

Building Government-Owned, Resilient Data Systems to Propel Kenya's Integration Journey

Dr. Lilly Nyagah
Head, Strategic Information and Research Unit
NASCOP, Kenya

21 March 2026



Works in Progress: Transforming the HIV Response in a Time of Change, April 20-22, 2026 | Nairobi, Kenya

Outline

- 1 Background
- 2 **M&E Vulnerability Score Summary**
- 3 Integrating HIV Services into PHC
- 4 **How, What & Timeline**
- 5 Practical Implications
- 6 **Government Ownership & Stewardship**
- 7 Challenges & Constraints

Why M&E Systems are Failing Us

Public Health Programs, Driven by Pandemics and Public Health Programs adopted technology FAST. But the Health System DID NOT.

Over the last 30 years, HIV, TB, and malaria programs **had to move fast** to save lives

Parallel systems were a **deliberate and rational choice** in emergency and scale-up contexts

Fragmented, donor-driven system resulted in delayed data

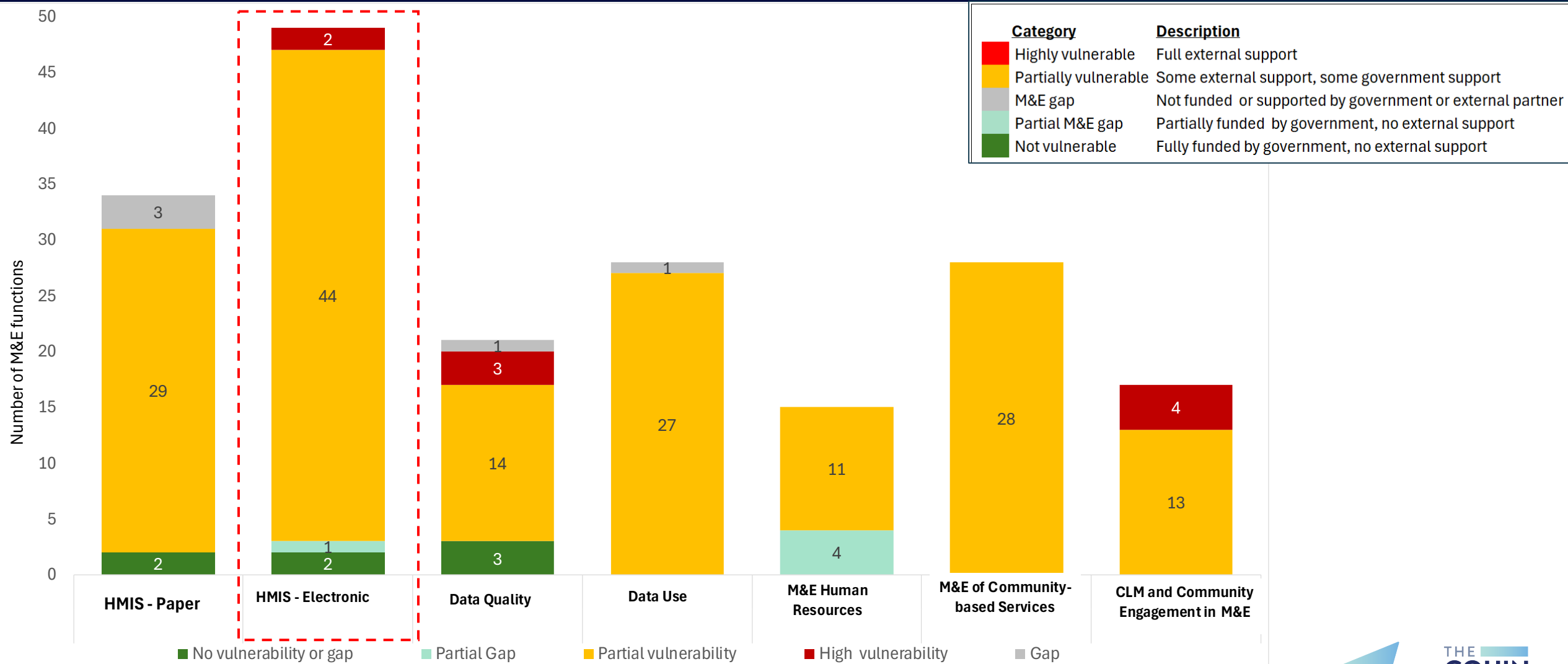
Weak government ownership meant low sustainability

