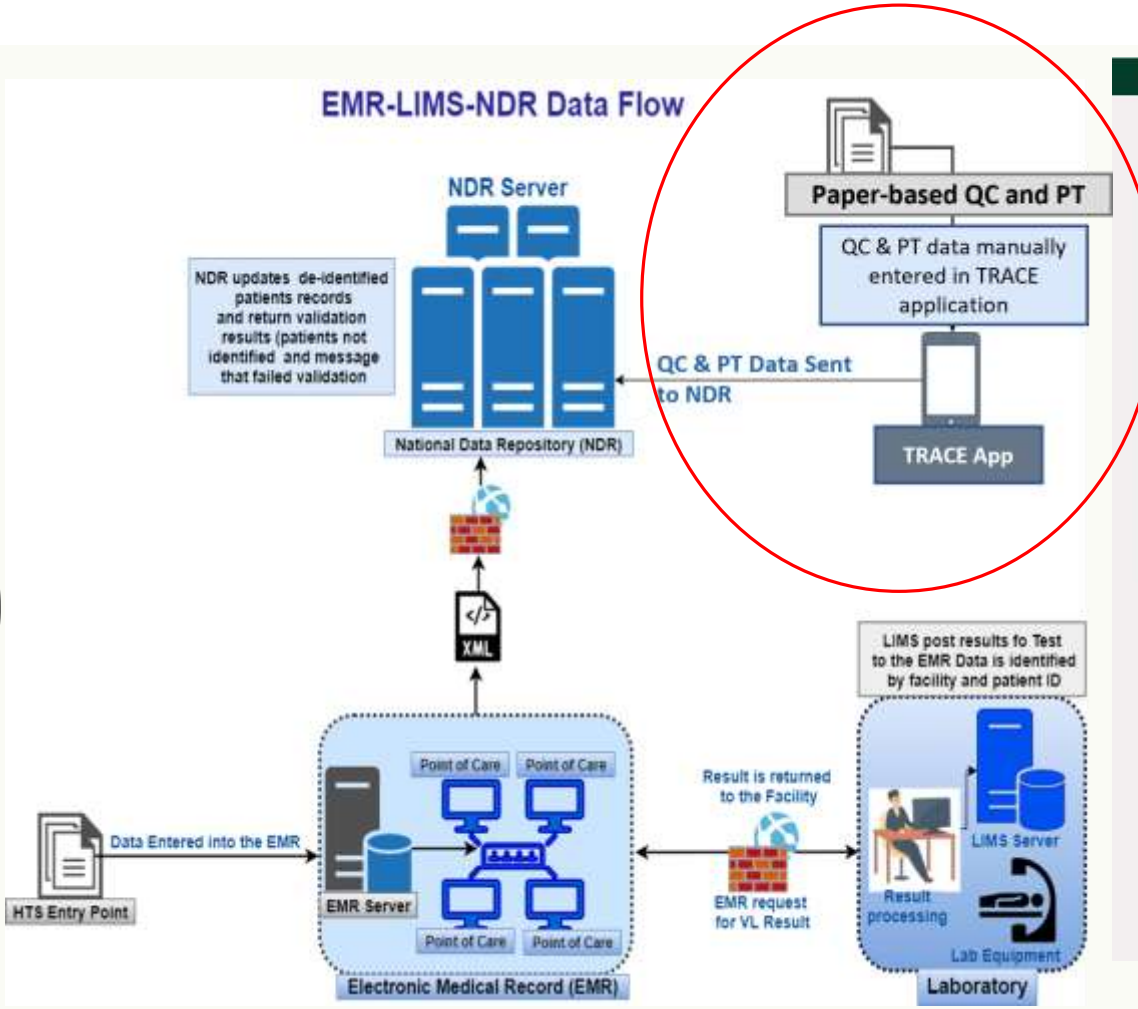
Grading Method

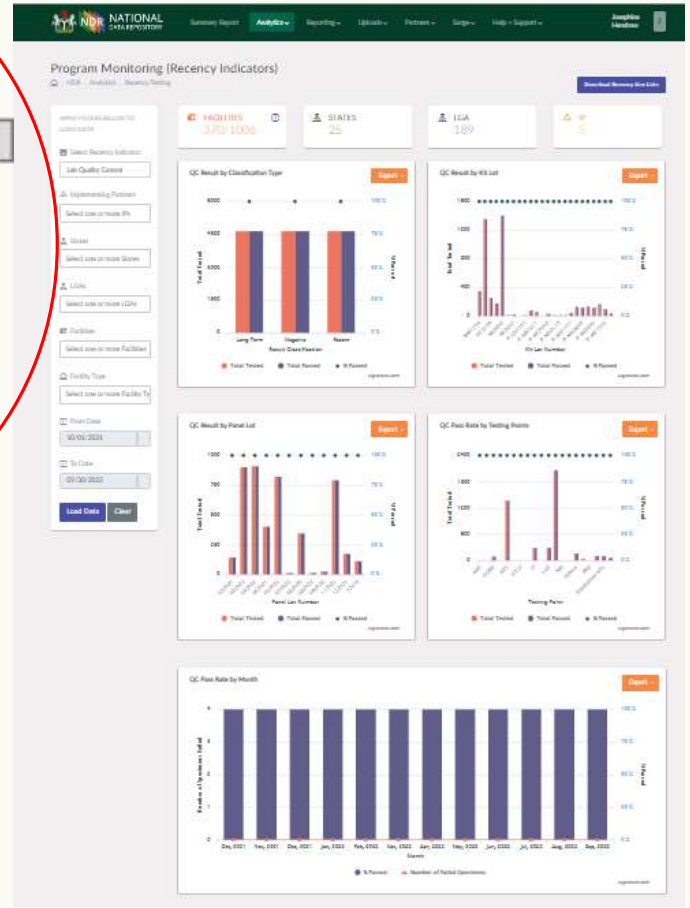
- 5 panels are distributed in each Cycle
- Each panel is scored 18%
- Pass mark for each participant is 5 X 18 = 90%
- On NDR, a script analyses participant PT results as follows:
