Born to be healthy

Prevention of mother-to-child transmission and fight against HIV spread at community level

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Report on exploring the factors that promote and inhibit the implementation of early infant diagnosis algorithm in Nairobi County, Kenya

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Report of the research activity conducted between February 2024 and April 2025 on factors influencing the implementation of the Early Infant Diagnosis algorithm in Nairobi County, Kenya.

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List of abbreviations

AIDS	Acquired immune deficiency syndrome
AICS	Agenzia Italiana Cooperazione allo Sviluppo
AMREF	African Medical and Research Foundation
ANC	Antenatal Care
ART	Antiretroviral therapy
BTBH	Born to be Healthy project
CASCO	County AIDS and STI Coordinator
CCC	Comprehensive care clinic
CHA	Community Health Assistant
CHEW	Community Health Extension Worker
CHP	Community Health Promoter
CPT	Cotrimoxazole prophylactic therapy
DBS	Dried-blood spot
ESRC	Ethics and Scientific Review Committee
PCR	Polymerase chain reaction
EID	Early Infant Diagnosis
GDPR	General Data Protection Regulation
GF	Global Fund
HEI	HIV- exposed infant
HF	Health facilities
HRIO	Health Records and Information Officer
HIV	Human immunodeficiency virus
LTFU	Lost to follow up
MM	Mentor mother
m2m	mothers2mothers
MMI	Medicus Mundi Italia
MOH	Ministry of health
NACOSTI	National Commission for Science, Technology and Innovation
NASCOP	National AIDS and STI control program
PCR	Polymerase Chain Reaction
PLHIV	People living with HIV
PMTCT	Prevention of mother to child transmission
STI	Sexually transmitted infection
TAT	Turnaround time
UNAIDS	Joint United Nations Programme on HIV and AIDS
UNIVR	University of Verona
VL	Viral load
VT	Vertical transmission

Project description

This exploratory study was conducted by the research team of the Infectious disease division (ID-CARE) of the Department of Diagnostics and Public Health, University of Verona, Italy (UNIVR) in collaboration with Medicus Mundi Italia (MMI).
The research is embedded within a bigger intervention coordinated by MMI called "***Born to be healthy: Preventing mother-to-child transmission and fighting HIV spread at community level*"** and implemented in Nairobi County between February 2023 and April 2025 in partnership with the partners NO ONE OUT, mothers2mothers (m2m), and UNIVR.

The project centres on the prevention of mother to child transmission (PMTCT) of HIV and is part of the global fight against the spread of HIV and HIV-related stigma and discrimination. The initiative aimed at contributing **to an improved access and quality of the PMTCT programme in Nairobi County, allowing the increase of the number of HIV-positive women receiving the antiretroviral therapy (ART) during pregnancy, labour and breastfeeding. In parallel, the goal was to reduce the number of children with new HIV infection due to transmission from mother to child.**
To enhance integration between public health services and communities in the fight against HIV, the Directorate of Health and the project jointly promote and support the Kenya Mentor Mother Program (KMMP). The program provides a comprehensive package of services delivered by two types of community agents: Mentor Mothers (MM), who work within health facilities, and Community Health Promoters (CHP), who operate at the community level. These agents collaborate to strengthen the link between health system and the community, support clients, increase service uptake, and promote education on the prevention of mother-to-child transmission of HIV.
Aligned with national guidelines, the project includes specialized training for both types of agents, overseen by local health authorities. Additional components of the program include Psycho-Social Support Groups, Adherence Counselling, public sensitization and outreach activities, and a Conditional Cash Transfer initiative to encourage full adherence to treatment among mothers.

This operational study guided the project components towards optimal adherence to the "*algorithm for early diagnosis of HIV infection in children*" (EID), as per the Ministry of Health of Kenya guidelines.
The study explores and describes the factors influencing the implementation of the Early Infant Diagnosis (EID) algorithm in Nairobi County, Kenya and identifies both enabling and inhibiting factors for the algorithm's implementation. The correct implementation of such an algorithm for the early diagnosis of infections allows children of maximum 18 months of age to be correctly diagnosed with HIV infection and thus to be started immediately on treatment with antiretrovirals. As described in the algorithm, the HIV diagnosis required two different positive tests that are two polymerase chain reaction (PCR) tests for children under 18 months of age and antibody tests for those above this age.
The results of this first pilot study will contribute to increase the knowledge on which components of the EID algorithm need further attention or have emerging issues to create tailored interventions based on the results in the future.

This report describes the study conducted by the research team of the University of Verona within the *Born to be Healthy* project and the "journey" of 47 HIV-exposed infants that were diagnosed with HIV

Nairobi, road in Korogocho

Background

Mother to child transmission of HIV

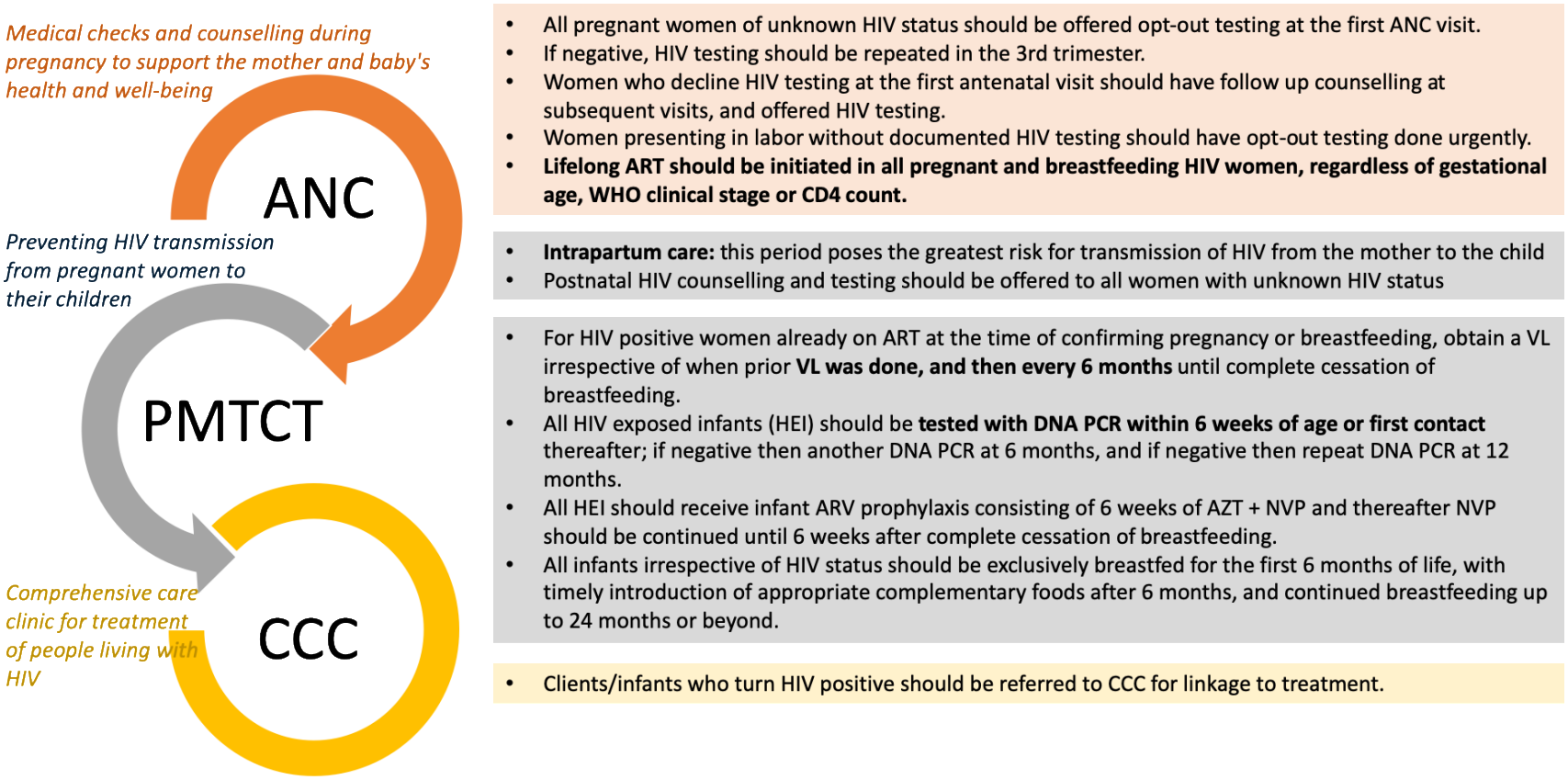
Globally there was 39.9 million people living with HIV (PLHIV) in 2023. In Sub-Saharan Africa women and girls (all ages) accounted for 62% of all new HIV infections (UNAIDS, 2024).
In the absence of intervention, **the rate of transmission of HIV from a mother living with HIV to her baby during pregnancy, labour, delivery or breastfeeding ranges from 15% to 45%.** However, with timely and effective measures, **this risk can be reduced to below 5%.** As such, especially in high-prevalence settings, routine HIV testing should be offered to all pregnant women as early as possible in pregnancy and should be repeated in pregnancy and breastfeeding. Moreover, identification of HIV infection should be immediately followed by prompt initiation of lifelong antiretroviral treatment to reduce viral load, which dramatically lowers the risk of transmission. Continuous support to ensure adherence to treatment is also needed for HIV-positive women. Encouraging safe delivery methods can further reduce the risk of transmission from mother to child. Babies born from an HIV positive mother should receive prophylactic antiretroviral medication immediately after birth till the end of breastfeeding. Exclusive breastfeeding is recommended for the first six months if the mother is on ART and virally suppressed. **Providing comprehensive care and support for HIV-positive mothers and their children is essential for their health and well-being.**