Parallel reporting created heavy HCW burden

“We are measuring the epidemic with systems not designed to end it”



Distribution of M&E Functions by Vulnerability



M&E Vulnerability Assessment Summary

CQUIN M&E assessment | High-vulnerability areas identified in Kenya's 4-P review

Core issue: governance and financing gaps

Policies

vulnerability

Key gaps identified

Weak governance frameworks

Platforms

vulnerability

Key gaps identified

Fragmented systems
8+ competing EMR systems- no common standards

Processes

vulnerability

Key gaps identified

High reporting burden

People

vulnerability

Key gaps identified

High dependence on partners

Service Integration through Systems Integration

THIS IS NOT INTEGRATION

- ✗ Different disease programmes using the same reporting template
- ✗ HIV data in one system and TB data in another with no linkage
- ✗ EMR installed but running parallel to paper registers
- ✗ Data shared at national meetings once a quarter
- ✗ Interoperability written into a proposal but not implemented

V
S

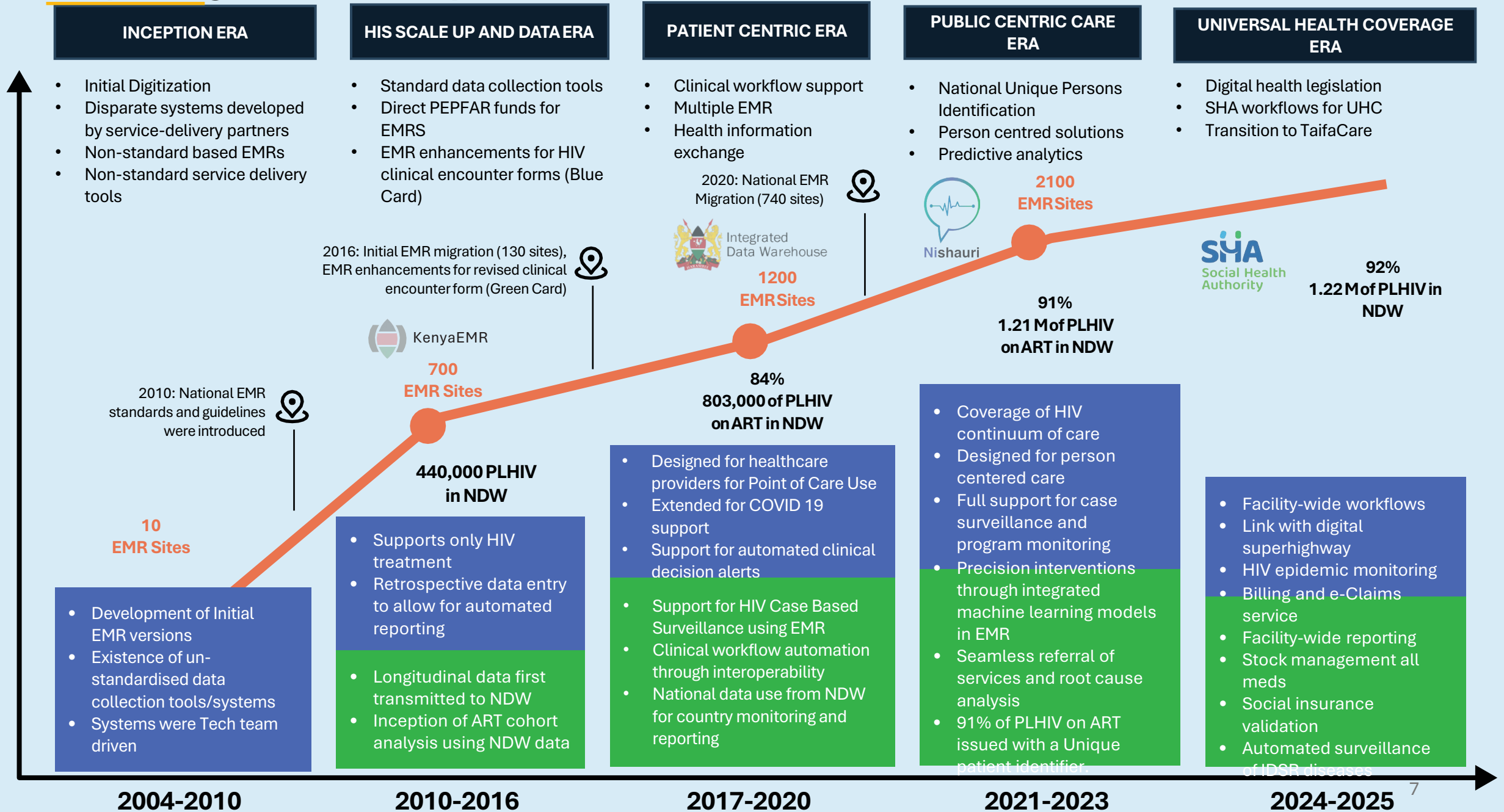
THIS IS INTEGRATION

- ✓ One patient, one record — HIV, MNCH, TB, hepatitis, OPD, claims, pharmacy, lab all linked and shared across facilities for uninterrupted care
- ✓ Service delivery and commodity data reviewed together in real time
- ✓ Facility-level data informing sub-county decisions within the same week
- ✓ Surveillance signals automatically flagging to programme managers
- ✓ The facility clinician and the national surveillance, M&E and program managers reading the same numbers

Integration is not sharing reports — it is sharing data across systems

Kenya's Digital Health Story

Key: • PLHIV - Persons Living with HIV • EMR - Electronic Medical Record • MOH - Ministry of Health • NDW - National Data Warehouse



INCEPTION ERA

- Initial Digitization
