



# Longitudinal Tracking of Mother-Baby Pairs Using Electronic Data Systems in Kenya

**Elvis Kirui**

Ministry of Health, Kenya



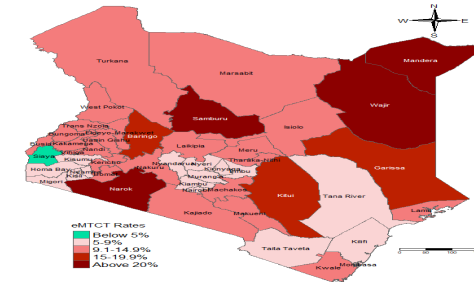
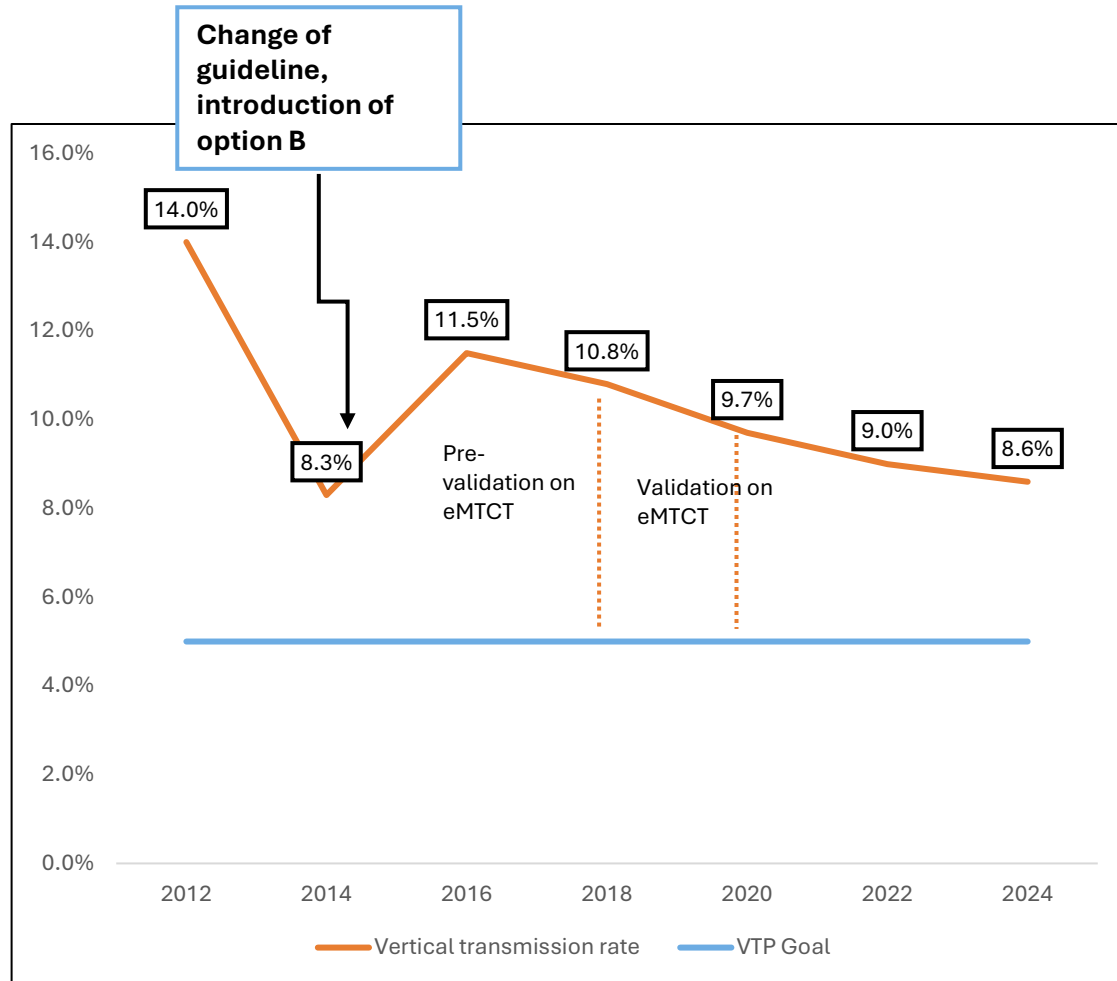
**HIV**  
Impact Network for  
Vertical Transmission  
**E**limination