HIV/AIDS and prevention of mother to child transmission in Kenya

Kenya has made tremendous progress over the last three decades to reduce incidence of the HIV/AIDS epidemic, however it is still prevalent with approximately 1.5 million people affected. Within the 1.5. million PLHIV in Kenya, women and girls aged 15 years or older represent 65% of this population (NASCOP, 2023). **They are a key group in the fight against HIV, as, without proper adherence to ART, the HIV transmission rate during pregnancy, labour, delivery or breastfeeding is as high as 15-45%.** This rate decreases to approximately 1% when treated (NASCOP, 2016). Each year in Kenya, nearly 52,000 infants are born to birthing parents who are HIV positive (UNAIDS) with 4,500 infants acquiring HIV and six children dying every day due to HIV/AIDS (NASCOP, 2023). If a HIV positive infant is not initiated on ART and left untreated, the mortality rate of those infected is 50% by two years of age (Gaitho et al., 2021). Analysis of the Kenya context show that one third of new HIV infections in children are caused by women who did not access treatment, one third by women who did not adhere to treatment and one third who acquired HIV during pregnancy (NASCOP, 2023). There are multiple factors which contribute to these reasons including accessibility, economic vulnerability, stigma and lack of HIV disclosure to family, gender-based violence, and level of patient literacy on HIV (Gaitho et al., 2021; Hurley et al., 2020). To prevent mother to child transmission of HIV it is necessary to engage mothers throughout the entire pregnancy. Interventions that are currently being utilised to improve engagement includes mentor mothers (MM) programs, technology, such as mother-infant tracking systems, text messages, partner counselling. However, systematic reviews and meta-analysis of

interventions and initiatives to improve EID have not shown evidence that they increase the rate of EID. This is often due to low sample sizes, small number of infants testing positive or heterogeneity of studies (*Okusanya et al., 2022*).

Figure 1 shows the integrated services supporting women and infants in the prevention and treatment of HIV in Kenya: antenatal care (ANC), prevention of mother-to-child transmission of HIV (PMTCT), and the comprehensive care clinic (CCC).



Adapted from Kenya HIV Prevention and Treatment Guidelines, 2022 edition

Early Infant Diagnosis

Kenya has committed to the UNAIDS 95-95-95 target which requires that 95% of PLHIV are diagnosed, 95% of all PLHIV are on treatment and 95% all PLHIV are virally suppressed. While Kenya has attained 95-95-90 in adults, the results are vastly different in children with the current rate 85-85-74, a stark difference in the HIV epidemic control (NASCOP, 2023).

To reduce infant mortality, health systems must be able to facilitate early testing, systems to ensure efficient notification of results, retain mothers in care and immediate initiation of ART (NASCOP, 2023; Hurley et al., 2020; Modi et al., 2018; Mofenson et al., 2020).

Early diagnosis of an HIV exposed infant (HEI) allows the identification and necessary treatment to decrease infant mortality and morbidity. It also includes the monitoring and support of HIV infected mothers with programs to help with adherence to ART, infant prophylaxis as well as psychosocial support.

In Kenya 33% of HEI are not tested within two months of birth (MOH Kenya, 2020). Currently, in Kenya the guidelines for EID follow an 18-month process, which requires **multiple tests at specific ages** (Figure 1). All of these steps might represent a moment in which issues and challenges can occur.

PCR testing

A PCR test, short for Polymerase Chain Reaction, is a molecular biology technique used to amplify (create many copies of) a specific DNA sequence.

This process is essential for various applications, including medical diagnostics. In HIV diagnostic PCR testing is a crucial tool that can be used
qualitatively (yes/no diagnosis) or quantitatively (viral load measurement).

PCR testing allows for early detection of HIV infection, which is crucial for timely initiation of antiretroviral therapy (ART) to prevent the progression of HIV and improve the infant's health outcomes. Infants who test positive on initial PCR are typically switched from HIV prophylaxis to treatment and followed up with confirmatory PCR test.

Dried blood spot (DBS) samples, collected from heel pricks, are commonly used for PCR testing in babies.

The Kenya EID algorithm and EID in Nairobi

The EID algorithm or cascade as can be seen in Figure 1 is a series of tests to diagnose HIV in an exposed infant. As per the Kenya EID algorithm, it requires a sample to be tested at **four specific time points within the first 18 months** of an infant's life. At these time points, a DNA PCR from a dried blood spot (DBS) is warranted then at 18 months a HIV antibody test is done.

If all tests are negative and if an infant has ceased breastfeeding, the HIV prophylaxis can be stopped, and the baby can be considered HIV negative.

If a DNA PCR is returned positive, a confirmatory HIV DNA PCR test is required. Once a HEI has a positive test, they are required to initiate ART as soon as possible. (NASCOP, 2022; NASCOP, 2023). Timely initiation of treatment for breastfeeding mothers and testing of infants exposed to HIV is critical to prevent VT and reduce mortality.

The five HFs involved in this study are located in four sub-counties of Nairobi in which there are informal settlements (Kerubo et al., 2015; Truong et al., 2023). A previous study showed that in informal settlements the rate of HIV/AIDS infection grows from 5% among non-slum urban residents to 12% in informal settlements in Nairobi, Kenya (Behzadifar et al., 2024; J. Madise et al., 2012). This is compounded by the fact that in Kenya only around 29% of women undergo their first antenatal care (ANC) visit in the first trimester of the pregnancy (*KNBS and ICF, 2023*.). This puts a high percentage of newborns potentially exposed to HIV; not including those HEI whose mothers have not attended ANC services. Furthermore, the recent MOH Kenya report “The plan to end AIDS in Children by 2027” shows that in the county of Nairobi, the number one reason of new HIV infections in children was caused by mothers dropping out of ART during breastfeeding. EID is a critical component of PMTCT programs, and if there are inadequate and inaccessible services, it can lead to delays in diagnosis and prevention of mother to child transmission.

While these 5 HFs are not representative of all health facilities in Nairobi County, they were identified as those that need to strengthen the program for the PMTCT of HIV and to implement the Kenya Mentor Mother Program.

These HFs cover a population of 221,981 people, with an estimated 12,690 pregnant women annually. Of these, 5,657 access the service "Elimination of mother-to-child transmission.