- 90% - Passed PT
- <90% - Failed PT

HIV and Recency Surveillance Data Flow

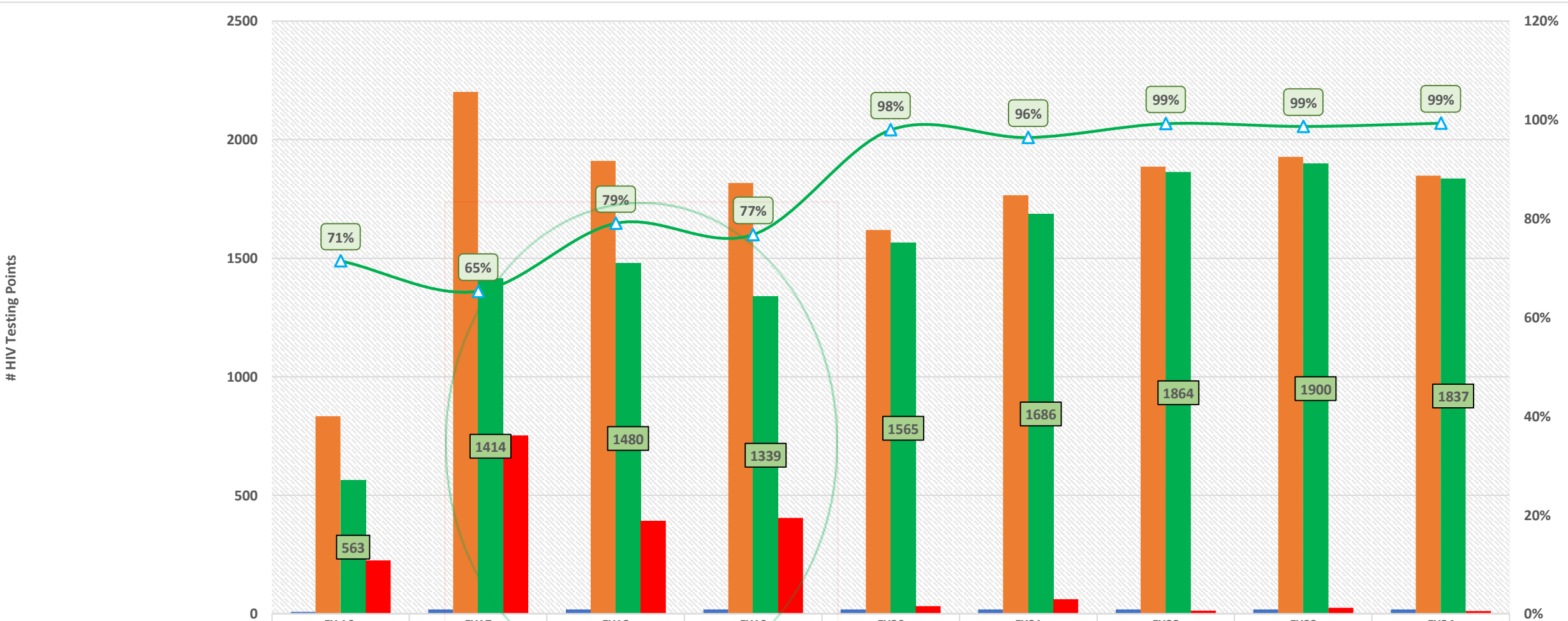
Integration of all Recency Surveillance Data Sources into NDR for Easy National and Sub-national Data Analysis and Visualization