# Outline

- Overview of Mother-to-Child Transmission (MTCT) of HIV in Kenya
- Data Flow Overview for Mother-Baby Pair
- Progress of EMR Deployment
- Using EMR to Track Baby-Mother Pair
- Lessons Learned and Recommendations

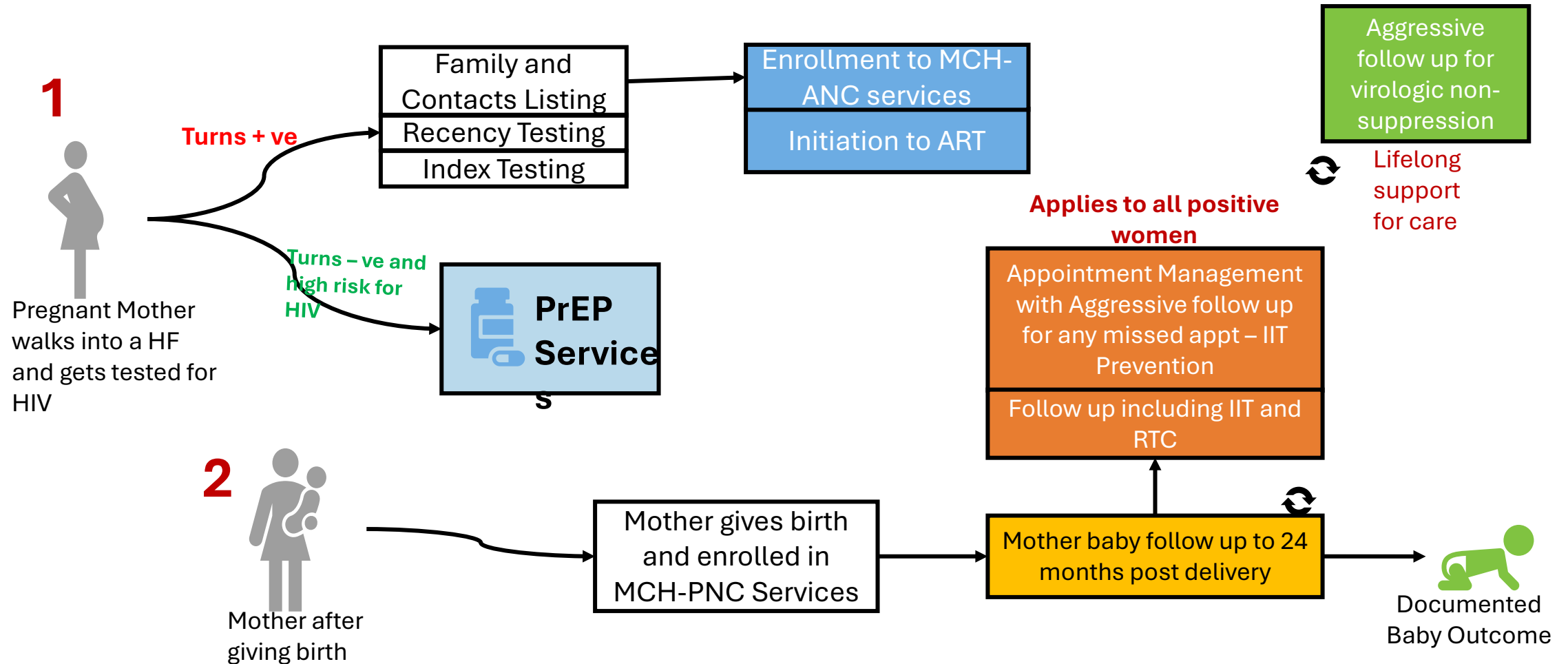
# Overview of Vertical Transmission in Kenya