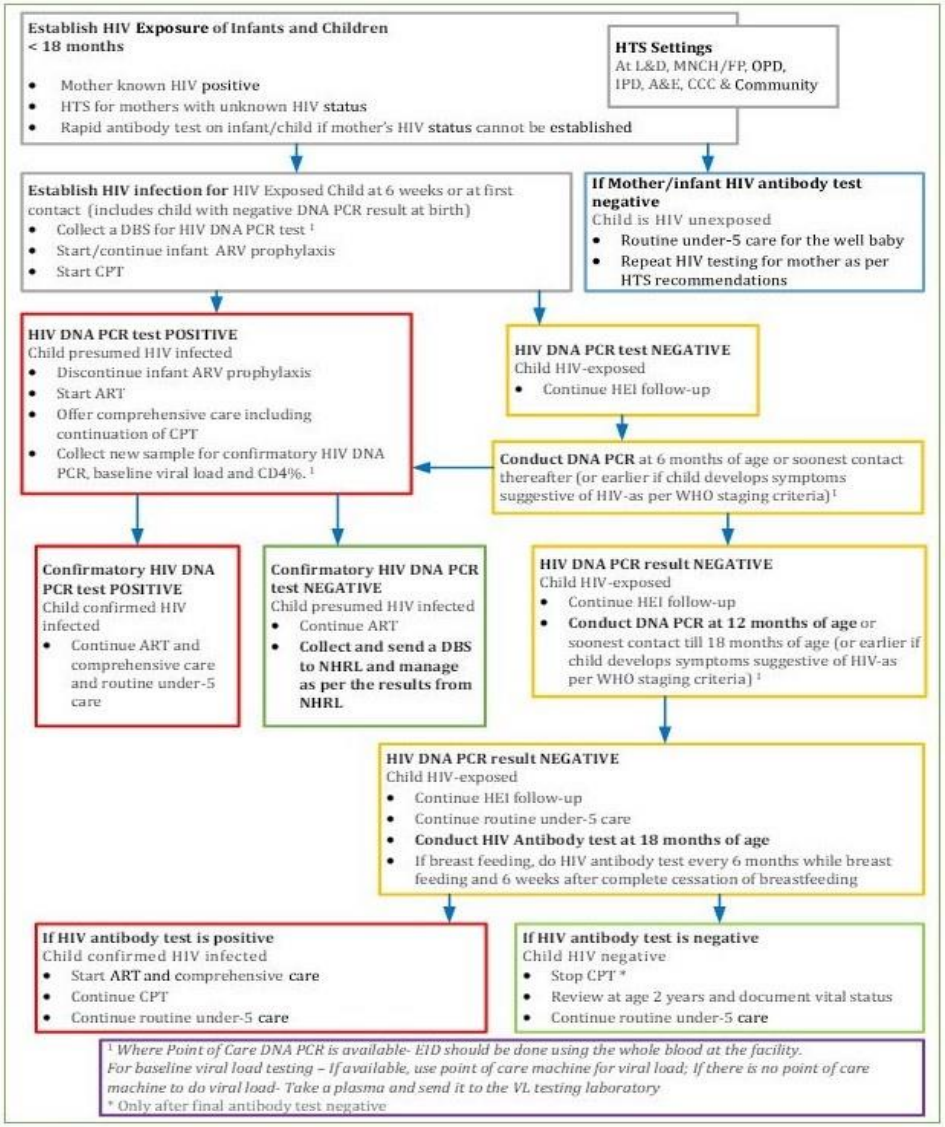


Figure 1 - Early infant diagnosis algorithm, NASCOP (2022) Kenya HIV Prevention and Treatment Guidelines

Conceptual Framework

Figure 2 shows the EID algorithm and its age specific time points broken down into all possible points where pitfalls can occur.

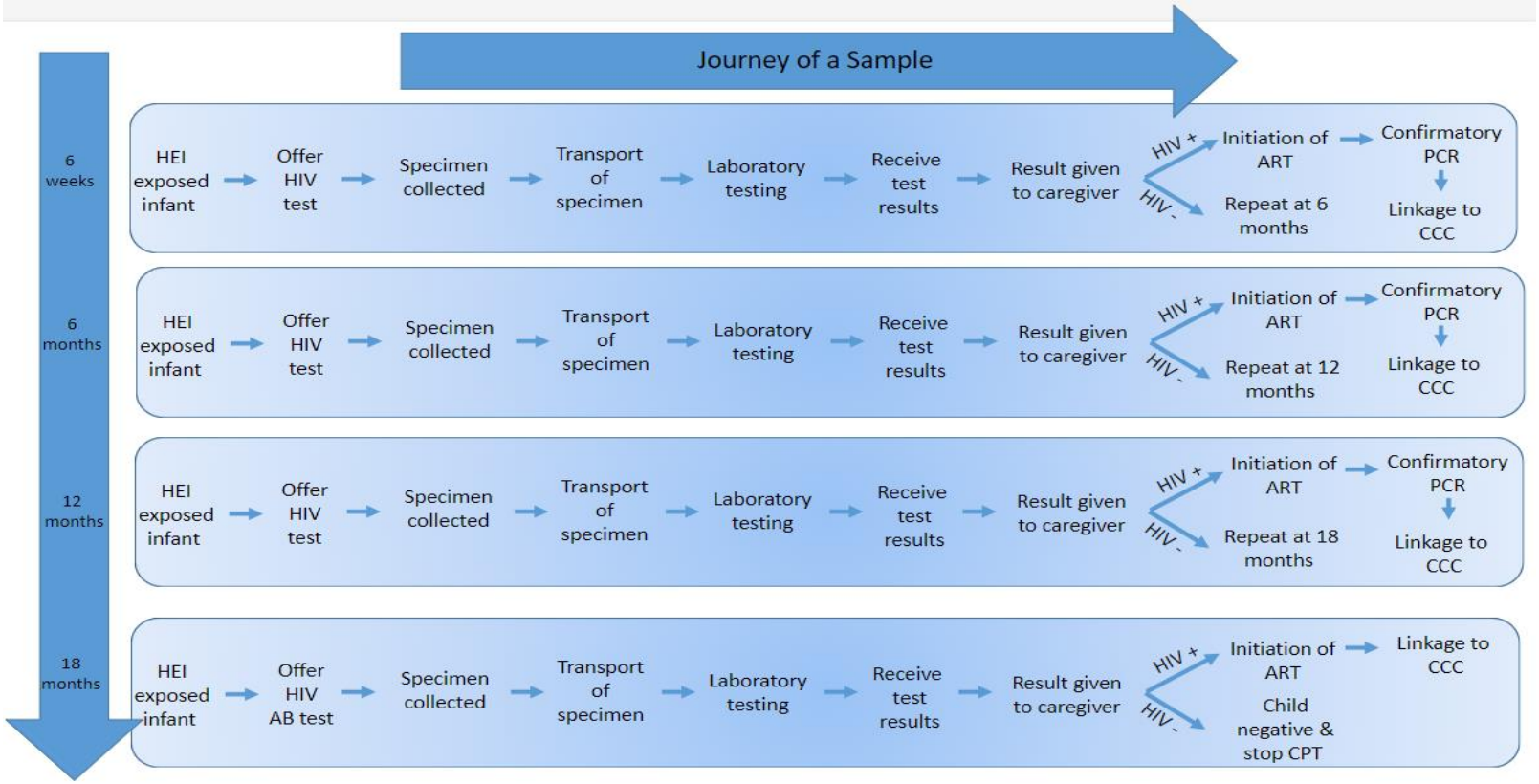


Figure 2- Journey of a sample within the EID and possible pitfalls. HEI: HIV-exposed infant; ART: antiretroviral treatment; CCC: comprehensive care clinic for HIV treatment; CPT: chemoprophylaxis.

The role of Mentor Mothers

The Kenya Mentor Mother Program (KMMP) was created to strengthen services in PMTCT, maternal and child health, and HIV care and support. The KMMP empowers women living with HIV (Mentor Mothers) to support and educate their peers, using their own experiences to:

- Encourage positive health behaviours
- Fight stigma
- Improve care-seeking and treatment adherence

Mentor Mothers work in health facilities and communities to:

- Educate women and couples before testing
- Offer one-on-one and group counseling
- Lead support groups
- Help trace mothers who have missed appointments

They provide a **safe, stigma-free space** for mothers and families to learn and get care, while being linked to **Community Health Promoters (CHPs)** to ensure continued support at home.

KMMP is built on the belief that **PLHIV are not just service users, but leaders and partners** in HIV response efforts. The program offers them a formal role in health care delivery. Objectives of the program include quality peer support at health facilities and in the community, and retention and adherence to care of mother-baby pairs. The program's success relies on **empowering women** through employment, knowledge, support networks, and reduced stigma.

The *Born To Be Heathy* project has supported the implementation of this program in the target health facilities of Nairobi County.

Methods

Study Design and setting

This exploratory study retrospectively assessed the correct application of the MOH of Kenya EID diagnostic algorithm breaking it down to its specific time points and steps in the health system.

The study was conducted in four sub-counties of Nairobi County, Kenya: Ruaraka, Embakasi West, Embakasi North, and Kamukunji.

Overall, five health facilities were involved, with at least one HF per sub-county. The data were collected using written or electronic records available at the health facility level.

To ensure *confidentiality* and prevent deductive disclosure, the 5 health facilities involved in this study are not mentioned in this report.

Study Population

The study population consists of all HIV-positive children with or without delayed EID, aged between 0 and 5 years (born between October 2019 and October 2024) and attending the health facilities targeted by the BTBH project.