HIV & Recency Surveillance Data Flow





Key Achievement - PT Program Performance (FY16-FY24)



	FY 16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
# States (SNU) Implementing RTCQI	8	19	19	19	19	19	19	19	19
# TPs enrolled for PT	833	2201	1910	1817	1619	1765	1887	1927	1849
# TPs with satisfactory performance	563	1414	1480	1339	1565	1686	1864	1900	1837
# TPs with unsatisfactory performance	225	752	392	405	32	62	14	25	12
% TPs with satisfactory performance	71%	65%	79%	77%	98%	96%	99%	99%	99%

Program Success and Lessons Learned

- National and State-level coordination and stratified technical support.
- Government involvement and ownership.
- Active engagement of SQIT in PT program
- Tiered-level RTCQI trainings and refreshers
- Integrated PT scale up amidst IP transitions, HCWs attrition and insecurity.
- Over **2,700** HIV Testers in 1,849 testing points participating.

Program Success and Lessons Learned (2)

Dissemination and learnings				
Year	December 2016	December 2017	December 2018	February 2024
Platform	ASLM, Cape Town, South Africa	ICASA, Abidjan, Côte D Ivoire	ASLM, Abuja, Nigeria	Webinar

POSTER 383

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HIV Proficiency Testing Programme and Areas of Improvement for Testers

Background: The use of rapid test kits (RTK) for detecting HIV have reduced the turnaround time and the volume of samples used for the assay. Although, most RTKs are easy to use, it is also important to always evaluate the proficiency of the tester to ensure that accurate and reliable results are delivered to clients. The use of dried tube specimen (DTS) for HIV proficiency testing (PT) in resource limited setting has contributed to improving the quality of testing and monitoring the performance of testers. The objectives of this work is to identify areas of improvement for testers during PT analysis and reporting.

Methods: Six vials of DTS and phosphate buffer in tween 20 were prepared, packed and delivered to 178 testing points supported by AIDS Prevention Initiative in Nigeria (APIN) in the CDC scale up priority local government areas in Lagos, Nigeria (Alimosho: 50; Ifako Ijaiye: 36; Mushin: 53; and Ikeja: 39). Each package contains reporting form, instructions for reconstitution and reporting. Testers were advised to submit their results via post or electronic attachment (email or WhatsApp). Results submitted were reviewed for properly filled form, use of expired kits and non-adherence to instructions and national algorithm. An aggregate score of 80 or above is judged as satisfactory.

Results: A total of 157 (88.2%) results were received (Alimosho 44 (28.0%); Ifako Ijaiye 34 (21.0%) ; Ikeja 30 (19.1%); and Mushin 49 (31.2%)), while 135 (85.9%) were considered satisfactory. Satisfactory performance across the areas: Alimosho 36 (81%); Ifako Ijaiye 34 (100%); Ikeja 27 (90%) and Mushin 38 (77.5%). For non-adherence to instructions and algorithm: Alimosho, 6 (13.6%); Ifako Ijaiye, 3 (8.8%); Ikeja, 4 (13.3%); Mushin, 5(10.5%). Improper filled form: Alimosho, 1 (2.2%) and Ikeja, 4(6.6%). Use of expired kit: Alimosho 1 (2.2%).