## In 2022:

- National vertical transmission rate averages at **8.6%** with significant geographical disparity; range from < 5 to 38.8%
- **24 Counties** recorded a reduction in new HIV infections among children aged 0-14 years;
- **Four (4)** counties Manderla, Wajir, Samburu and Narok reported very high vertical transmission rates of above 20%
- **In 2022, Siaya county recorded vertical transmission rate of 4.3%: the only county to achieve the target of <5%**

# Mother's VTP Journey: Key Sentinel Events for Follow-Up and Action



# Data Flow Overview for Mother-Baby Pair Monitoring

## Mother Registration & Enrollment:

- Mother is registered and enrolled into MCH services, where antenatal care (ANC) services are provided, and HIV testing is documented.

## At Delivery & Mother-Baby Pairing:

- At delivery, child information is recorded, creating the **mother-baby pair**.
- Serves as an entry point for mothers who did not attend ANC services.
- HIV testing is done for eligible mothers during labor and delivery (L&D).

## Postnatal Services & Child Welfare:

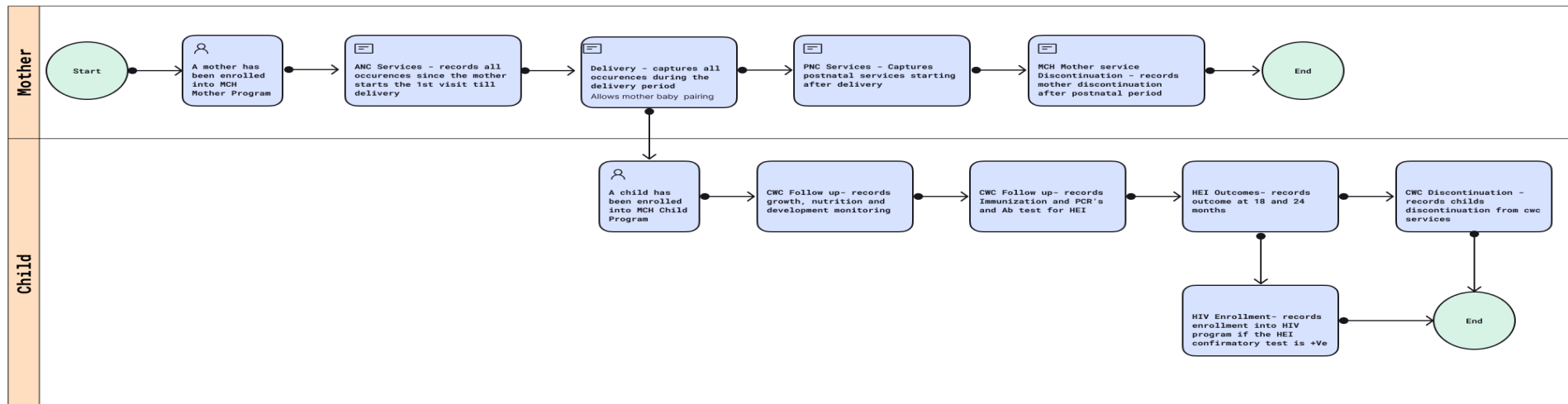
- Postnatal care (PNC) services and child welfare services are recorded, including tracking PCR tests done for HIV-exposed infants (HEIs).
- HIV testing for eligible mothers is documented during the postnatal period.