Information was extracted from clinical records and registries of **HIV-positive children, aged between 0 and 5 years, with or without delayed EID of HIV infection.**

Study tools and data collection

Data on the correct application of the EID algorithm was collected from registries using a printed structured data collection form (see Annex). This form was developed through a process that encompassed a literature review and discussions among the research team and major stakeholders. This allowed to take into consideration how data are currently collected and to understand the different registries available at the health facilities.

The study used mainly three registries at the five HF target after approval was received from the county, sub-county and HF's coordinators.

The registries that were mostly used were:

- HIV exposed Infant (HEI) register,
- PCR sample log register, and

- the mother infant pair follow up registry (when available).

Whenever needed, the Electronic Medical Record (EMR) was also consulted.

From these records no names or exact dates were collected to guarantee anonymity.

The following retrospective information was extracted:

- **Socio-demographics**: gender, year of birth, place of birth (home or facility), type of delivery, marital status of mother, HIV status of mother at delivery
- **Clinical outcomes and current status** of mother and infant
- **Early Infant HIV diagnosis**
    - Clinical flow and PCR sample collection at 6 weeks, 6 months, 12 months
    - Timing of the laboratory results (turnaround time)
- **Breastfeeding and prophylaxis status** during the EID program

The information was then entered on structured data collection forms which were developed in close collaboration with the team in Nairobi, Kenya to ensure feasibility and accessibility of the information.

After the information was collected in writing on the data collection forms, it was then entered into the Epi Data Software platform. An electronic case report form (eCRF) was created to mimic the paper data collection form to allow simple and reliable data entry.

A number was written on each paper questionnaire to allow verification in case of discrepancies or inconsistent data spotted during the data cleaning and analysis. Only members of the BTBH research team (local co-investigators) were authorised to access Epi Data.

The use of the Epi Data platform facilitated data management, and allowed for downloadable datasets for the analysis, which were overseen exclusively by the investigators at UNIVR. Theoretical and practical training courses, with special emphasis on ethics, privacy and data collection, were organized for all the research team staff and co-investigators involved in the BTBH when two UNIVR team members conducted a mission in Kenya. Participation and successful completion of the training programme was required for the co-investigators before taking part in the study.

Statistical analysis

Data cleaning was undertaken to identify any discrepancies or inconsistencies and to validate the database. Any issues identified during this preliminary phase were discussed directly with the data collectors to ensure accurate corrections. Following this process, the cleaned dataset was considered final and downloaded for analysis.

A descriptive statistical analysis was conducted to explore the characteristics of the 47 infants (and their respective mothers) included in the study. Categorical variables were analysed using frequencies, proportions and percentages. Each variable was cross-tabulated to highlight relevant findings and potential predictors.

Demographic variables were presented in tables and illustrated graphically using bar and pie charts. All results were summarised in two-way tables, and statistical associations were assessed using either Fisher's exact test or the Chi-squared test.

Further analyses will be performed using an exact logistic regression model to examine the relationship between the timeliness of testing for HIV-exposed infants (HEI) and relevant predictors identified in the analysis.

All data analyses were conducted using STATA Software, version 17 (Stata Corp, College Station, Texas, USA).

Outreach in Dandora

Psycho-social support group in Korogocho

Ethics

To address the ethical implications of human-initiated research, all ethical norms and principles from the Helsinki Declaration have been taken into account when drafting the study protocol.

The National Commission for Science, Technology and Innovation (NACOSTI) NACOSTI/P/23/23814 and the AMREF Ethical Scientific Review Committee (AMREF-ESRC) ESRC P1357/2022 provided ethical review and approval of study protocol and data collection material. No informed consent was given to data subjects, and a waiver of consent was approved by AMREF-NACOSTI for secondary use of data.

Authorisation for conducting the research was granted by Nairobi County and Sub-County coordinators.

In this study the data collected were data already recorded and existing in the five health facilities' registries for other purposes. All data collected was anonymized to protect the identities and used as secondary data for new research purposes.

The use of medical registries involves several ethical issues such as: retaining privacy and confidentiality, data security, risk of re-identification, and data inaccuracies, that must be carefully managed. These considerations were at the forefront when developing the study and were addressed through the training staff and using a data collection software to protect the data of those involved. The privacy and confidentiality of study participants were maintained by implementing stringent measures to prevent unauthorized access and ensuring data collected was fully anonymised.

All investigators involved have completed and received certificates of completion of online ethics courses to ensure the protection of participants, as well as signing data confidentiality forms. To ensure confidentiality at the data collection level, the co-investigators ensured that the forms are only used for research purposes. Names or specific dates in the registries were not collected in any form.

Any client information in connection with this study has been kept strictly confidential. To further reduce data breach, the data collection forms were stored in a locked room with only the principal investigator and data entry staff having authorised access. Electronic case report forms on Epi Data were only accessible to data entry staff and were password protected.
All the data analysed by UNIVR were anonymised.

Moreover, since the mother-baby pairs included in this study were few in number and thus potentially identifiable in some cases, the health facilities involved in this study are not mentioned in this report. This decision was taken to prevent *deductive disclosure* and maintain the security of all data collected also during the dissemination of the results.

Nairobi, road between Korogocho and Ngomongo

Study overview

Overall, this implementation study was conducted with the collaboration of the project partners and the MOH of Nairobi County, Kenya, particularly with the collaboration and guide of the local public health stakeholders, including the County AIDS and STI Coordinator (CASCO) of Nairobi County, the Sub-County AIDS and STI Coordinators (SCASCO) as well as the health facility coordinators.

Figure 3 describes all the different steps carried out to conduct the study (orange), while the outputs are highlighted in yellow.

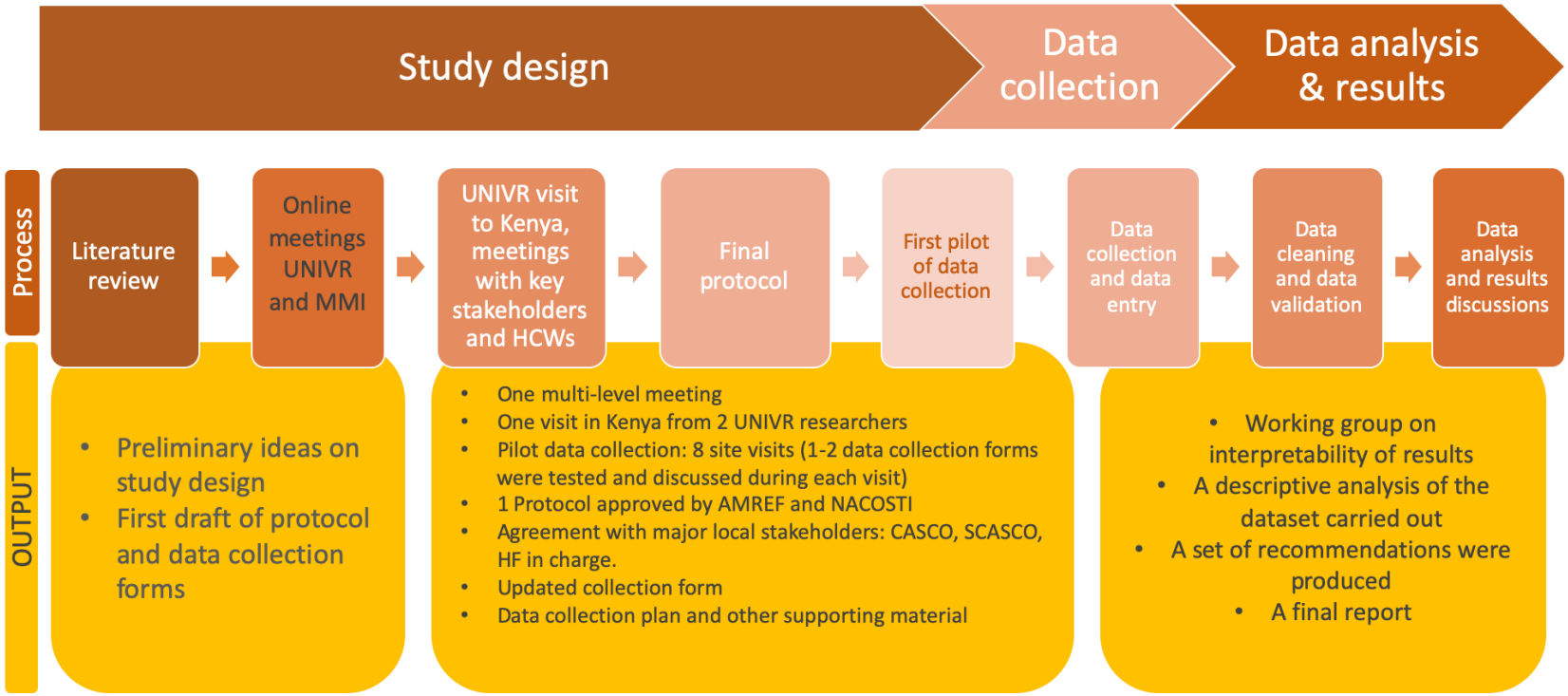


Figure 3: Steps of study design and its implementation.