Conclusion: Proficiency testing helps to identify areas of improvement and it is important that testers adhere strictly to instructions, algorithm and fill the report form properly.

POSTER 255

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Improving Quality of HIV Testing in PMTCT Sites Using Dried Tube Specimen - Experience from South Eastern Nigeria

Background: The first 90 of the UNAIDS 90-90-90 strategy is concerned with the giving HIV Testing Services (HTS) access to 90 percent of the population. The quality of the HTS provided depends among other factors on the skill of the testers. The inadequate human resources for health, the high HIV prevalence in Nigeria and urbano-centric concentration of health workers especially Laboratory Scientist resulted to the use of the trained Lay Testers to provide HTS; especially in the rural areas. Lay Testers provide HIV Testing Service for Pregnant women accessing antenatal care. Quality Assurance procedure for HIV test results from Lay testers is ascertained using Dried Tube Specimen-based Proficiency Testing. This study assesses improvements in the quality of HIV testing at ECEWS supported PMTCT Sites enrolled into Proficiency Testing program in 2014.

Methods: 315 HIV testing points in PMTCT Sites were enrolled into PT program using DTS. The PT program was administered in cycles of four rounds per year. Each Testing point was provided with 2 sets of PT samples per round and were instructed to submit the PT results within 3 weeks of receiving the samples. The lay Testers were mentored on how to do the PT using the provided DTS. The acceptable PT result pass rate per round was set at 100%. The PT results were evaluated based on the reference results and adherence to National HIV Testing Algorithm. The proficiency testing reports including recommended corrective actions for unsatisfactory performance were generated and dispatched to the participating sites within a week. Sites with unsatisfactory outcomes were supported through mentoring to implement the Corrective Actions towards improving the quality of HIV testing in the sites, while those with satisfactory performance are supported to sustain it.

Results: The pass rate for the four rounds were 25%, 41.7%, 13.8%, and 100% in 2014 and 41.5%, 92.7%, 95.4%, and 100% in 2015 respectively.

Conclusion: The quality of HIV testing at the supported sites improved significantly with each round. Quality Assurance monitoring using Dried Tube Specimen should be prioritized in order to ensure accurate, reliable and reproducible HIV testing results from Lay Testers.

Implementation Gaps and Possible Solutions

Challenges	Proffered Solutions
➢ Sourcing of HIV Recent samples for panel production	▪ Decentralization of PT & QC panel production. ▪ Pooling of leftover Recent samples from PCR Labs
➢ Staff attrition affecting the pool of trained staff	Continuous On-the-job Training
➢ Limited internet access in some parts of the country affecting prompt upload	▪ Activation of offline entry mode for data synch at internet access. ▪ Submission of hard copy PT Result form for entry into NDR by IP staff at locations with internet access.
➢ Inadequate infrastructure or resource limitations	Continuous advocacy for resource and leveraging on existing infrastructures for program implementation.
➢ Intermittent stockout of commodities and supplies	Forecasting for separate commodities and supplies for QA/QC activities and tying QA/QC funds to HIV Testing Service budget.
➢ Security challenges limiting 'physical' supportive site supervision	▪ Use of indigenous SQIT for RTCQI and PT activities ▪ Virtual and use of technological tools for remote support.