## Outcome Documentation:

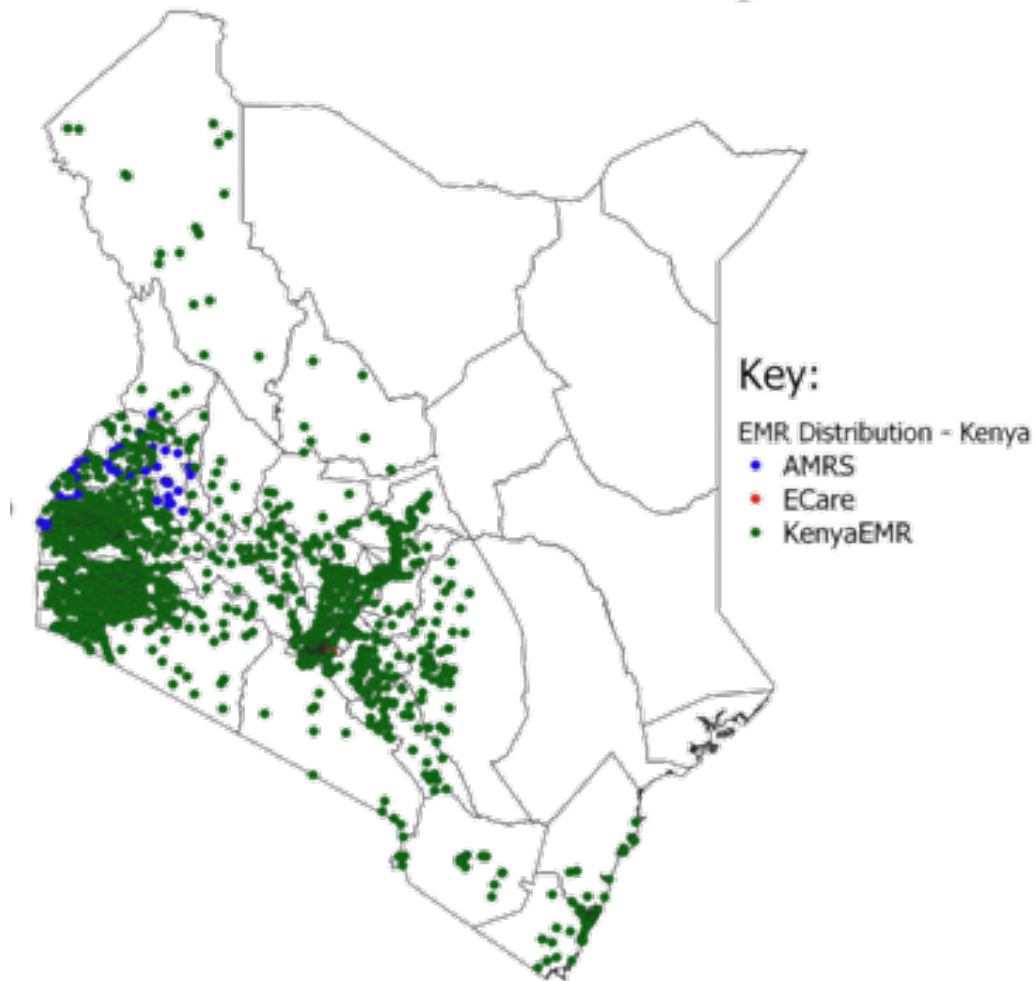
- Both maternal and child outcomes are documented accordingly.

## HIV Testing & ART Linkage:

- At any HIV testing point (ANC, L&D, PNC), if the test is positive, the client is immediately linked to care and started on ART.



# Progress of EMR Deployment in Kenya



## EMR distribution as of July 2024

- **2,392** Active EMR Sites
- **2,298** KenyaEMR Sites,
- **80** AMRs Sites,
- **14** E-Care Sites,
- **88%** of EMR sites reported in the month of July 2024 to NDW

[National Data Warehouse | Dashboard \(nascop.org\)](#)