UNIVR: University of Verona, MMI: Medicus Mundi Italy, HCWs: Healthcare workers, AMREF: African Medical and Research Foundation, NACOSTI: National Commission for Science, Technology and Innovation, CASCO: County AIDS and STI Coordinator, SCASCO: Sub-County AIDS and STI Coordinator.

Summary of the literature review on the topic

The literature shows that the **barriers to Early Infant Diagnosis (EID) of HIV Exposed Infants (HEI) are various and multifaceted and are often unique to their location and cannot be generalised from country to country and furthermore country to country**. This is further shown by a systematic review of individual and contextual factors for HIV positive and postpartum women which breaks down that individual, interpersonal, community and structural barriers are unique and that programs integrating maternal health and HIV services must identify their unique barriers and motivators (*Hodgson et al., 2014*).

The recent MOH Kenya report "*The plan to end AIDS in Children by 2027*" shows that in the county of Nairobi, the number one reason of new HIV infections in children was caused by **mothers dropping of ART during breastfeeding.**

A recent systematic review and meta-analysis shows that 30% of women fail to show maternal compliance with ART in Sub-Saharan Africa and did not meet viral suppression. This was particularly apparent in the post-partum period which showed the lowest levels of adherence (*Fassinou, 2024*), underscoring the need for infants to be followed over the entire 18-month EID program or until breastfeeding ceases.

Despite the implementation of infant tracking systems as well as improvement in use of text messages there are still challenges in retaining mother-infants' pairs throughout the EID cascade, delaying necessary ART initiation (*Finocchario-Kessler et al., 2018; Hurley et al., 2020*). While the challenges facing EID have been researched, it is important that the entire 18-month process of the EID algorithm is studied to see where exactly bottlenecks or issues occur, to ensure EID and timely initiation of ART to decrease infant mortality and morbidity. At each time point throughout the cascade each sample must overcome challenges and specific requirements before the notification of the result can be given to the client. **Before conducting a PCR test, you need maternal HIV status, as well as client understanding and literacy of HIV which leads to acceptance of testing.** Furthermore, it requires combating the stigma that surrounds HIV and making the clinic accessible. Challenges with the tests themselves can arise such as specimen not collected or processed correctly or equipment breakdown or even slow TAT. There can also be problems in relation to relaying the notification of test results due to loss to follow up of mother infant pairs, or poor data management of the clinic (*Hurley et al., 2020; Khamadi et al., 2008; Hassan et al., 2012; Finocchario-Kessler et al., 2014*).

While there is an abundance of literature of challenges which affect EID, there is limited literature on where the bottlenecks, issues in the whole 18 months EID cascade occur in Kenya and worldwide.

Qualitative literature has shown the mothers and caregivers' experience for the entire EID programs, but there is less quantitative research on the entire program. **Studies which have researched maternal factors and health system factors which affect EID completion demonstrated that delayed test results and lack of communication between clients and HFs increase loss to follow-up of appointments** (*Kamble et al.,2023; Ankund et al.,,2020;Nikhare et al.,2024; Nkhonjera et al., 2021*). Maternal factors such as age, education, and distance to health centres all increased delayed testing (*Ankund et al., 2020; Hurley et al., 2020*).

University of Verona research team visited Kenya and met key stakeholders

Two researchers of the University of Verona, Department of Diagnostics and Public Health, Section of Infectious Diseases, visited Kenya in October 2024. The visit was supported by the MMI team in Kenya as regards organisational aspects. During this period, a multi-level meeting was organised, and several site visits were conducted across target health facilities in Nairobi County as part of the pilot phase of the BTBH operational research. The objective was to align stakeholders on research objectives and test data collection tools, as well as assess data availability.

The **multi-level meeting**, that took place the 28th of October 2024, focused the discussion on key points and adjustments needed to fine-tine the research approach, such as a few variables of the data collection tool and the data sources. The staff of the health facilities shared insights on data sources and on how to triangulate information from multiple registers. Details of the multi-level meeting are further described in the Box "Multilevel meeting to align stakeholders on research objectives".

Site visits of UNIVR research team and MMI team

First pilot of data collection

Following the discussions, a number of site visits were planned. The research team was able to test the collection form in all the 5 target health facilities, confirming the number of eligible HIV-positive children (sample size) in each facility. Furthermore, ethical and practical aspects of the operational research were discussed with the local co-investigators, including the importance of secure storage of data and data anonymization.

The visits also showed the importance of implementing, during the data collection, “health facility-specific procedures” due to differing routine practices at each health facility. A supporting document was also created, providing tailored guidance for data collection.

Based on the revisions made, the pilot findings and the ethical considerations, the final “Data Collection Form” (available in the Annex) and an additional document including “Instructions for Data Collection” were finalized.

Outreach in Korogocho

Multilevel meeting to align stakeholders on research objectives

On **October 28, 2024**, a key stakeholder meeting was held at the **Marble Arch Hotel in Nairobi**. The goal was to bring everyone on the same page about the goals of the upcoming study on improving care for HIV-positive mothers and children.

Who Was Involved?

The meeting brought together many important players in Kenya's HIV response, including:

- County AIDS and STI Coordinator (CASCO)
- Sub-County AIDS and STI Coordinators (SCASCOs)
- Health facility in-charges
- Health Records and Information Officers (HRIOs)
- Project partners and collaborators

This diverse group worked together to shape a stronger, more united approach to the research.

What Was Discussed?

The meeting focused on aligning the research objectives and reviewing the tools and data sources needed for a successful study. **Key discussion points and adjustments:**

- **Important Data Sources Identified:** participants highlighted key tools such as the **HEI Register**, **Electronic Medical Records (EMR)**, and the **PCR Sample Log Register**. They also mentioned helpful other resources like the **Mother and Baby Pair Register** and a "master" register maintained by **mothers2mothers (m2m),** which was available since the beginning of the project**.**
- **Support for Data Collection:** facility in-charges and HRIOs expressed full support for both the **pilot** and **full data collection**.
- **Population Estimate and Sample Size Concerns:** based on government data (DHIS), there are roughly **60 HIV-positive children on ART** in the targeted areas, with a maximum expected study population of **about 100**, including children who may have passed away or been lost to follow-up. Some participants raised a concern: What if there aren't enough cases to study?
  It was shared that if the sample size would be low, a **descriptive analysis** of the available data would have been still very useful to picture the current situation.
- **Age Range Adjustment:** to include more children in the study, the age range was expanded from **1–4 years to 0–5 years**. This change would allow the study to capture the impact of the **COVID-19 pandemic** on testing and lab services.

Facility Mentor Mother in Korogocho

Description of study population

From October 2019 to October 2024 a total of 47 mother-infant pairs were included in the study and available data were retrospectively collected.

This study analysed 47 HIV-positive children followed at the 5 health facilities of the 4 sub-counties included in the BTBH project: Embakasi West (one health facility), Ruaraka (two health facilities), Embakasi North/Kasarani (one health facility), and Kamukunji (one health facility). Of those, 18 children were from Embakasi West sub-county, 14 from Embakasi North/Kasarani, 11 from Ruaraka, and 4 from Kamukunji. The distribution of the study population in the different sub-counties of Nairobi County is shown in Figure 5.

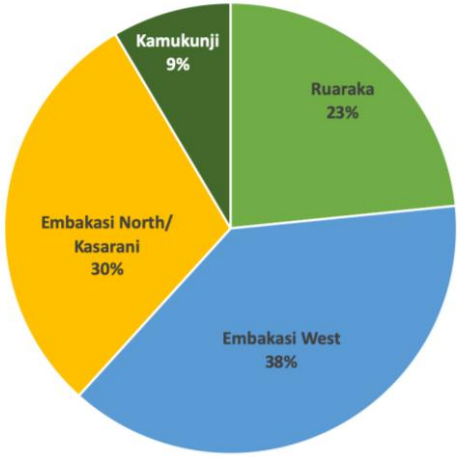


Figure 4 -Distribution of the study population in the 4 sub-counties targeted by the Born To Be Healthy project.