- Disparate systems developed by service-delivery partners
- Non-standard based EMRs
- Non-standard service delivery tools

HIS SCALE UP AND DATA ERA

- Standard data collection tools
- Direct PEPFAR funds for EMRS
- EMR enhancements for HIV clinical encounter forms (Blue Card)

PATIENT CENTRIC ERA

- Clinical workflow support
- Multiple EMR
- Health information exchange

PUBLIC CENTRIC CARE ERA

- National Unique Persons Identification
- Person centred solutions
- Predictive analytics

UNIVERSAL HEALTH COVERAGE ERA

- Digital health legislation
- SHA workflows for UHC
- Transition to TaifaCare

2010: National EMR standards and guidelines were introduced

2016: Initial EMR migration (130 sites), EMR enhancements for revised clinical encounter form (Green Card)

2020: National EMR Migration (740 sites)

Nishauri

Integrated Data Warehouse

SHA Social Health Authority

92% 1.22M of PLHIV in NDW

- Development of Initial EMR versions
- Existence of un-standardised data collection tools/systems
- Systems were Tech team driven

- Supports only HIV treatment
- Retrospective data entry to allow for automated reporting
- Longitudinal data first transmitted to NDW
- Inception of ART cohort analysis using NDW data

- Designed for healthcare providers for Point of Care Use
- Extended for COVID 19 support
- Support for automated clinical decision alerts
- Support for HIV Case Based Surveillance using EMR
- Clinical workflow automation through interoperability
- National data use from NDW for country monitoring and reporting

- Coverage of HIV continuum of care
- Designed for person centered care
- Full support for case surveillance and program monitoring
- Precision interventions through integrated machine learning models in EMR
- Seamless referral of services and root cause analysis
- 91% of PLHIV on ART issued with a Unique patient identifier