## Module uptake as of July 2024

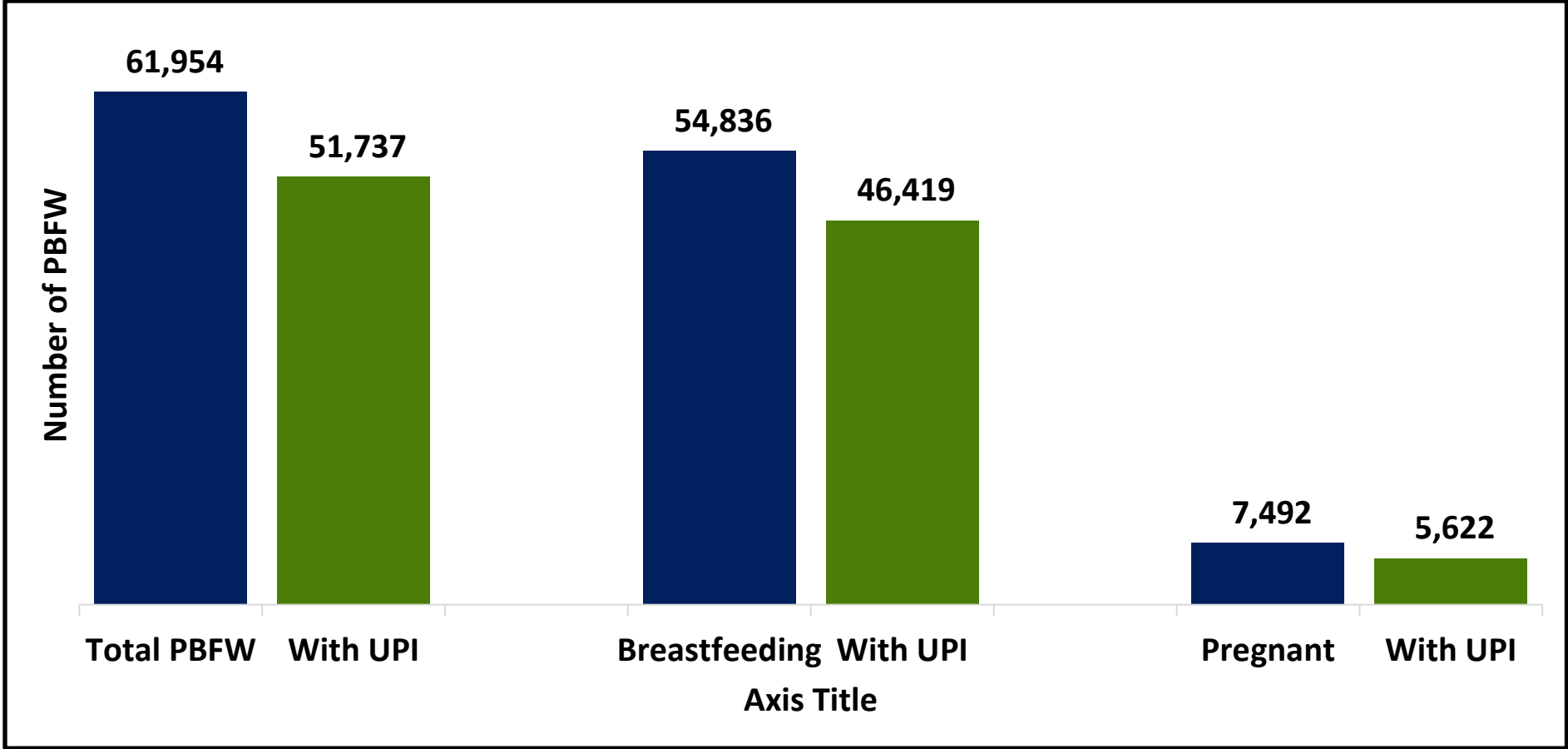
- 1,702 (89%)** sites are utilizing HTS module
- 2,392 (99%)** sites are utilizing C&T module
- 2,221 (93%)** sites are utilizing VTP module
- 1,470 (74%)** sites are utilizing PrEP module