Overall, the HIV-positive children included in the study were the 2% of the total number of exposed children followed up at the 5 target health facilities. The number of exposed children (orange bar) from the target sub-counties and the HIV-positive identified in this study (yellow) are shown in Figure 6.

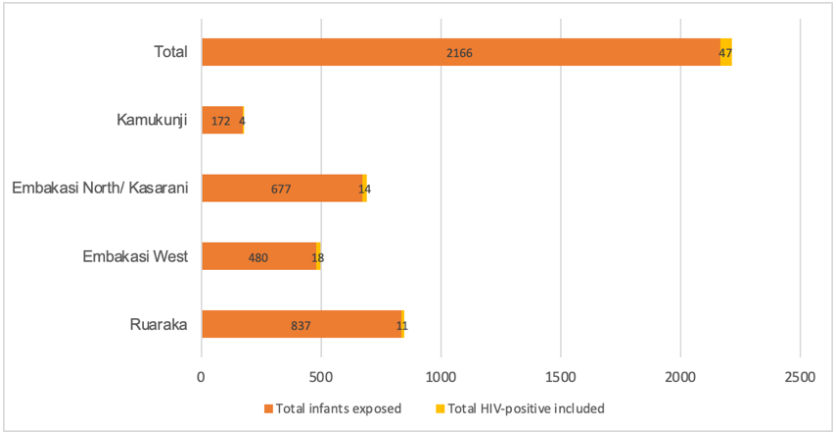


Figure 5 - Overall number of HIV-exposed infants followed at the PMTCT services (orange) and number of HIV-positive children included in the study (yellow) from the different target sub-counties during the study period (from October 2019 to October 2024)

Among the included children, two HIV-positive children were born in 2019, 16 in 2020, 14 in 2021, 12 in 2022 and 3 were born in 2023. No children included in the study were born in 2024. The distribution of the year of birth of the eligible HIV-positive children included in the study, is shown in Figure 7.

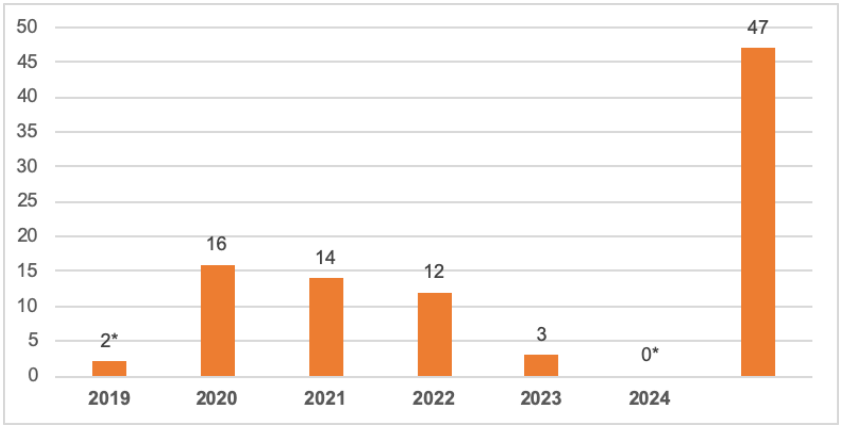


*Figure 6 - Year of birth of the children included in the study (*from October 2019 to October 2024)*

As shown in Table 1, among the 47 children included in the study, 22 were male and 25 were female. Most of them (57%) were born in the facility, while 1 (2%) was born at home and for 19 children (40%) this information was not available. Further socio-demographic information of mothers and children are shown in Table 1.

Infants information	**N=47**	**(%)**
Year of birth		
2019* (October-December only)	2	4.3%
2020	16	34.0%
2021	14	29.8%
2022	12	25.5%
2023	3	6.4%
2024	0	
Gender		
Female	25	53.2%
Male	22	46.8%
Place of birth		
Home	1	2.1%
Facility	27	57.4%
Unknown	19	40.4%
Subcounty		
Ruaraka	11	23.4%
Embakasi West	18	38.3%
Embakasi North / Kasarani	14	29.8%
Kamukunji	4	8.5%
Mother information	**N=47**	**(%)**
Marital status		
Married	13	27.7%
Divorced/separated	5	10.6%
Widowed	2	4.3%
Single	6	12.8%
Unknown	21	44.7%
Delivery type		
Spontaneous vaginal delivery	26	55.3%
Caesarean section	2.00	4.3%
Unknown	19.00	40.4%

*Table 1- **Socio-demographic** information of the mother-infant pairs included in the study.*

PMTCT service guidance area in Korogocho

Key findings and interpretation of results

This study summarises the journey of 47 HIV-positive children 0 to 5 years old, who were reported in the registries of the 5 target health facilities of 6 sub-counties of Nairobi County, supported by the Born to be Healthy project.

38/47 (81%) were mother-baby pairs followed up since their birth at the PMTCT clinic of the health facilities; while 9 children were directly transferred in at the Comprehensive Care Clinic (CCC) and no information was available on their journey within the PMTCT service.

- ***Clinical outcome and follow-up status of the mothers and babies***

Among the 47 children followed at the 5 target health facilities,

- 24 mother-baby pairs (51%) are alive and currently followed up at the comprehensive care clinic (CCC),
- 8 children (17%) died (in one case both the child and the mother died),
- 3 mothers (6%) died (in one case the child also died, while in 2 cases the children are alive and followed up at the health facility),
- 11 pairs (23%) are currently lost to follow up (LTFU),
- 1 pair (2%) was transferred out to be followed up in another facility.

Lost to follow up (LTFU)

It refers to a situation where a client who was previously receiving care is no longer attending the scheduled appointments.

It can have serious consequences, including increased risk of HIV transmission, development of drug resistance, and increased mortality.

High rates of LTFU can compromise the overall success of HIV treatment programs, as it reduces the number of clients who are successfully adhering to treatment and suppressing their viral load.

- ***Diagnosis within or after 18 months***

Overall, among the 47 children included in the study, **25 (53%) obtained a diagnosis within the first 18 months from birth** as required by the Kenyan guidelines, while for **22 children there was a delayed diagnosis or unclarity of the process** (Table 2).

Time of diagnosis	**N=47 (%)**
Diagnosis within 18 months	**25 (53%)**
6 weeks PCR + confirmatory PCR	13 (28%)
6 months PCR + confirmatory PCR	4 (8%)
12 months PCR + confirmatory PCR	2 (4%)
18 months (antibody test)	6 (13%)
Delayed or unclear Diagnosis	**22 (47%)**
Missing information from PMTCT	13 (28%)
Started directly in CCC	9 (19%)

Table 2- Overview of the early infant diagnosis of the 47 infants included in the study

Among the 25 infants correctly diagnosed within 18 months from birth,

- **13/25 infants (28%) were diagnosed at 6 weeks** (a first PCR test at 6 weeks resulted positive and a second PCR test was performed and confirmed the previous result);
- **4 infants (8.5%) were diagnosed at 6 months;**
- **2 (4%) were diagnosed at 12 months**; while
- **in 6 cases (13%) the HIV diagnosis** was not performed through PCR testing but directly with an antibody test (AB) at 18 months after birth.

Among the 22 children that did not receive a diagnosis within 18 months,

- **9 children (41%) were directly "transferred in"** and started the follow up at the CCC, therefore most of their historical information (PMTCT journey, if any) was not available;
- **13 children (59%)** did not receive a diagnosis within 18 months, facing different kind of "challenges". The most reported challenges were lack of confirmatory testing due to different reasons including death of the baby (6/13) or religious issues (1/13).

Why This Matters?

If infants miss the early testing window, or if results take too long to be communicated, follow up visits and treatment are delayed — and this delay can lead to serious illness or even death. Every missed opportunity during the visit can result in a late diagnosis and in a missed opportunity to save lives.

- ***PCR testing within the PMTCT service***

As mentioned before, overall, 28/47 (60%) infants were able to have **a first PCR test collected within the first 6 weeks** from birth. Of them, **21/28 (75%) resulted HIV-positive**, while **6/28 (21%) resulted negative**. For 1 case, the PCR result was not reported in the registry.