- Facility-wide workflows
- Link with digital superhighway
- HIV epidemic monitoring
- Billing and e-Claims service
- Facility-wide reporting
- Stock management all meds
- Social insurance validation
- Automated surveillance of IDOR diseases

2004-2010

2010-2016

2017-2020

2021-2023

2024-2025

Streamlining Data Documentation, Reporting and Quality Assurance — Before vs After

What the HCW experience looked like — and why it changed

Before integration — HCW and data team burden

- 6 **separate** paper registers per patient (ART, VL, HTS, PMTCT, TB, pharmacy)
- 3–4 data entry steps for a single VL result: paper requisition → LIMS manual entry → paper result → facility register → DHIS2
- End-of-month: manually tally all registers, complete 6+ different partner report templates
- Facility data quality team spent 2–3 days/month cross-checking registers before upload
- Errors common: wrong register, illegible handwriting, missing patient ID, transposed VL values
- HCWs reported that documentation took longer than the clinical consultation itself
- High staff burnout from administrative burden — contributed to high turnover

After integration — streamlined workflow

- Single KenyaEMR screen per clinical encounter: ~4 minutes data entry
- VL result auto-populates from NASCOP LIMS — zero manual transcription
- DHIS2 aggregated automatically overnight — no end-of-month manual upload
- Monthly reporting reduced from 6+ forms to 2 standardised dashboards
- Data quality flags built into EMR — errors caught at point of entry, not a month later
- Facility M&E officer role shifted from data transcription to data use and quality review
- HCW time saved: estimated 8–12 hours/month per facility redirected to patient care

Key lesson: Reducing documentation burden required rationalising what data is collected before optimising how it is collected. Tool redesign before system redesign.

Streamlining Data Collection in the EMR

Removed from HCW Workflow

- VL register → auto-populated from NASCOP LIMS
- Manual DHIS2 uploads → real-time EMR aggregation
- Parallel HTS & ANC paper registers → merged into EMR modules
- Paper CD4 records → EMR baseline element (auto-filled)
- 6 partner reports/month → 2 standardised reports
- reduced need for data quality assessments

Preserved (critical data)

- Clinical encounter: diagnosis, regimen, adherence
- Viral load date & value (core cascade element)
- PMTCT: maternal ART status + infant EID outcome (via NUPI) with increased focus on HIV-negative women
- WHO staging at ART initiation
- LTFU flag: last appointment & follow-up outcome
- TB/HIV co-treatment start & outcome dates

How it was done

- One standardised screen per visit (~4 mins/patient)
- Auto-fill: medication, regimen & next appointment pre-populated
- LIMS integration: VL, CD4, EID results auto-populated
- Offline mode with overnight sync
- Built-in data quality flags at entry point
Paper fallback card for low-connectivity facilities

Let clinicians take care of patients. Let systems handle reporting, program monitoring and surveillance

Challenges & Constraints

Honest account — for countries exploring this path

Staffing and skills at national and county-level to handle digital systems and technology

HCW training, training cost and staff turnaround

EMRs to serve as comprehensive clinical management tools and not vertical

Infrastructure, connectivity & power at facility level

Sharing of health records across data systems and facilities for efficient patient management and unique count of clients for surveillance and program management.

Data quality assurance

Lessons Learned

Start with governance, not technology

Legal and policy framework first-system build second.
Technology without governance reverts to partner control.

The UPI is the foundation

Without a persistent patient identifier, all 'integration' is superficial. Invest in NUPI-equivalent early — every subsequent system connection depends on it.

Integration is a programme issue, not IT

The barriers are HCW training, facility leadership, political-data sharing agreements, partner reluctance etc.
Programme leadership must drive this, not the IT department

Rationalize before you integrate

EMRs to have essentials standards for facility-wide functionality, not vertical diseases. Fewer, better-maintained systems are cheaper and easier to connect than many fragmented ones.

Government must own the infrastructure

Servers, domain, and access controls must sit with MOH — even if partners pay for the hardware.

Invest in people, not just platforms

Trained workforce is essential for maintenance of technology.