## Active PLHIV as of July 2024

- 94% (1,276,487) of CurrART Patients were seen at a site actively using the EMR. (KHIS Data)
- 99% (1,261,372) of CurrART Patients seen at EMR Sites had records in NDW (NDW Data)

# Unique Personal Identification (UPI) Uptake Among Current PBFW – June 2024

EMR use  
UPI to  
identify  
clients



# Identification of Eligible Children for Screening and Testing

## Ways of listing children to determine Eligibility:

- **Family Contact Listing Form:** Utilized to identify children born to HIV-positive mothers.
- **Support Line:** Leverages support networks to track and list eligible children.
- **Delivery Records :** Lists children born to HIV-positive mothers at delivery points.

Maternity Register																			
Summary																			
Total: 10 Males: 0 Females: 10																			
Mode of Delivery	Number of babies delivered	Placenta Complete	Uterotonic given	Vaginal Examination	Blood Loss	Condition after delivery	Deaths Audited	Other Delivery Complications	Baby Sex	Birth weight	Baby Condition	HIV Status at ANC	HIV Test One	HIV Test Two	HIV Test Three	HIV Final Results	ARV Prophylaxis Issued from ANC	Maternal HAART	Infant Prophylaxis
Normal delivery	1	Yes	Oxytocin	Normal		Alive	-		F	4	Liveborn, Unspecified Whether Single, Twin, or Multiple	Negative	Trinscreen 123 2025-02-06 Negative			Negative			No
Normal delivery	1	Yes	Oxytocin	Normal		Alive	-		F	4	Liveborn, Unspecified Whether Single, Twin, or Multiple		Dual Kit 24123k 2024-09-30 Negative			Negative			No
Normal delivery	1	Yes	Oxytocin	Normal		Alive	-					Positive				-			No
Normal delivery	1	Yes	Oxytocin	Normal		Alive	-		F	4	Liveborn, Unspecified Whether Single, Twin, or Multiple	Positive				-			No



# Using KenyaEMR to Track Mother-Baby Pair

## Relationships \_ Mother-Baby pairing

- Pairing is established during registration
- Accessible from both the **Registration Form** and the **Client Homepage** in KenyaEMR

The screenshot shows the KenyaEMR registration interface. On the left is a navigation menu with options: Basic Info, Contact Details, Demographics, Relationships, and Next of Kin Details. The Relationships section is highlighted. The main form area is titled '4. Relationships' and contains a search box for 'Related person' with the instruction 'Search for an existing client in the system'. Below the search box is a dropdown menu for 'Relationship' with 'Child' selected and the instruction 'Establish and select the correct relationship'. There is an 'Add Relationship' button. Below this is the '5. Next of Kin Details' section.

The screenshot shows the 'KenyaEMR Patient Home Page' with a sidebar on the left containing menu items: In Patient, Immunizations, Attachments, Appointments, Billing, Referrals, Relationships (highlighted), and Case management. The main content area has tabs for 'Family', 'PNS Contacts', and 'Other'. The 'Family' tab is active, showing a 'Family contacts' section with a table of linked family contacts. A red box highlights the 'Family contacts' section, and another red box highlights the text 'Linked Family Contacts in KenyaEMR' with an arrow pointing to the table. The table has columns: Name, Relation, Age, Alive, Cause of Death, and Chronic Disease. It lists two contacts: 'Staic Staic Staic' (Child, 15, Alive) and 'Reign Baby' (Child, 0, Alive). The page includes pagination controls at the bottom: 'Items per page: 10', '1-2 of 2 items', and '1 of 1 page'.