Among the 21 infants that resulted positive at the first PCR test:

- **13 infants received a second test** that confirmed their **HIV-positive status** (as shown in Table 2);
- **3 infants received a second PCR test** (sample was collected), however **no information on the result** was reported in the registry;
- **2 infants received a second PCR test** that, in contrast to the previous one, **resulted negative**; however, both did not receive a 3rd test to confirm either the first or the second result and, in both cases, later on an antibody test was performed and it resulted positive.
- **3 infants never received a confirmatory test for different reasons**. Scenarios include, one lost to follow up (LTFU) due to religious issues, and two babies that died before receiving test results (either 6-week PCR test result or the confirmatory one).

Why This Matters?

Infants resulting HIV-positive within the first 6 weeks are typically due to in utero or intrapartum transmission, while those who turned positive **after 6 weeks** are more likely to acquire the infection during **breastfeeding.** Early testing at 4-6 weeks and again at 4-6 months is crucial for diagnosis and timely interventions.

Among the **6 infants that resulted negative at the first PCR test (6-week):**

- 3 were repeated within 6 months and resulted positive
  - in 2 cases a confirmatory PCR confirmed the positive result, while
  - in 1 case it was not possible as the baby died before;
- 1 was repeated at 6 months and resulted negative but, later on, the antibody test at 18 months resulted positive
- 1 was repeated at 12 months resulting positive, but was never followed by a confirmatory PCR test and no other information about the infant was recorded.

Overall, 51% of the records collected reported PCR testing results properly, while the remaining 49% of records were partially reported (missing information about the test results or, in the communication from laboratory to health facility, or from healthcare workers and clients).

- ***Laboratory Results and Turnaround Time (TAT)***

Considering the time between the sample collection and the communication of the result to the client, **50% of the study population received the test results within 4 weeks,** while the others received the test results after more than 4 weeks at least once.

Considering the overall number of tests performed,

- **67 PCR tests were collected**, of those
  - **62 (92%) results were available and reported in the registries**
  - **56 (84%) were given to the mothers (regardless of the time).**

Considering the **TAT,** among the 67 tests performed**,**

- 32 (48%) were communicated within 4 weeks;
- 13 (19%) were communicated between 4 and 8 weeks; and
- **11 (16%) were communicated in more than 8 weeks.** Among the 11 cases of long TAT, 10 (91%) were from the same sub-county (Embakasi West). This means that there were specific difficulties either in laboratory testing capacity or in the post-laboratory procedures (i.e.: not stable internet connection to download lab test results) or in giving the test result to the mothers. Therefore, some infants and mothers had to wait longer than expected to know their test results when they were followed up in that specific area.

Why This Matters?

TAT refers to the duration between when a sample for HIV testing is sent to the laboratory and when the results are available and communicated to the client. It essentially measures the efficiency of the testing process. The longer TAT, the less efficient is the linkage to care and the prompt start of the antiretroviral treatment.

- ***Feeding options and HIV prophylaxis***

For both children that initially tested negative and turned positive later in the journey and for those that were tested for the first time several months after birth, information about breastfeeding and prophylaxis were checked.

Among the six infants that received a PCR test within the first 6 weeks after birth and resulted negative, 5 of them were on HIV prophylaxis as required during breastfeeding. For all of them HIV prophylaxis was switched to treatment as soon as the first HIV test resulted positive and then confirmed. For one child no information was available about breastfeeding and prophylaxis, due to missing appointments.

Why This Matters?

Antiretroviral therapy (ART) for the mother and antiretroviral prophylaxis for the infant are highly effective in preventing transmission during breastfeeding.

Maintaining an undetectable viral load during pregnancy and breastfeeding greatly reduces the risk of transmission.

Mothers living with HIV are still strongly encouraged to breastfeed exclusively for the first six months, introduce appropriate complementary foods, and continue breastfeeding, as breastfeeding provides numerous benefits to infants.

HIV exposed infants should receive ARV prophylaxis to further reduce the risk of infection. Extended ARV prophylaxis during breastfeeding ensures continuous protection.

Community hall for Korogocho outreach

Implications and recommendations

The results of this operational explanatory study **offer a first understanding of the adherence to the EID algorithm in the target health facilities of Nairobi County supported by the Born to be Healthy project.**

This study allowed to describe the journey of 47 children within the EID algorithm and identify a number of challenges that can be considered for future implementation strategies and could improve the quality of the PMTCT and the PMTCT-related services in Nairobi, including the mentor-mother programme.

Although the results of our study cannot be generalised due to the low number of records collected, pointing out the main barriers **in adherence to the EID testing algorithm in a real life setting,** it can represent the basis for future studies and interventions.

A few points are highlighted below.

- The enrolment at the PMTCT service for an HIV exposed infant should ensure that a first PCR sample is collected and correctly sent to the reference laboratory to be analysed within the first 6 weeks after birth. PCR results should be timely transmitted from the laboratory back to the clinic and should be easily accessible to the healthcare workers. Information about the results should be given to the mother as soon as possible and, in any case, withing the following 4 weeks.

- All HIV positive mothers should be informed about HIV natural history, route of transmission, including mother-to-child, and on the efficacy of antiretrovirals in both preventing the development of the immunodeficiency syndrome (AIDS) and the transmission of the infection both to the child and via sexual contacts. All the steps of the EID algorithm should be clearly explained to HIV positive mothers to empower them in preventing the spread of the infection to their children. In this particular aspect, the role of the mentor mothers is essential as they represent a powerful connecting element from the health workers and the mothers, translating key information in understandable language for the women and understanding the social-economical-religious barriers than might prevent them from being linked to care. Since efficient turnaround time is vital for early treatment initiation, mentor mothers could also have an impact in keeping the test turnaround time short (i.e. reminding the healthcare staff that a test result is still pending, taking mothers to visits, etc.).

- A second PCR test (confirmatory test) is needed for a correct diagnosis, therefore when a first PCR test is positive, a second sample should be collected as soon as possible to confirm the previous result. The confirmatory PCR result should be timely transmitted back to the clinic and carefully communicated to the mother as soon as possible. This is particularly important as this result implies that the infant is transferred to the CCC.

- Since early initiation of ART is associated with improved virological, immunological, and clinical outcomes, these steps are essential for improving clinical outcomes and should be finalised in the shortest time possible. **Strengthening sample referral systems and communications across the different health facilities players is crucial to improving timely diagnosis.**

- Another important consideration is the monitoring of breastfeeding and prophylaxis uptake of exposed infants. Careful attention and support during the first months of life is crucial and mentor mothers can play an important role also in this sensitisation. It is key, indeed, that an HIV negative infant receives the HIV prophylaxis throughout the whole breastfeeding and the dialogue on this between healthcare staff and mothers can be made easier by mentor mothers. **Improving follow-up mechanisms of HIV-positive mother along all the steps of the care: from pregnancy to end of breastfeeding is vital.**

- Overall, reporting issues were observed during data collection and data analysis. A major issue was observed for the children that were transferred in from another health facility or initiated directly at the CCC. In fact, for these children very limited information was available and the lack of medical records did not allow the evaluation of their EID journey within the PMTCT services. The transfer of clients from one HF to another should be taken into consideration and detailed information should be tracked to allow an individualised follow up and to ensure linkage to care. **Strengthening referral systems to ensure that detailed information is recorded in transfer documents is important. Transfer documents could include more information about the EID journey of each child in order to track cases that require more attention.**

The difficulty in collecting data and consistency of results underscores the importance of further research to expand our understanding of these critical issues and their impact on EID outcomes in the local context. **Providing continuous mentorship to health workers on EID protocol would be essential to keep improving the PMTCT and PMTCT-related services.**

Taking into account all these observations and considerations, **this explanatory study can be used as a starting point for further and future research studies to guide community best practices in the quality improvement of PMTCT services, adherence to the PMTCT programs and ultimately clinical outcomes improvement.** In this sense, a scale up of the study and project intervention could be discussed and implemented expanding it to other HFs of the Nairobi County.

By building upon the findings of this study, future research endeavours can contribute to a more comprehensive understanding of the factors influencing the difficulties in implementing the EID algorithm and ensuring EID.

Study strengths and limitations

The strengths of this study include the participatory approach in study design, the positive collaboration with all the health facilities involved, the SCASCOs and CASCO, and the level of detail to which it was possible to record the information.
An important limitation of this study was the sample size, that does not allow generalisability of the data collected. Moreover, a limitation of the study was the relatively high number of missing data and reporting issues that limited a comprehensive overview of the EID issue.
Although, the target sample size was not reached, and a number of records were incomplete this study still provides valuable information that can be useful to improve a number of steps in the early infant diagnosis within the PMTCT services and bridging PMTCT services across different health facilities (transfers between HFs) or within the same facility (transfer of clients from PMTCT to CCC).