Proficiency Testing (PT) Program Sustainability and Next Steps

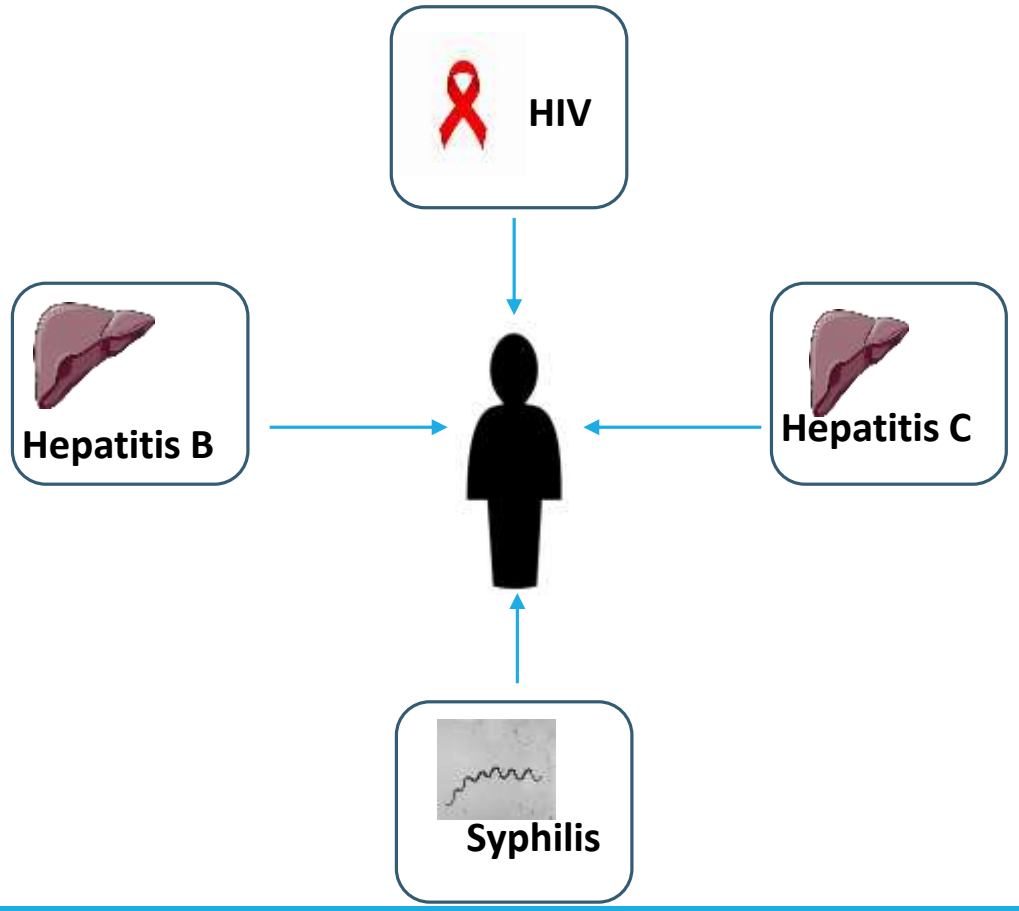
Sustainability Strategies

- ✓ Sustained Government engagement and ownership
- ✓ Integration of the PT program into existing HIV testing services supported by Government.
- ✓ Simplify operational cost for ease of program continuity by Government.
- ✓ Building capacity of Government Staff on PT program administration.
- ✓ Joint monitoring and supportive site visit

Next Steps or Future plans for PT

- ➢ Rollout of Multi-pathogens Integrated PT program.
- ➢ Establishment of continuous joint monitoring and evaluation system for Integrated PT program.
- ➢ Establishment of functional biorepository for differs of specimens needed for multi-pathogen Integrated PT program.

Rollout of Multipathogen PT Testing



- Our integrated HIV diagnosis and recency PT has operated well
- Next, we plan to work with the Gov. to integrate HIV, syphilis and hepatitis in our triple elimination program
- Benefits of Integration will:
  - Streamline communication and coordination among all PT program workflows
  - Efficient use of resources and staff
  - Yields cost savings
  - Improved data quality and accuracy

Hypothetical Example of Multipathogen Integrated PT Panels

Specimen IDs	HIV RDT	HIV RTRI	Syphilis	Hepatitis B	Hepatitis C
PT-1	**Reactive**	**HIV-1 Recent**	**Reactive**	Non-reactive	Non-reactive
PT-2	**Reactive**	**HIV-1 Long-term**	Non-reactive	**Reactive**	Non-reactive
PT-3	**Reactive**	**HIV-1 Long-term**	**Reactive**	**Reactive**	**Reactive**
PT-4	Non-reactive	Non-reactive	**Reactive**	Non-reactive	**Reactive**
PT-5	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Non-reactive

Acknowledgement

- ✓ National/State HIV/AIDS, Viral Hepatitis and STIs Control Programme (NASCP/SASCP), Federal/State Ministry of Health (FMoH/SMoH), Nigeria.
- ✓ CDC Nigeria
- ✓ APIN-PHI
- ✓ CCFN
- ✓ CIHP
- ✓ ECEWS
- ✓ IHVN
- ✓ PHIS 3