Name	Relation	Age	Alive	Cause of Death	Chronic Disease
Staic Staic Staic	Child	15	Alive	--	--
Reign Baby	Child	0	Alive	--	--

# Tracking Mother-Baby Pairs for Child Follow-Up: How HCWs Use KenyaEMR

## Enrollment to MCH-Mother Services:

Enrollment enables HCWs to track the child's progress while providing the mother with postnatal and VTP care

## Enrollment to MNCH-Child Program:

Enrollment enables HCWs to track the child's progress alongside the mother's postnatal and VTP care in MCH-Mother services

The screenshot shows the KenyaEMR interface for a patient named KUBER KUBER KUBER, 37 yrs, Female. The 'Care panel' is selected, and the 'Program enrollment' tab is active. A table lists care programs with 'MCH - Mother Services' highlighted. To the right, the 'MCH - Mother Services Enrollment form' is displayed, showing fields for Date (02/10/2024), Provider (admin - Jepakwony Jepakwony...), Location (Nyeri County Referral Hospital), and Maternal/Antenatal Profile (Service Type: ANC, Delivery, PNC).

Program name	Status	Enroll
CPM	Eligible	Enroll
GBV	Eligible	Enroll
MAT	Eligible	Enroll
NCD	Eligible	Enroll
TB	Eligible	Enroll
TPT	Eligible	Enroll
MCH - Mother Services	Eligible	Enroll
Key Population	Eligible	Enroll

The screenshot shows the KenyaEMR interface for a patient named Reign Baby, 4 wks, 6 days, Male. The 'Care panel' is selected, and the 'Program enrollment' tab is active. A table lists care programs with 'MCH - Child Services' highlighted. To the right, the 'MCH - Child Services Enrollment form' is displayed, showing fields for Date first seen, Gestation at birth (weeks), Birth Weight (kg), Birth length (cm), Birth Order in Family (1,2,3), Birth type, and Place of delivery.

Program name	Status	Enroll
HIV	Eligible	Enroll
GBV	Eligible	Enroll
NCD	Eligible	Enroll
TB	Eligible	Enroll
TPT	Eligible	Enroll
MCH - Child Services	Eligible	Enroll
VMMC	Eligible	Enroll

# Using KenyaEMR to Document and Monitor HIV Testing Among Perinatally HIV-Exposed Infants

## Documentation and Tracking

### Lab Orders:

- Ordered via the Lab Order functionality on the client homepage.
- Lab orders and results are documented and accessible under the Orders and Results Viewer.

### HEI Register:

Automatically generated to capture longitudinal data for each HIV-Exposed Infant (HEI)

### System indicators

1. First DNA PCR Test at 6 weeks or First Contact
2. Second DNA PCR Test at 6months
3. Third DNA PCR Test at 12months
4. Anti-body test between 18-24 months

The image displays two screenshots of the KenyaEMR interface. The left screenshot shows the 'Order basket' with four categories: Drug orders (0), Lab orders (0), Radiology orders (0), and Procedures orders (0). The right screenshot shows the 'Add lab order' form with the following fields: Test type (HIV DNA POLYMERASE CHAIN REACTION, QUALITATIVE), Lab reference number, Priority (Routine), and Order reason (Initial PCR (6week or first contact), 2nd PCR (6 months), 3rd PCR (12months), Confirmatory PCR and Baseline VL). The bottom of the interface shows 'Cancel' and 'Sign and close' buttons on the left, and 'Discard' and 'Save order' buttons on the right.

# Reporting of Perinatally HIV-Exposed Infants in Kenya EMR

## MCH Child Reporting

Availability of HEI register to track longitudinal events.

Availability of reports and line lists for tracking timing of follow up tests.

The screenshot displays the KenyaEMR web application interface. At the top left, the logo for KenyaEMR 1.9.1.0 is shown, powered by OpenMRS, with the location identified as Railways Dispensary (Kisumu) (14027). The top right corner features the Government of Kenya Ministry of Health logo. A navigation bar includes 'Home' and 'Reports' tabs, with the user logged in as 'Jepaskwony Jepaskwony Jepaskwony'. A secondary menu lists various service categories: Common, Cohort Analysis, EHR Reports, HIV, TB, TPT, MCH - Mother Services, OTZ, OVC, MCH - Child Services, Key Population, PrEP, and VMMC. The main content area is divided into two columns: 'Indicator' and 'Patient Follow-Up Reports'. The 'Indicator' column lists 'MOH 710 MOH Immunization Report' and 'HEI Cohort Analysis HEI Cohort Analysis'. The 'Patient Follow-Up Reports' column lists: 'Patients without PCR test', 'Patients without antibody test', 'Infant feeding options', 'Infants without PCR confirmatory test', 'Infants never taken CTX', 'Infants never on prophylaxis', 'HEI Register HEI Register', 'MOH 510 Permanent Immunization Register', 'MOH 511 CWC Register(MOH 511)', and 'HEI Missed HIV Tests Report of HEIs with missed HIV tests'.

KenyaEMR 1.9.1.0, powered by OpenMRS  
Railways Dispensary (Kisumu) (14027)

Government of Kenya  
Ministry of Health

Home Reports Logged in as *Jepaskwony Jepaskwony Jepaskwony* My Profile Log Out Help

Common Cohort Analysis EHR Reports HIV TB TPT MCH - Mother Services OTZ OVC MCH - Child Services Key Population PrEP VMMC

**Indicator**

- MOH 710  
MOH Immunization Report
- HEI Cohort Analysis  
HEI Cohort Analysis

**Patient Follow-Up Reports**

- Patients without PCR test
- Patients without antibody test
- Infant feeding options
- Infants without PCR confirmatory test
- Infants never taken CTX
- Infants never on prophylaxis
- HEI Register  
HEI Register
- MOH 510  
Permanent Immunization Register
- MOH 511  
CWC Register(MOH 511)
- HEI Missed HIV Tests  
Report of HEIs with missed HIV tests

# Perinatally HIV-Exposed Infants Final Outcome Documentation

## HEI Outcome Documentation

- Able to document the final HEI outcome while at the client homepage as shown in the image
- Records the final HIV status and the exit criteria

The screenshot displays the KenyaEMR interface for a patient named King Reign. The patient's profile shows they are a 5-week-old male, born between August and September 2024, with an OpenMRS ID of MGKGX3 and a Unique Patient Number of 1211900001. The 'Vitals & Anthropometrics' section for a visit on 05-Sept-2024 at 14:55 shows an overdue status. The vitals table includes BP, Heart rate, R. rate, SpO2, Temp (36.3 DEG C), Weight (77 kg), Height (154 cm), and BMI (32.5 kg / m²). The 'Conditions' section is empty, and the 'Active Medications' section is also empty. The 'Child HEI outcomes' form is open, showing the 'FINAL OUTCOME' dropdown set to 'Negative', the 'Exit Date' as 03/10/2024, and the 'Exit Criteria' dropdown set to 'HIV Neg age > 18 months'. The interface includes a sidebar with navigation options like Patient summary, Vitals & Biometrics, Medications, Care panel, Orders, Results Viewer, Visits, Allergies, Conditions, In Patient, Immunizations, Attachments, Appointments, Billing, Referrals, Relationships, Case management, Clinical views, Clinical Encounter, and Specialized Clinics. The top navigation bar shows the patient's status as 'Waiting - triage' and 'Outpatient (Not Urgent)', with options to 'Move patient to next service' and 'End visit'.

# Lesson Learned and Recommendations

- **Longitudinal Follow-Up:** Enable VTP clients to benefit from individualized, long-term follow-up.
- **Optimize Early Infant Diagnosis (EID):** Leverage EMR systems to streamline and improve the EID process.
- **Engage the Private Sector:** Strengthen partnerships with the private sector to enhance data aggregation and implement impactful interventions.
- **Invest in MCH :** Boost investments in maternal and child health (MCH) facilities to increase EMR utilization for ANC and MCH clients.
- **Healthcare Worker Training:** Ensure continuous capacity building for healthcare workers on VTP modules to improve service delivery.
- **Policy Enforcement in the Private Sector:** Enforce policies to improve service delivery within the private sector, which significantly contributes to national vertical transmission rates.