Conclusions

This report underscores the importance of a strong system able to support mothers in the prevention of HIV transmission and a robust EID system to ensure timely diagnosis and treatment of HIV-exposed infants.
Continued investment in system strengthening, including improved turnaround time and linkage to care, is essential to reduce infant HIV morbidity and mortality. Specific focus on data reporting and data monitoring within PMTCT services could be considered in future interventions, since accurate and reliable data are essential to make tailored decisions, track progress, and guide actions that can have an impact on the retention in care of mothers and infants living with HIV.

Waiting for outreach in Ngomongo

Annexes

Data collection form

AID 012596/01/3

"Born to be healthy: Exploring the factors that promote or inhibit the implementation of the HIV early infant diagnosis algorithm in Nairobi County, Kenya"

Data Collection Form

DATE AND PLACE OF DATA COLLECTION COMPLETION

(DD/MM/YYYY): _____/_____/_____ Initials of data collector:_____

BTBH number: first 2 initials of the HF, progressive number (XXX), months (MM) and year (YY) of birth). (i.e. Dandora 2, baby 1, Sept 2021 = DA0010921)

BTBH number: _____

Sub-country of HF follow-up:

- ☐ Ruaraka
- ☐ Embakasi West
- ❑ Embakasi North / Karasani
- ☐ Kamukunji

FOR DATA ENTRY ONLY

DATE OF ENTRY AND RECORD NUMBER IN EPIDATA (DD/MM/YYYY): _____/_____/_____

Progressive number on Epi Data: _____

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Mother-Baby Paired (MBP) registry / EMR if available		
1.	Birthplace of infant	☐ Home ☐ Facility ☐ Unknown
2.	Gender of infant	☐ Male ☐ Female ☐ Unknown
3.	Year of birth (YYYY)	☐ _____
4.	Type of delivery	☐ Spontaneous vaginal delivery ☐ Caesarean section ☐ Unknown
5.	Is the gestational age of the infant available?	❑ Yes ❑ No
6.	If yes, gestational age at birth (WW of the infant)	_____ (if not available in MBP or EMR, look at maternity register (if born in the same facility))
7.	Mothers' HIV status known at delivery?	☐ Yes ☐ No
8.	If yes, specify the HIV status of the mother	❑ Positive ☐ Negative
9.	If positive, was mother's viral load done before delivery?	❑ Yes ❑ No, as per MOH guidelines ❑ No ☐ Unknown
10.	If done, was the mother's viral load undetectable?	❑ Yes ❑ No ☐ Unknown
11.	Which is the current mother's marital status?	❑ Married ❑ Cohabitation ❑ Divorced/separated ❑ Widowed ❑ Single ❑ N/A
12.	Did the mother disclose her HIV status to anyone?	❑ Yes ❑ No ❑ N/A

13.	Did the mother complete any ANC visits (at least one)?	❑ Yes ❑ No ❑ N/A
14.	If yes, is the number of ANC visits available?	❑ Yes ❑ No
15.	If yes, how many ANC visits did she complete?	❑ 1 ❑ 2 ❑ 3 ❑ 4
16.	Was mother's HIV status known before ANC visits?	❑ Yes ❑ No ❑ N/A
17.	Was mother's ART initiated?	❑ Yes ❑ No ❑ N/A
18.	Was mother's ART stopped any time until the end of breastfeeding or until now if she's still breastfeeding?	❑ Yes ☐ No ❑ N/A
19.	If yes, is the time point when ART was stopped available?	❑ Yes ❑ No
20.	If yes, how many months after delivery was ART interrupted?	Number of months: _____
21.	Was viral load tested **every six months** until now or the end of breastfeeding?	❑ Yes ❑ No ❑ N/A
22.	Which was the antiretroviral treatment the mother received for PMTCT?	☐ Highly Active AntiRetroviral Therapy (HAART) ❑ None ❑ Unknown ❑ Other (specify) _____
HEI register / EMR if available		
1.	Did the infant start ARV prophylaxis?	❑ Yes ☐ No ❑ N/A
6 weeks or first contact		
PCR test at 6 weeks or first contact (some info can be find using the PCR Specimen Log)		
1.	Was the sample collected at 6 weeks?	☐ Yes

		☐ No ❑ N/A
2.	What was the test result?	❑ HIV Positive ❑ HIV Negative ☐ To be repeated ☐ N/A
3.	Was the 6 weeks test result given to the patient?	☐ Yes ☐ No ❑ N/A
4.	What was the timeframe between sample collection and communication of 6 weeks test result?	❑ Less than 4 weeks ❑ 4-8 weeks ❑ More than 8 weeks ☐ N/A

5. Which was the infant feeding option at 6-8 weeks?	**6. Which was the infant HIV prophylaxis for the first 6-8 weeks?**
❑ Exclusive Breastfeeding ❑ Exclusive Replacement Feeding ❑ Mixed Feeding ☐ Not Breastfeeding ☐ N/A	☐ AZT+NVP ❑ NVP only ❑ AZT only ☐ Other_____ ☐ None ❑ Discontinued for ART initiation ❑ N/A

10 weeks

1. Which was the infant feeding option at 10 weeks?	**2. Was the infant on NVP HIV prophylaxis at 10 weeks?**
❑ Exclusive Breastfeeding ❑ Exclusive Replacement Feeding ❑ Mixed Feeding ☐ Not Breastfeeding ❑ N/A	☐ Yes ☐ No ❑ Discontinued for ART initiation ❑ N/A

14 weeks

1. Which was the infant feeding option at 14 weeks?	**2. Was the infant on NVP HIV prophylaxis at 14 weeks?**
❑ Exclusive Breastfeeding ❑ Exclusive Replacement Feeding ❑ Mixed Feeding ☐ Not Breastfeeding	☐ Yes ☐ No ❑ Discontinued for ART initiation ❑ N/A

❑ N/A	
6 months	
PCR test at 6 months (some info can be find using the PCR Specimen Log)	
1. Was the sample collected at 6 months?	☐ Yes ☐ No ❑ N/A
2. What was the test result?	❑ HIV Positive ❑ HIV Negative ☐ To be repeated ☐ N/A
3. Was the 6 months test result given to the patient?	☐ Yes ☐ No ❑ N/A
4. What was the timeframe between sample collection and communication of 6 months test result?	❑ Less than 4 weeks ❑ 4-8 weeks ☐ More than 8 weeks ☐ N/A
5. Which was the infant feeding option at 6 months?	**6. Was the infant on NVP HIV prophylaxis at 6 months?**
❑ Exclusive Breastfeeding ❑ Exclusive Replacement Feeding ❑ Mixed Feeding ☐ Not Breastfeeding ☐ N/A	☐ Yes ☐ No ❑ Discontinued for ART initiation ❑ N/A

9 months	
1. Which was the infant feeding option at 9 months?	**2. Was the infant on NVP HIV prophylaxis at 9 months?**
❑ Breastfeeding ☐ Not Breastfeeding ☐ N/A	☐ Yes ☐ No ❑ Discontinued for ART initiation ☐ N/A
12 months	
PCR test at 12 months (some info can be find using the PCR Specimen Log)	
1. Was the sample collected at 12 months?	☐ Yes

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		❑ No ❑ N/A
2.	What was the test result?	❑ HIV Positive ❑ HIV Negative ❑ To be repeated ❑ N/A
3.	Was the 12 months test result given to the patient?	☐ Yes ❑ No ☐ N/A
4.	What was the timeframe between sample collection and communication of 12 months test result?	❑ Less than 4 weeks ❑ 4-8 weeks ❑ More than 8 weeks ❑ N/A
5. Which was the infant feeding option at 12 months?		**6. Was the infant on NVP HIV prophylaxis at 12 months?**
❑ Breastfeeding ☐ Not Breastfeeding ☐ N/A		☐ Yes ☐ No ❑ Discontinued for ART initiation ☐ N/A

15 months		
1. Which was the infant feeding option at 15 months?		**2. Was the infant on NVP HIV prophylaxis at 15 months?**
❑ Breastfeeding ☐ Not Breastfeeding ☐ N/A		☐ Yes ☐ No ❑ Discontinued for ART initiation ☐ N/A
Confirmatory PCR test (whenever needed)		
1.	Was the sample collected?	☐ Yes ❑ No ☐ N/A
2.	Is the sample collection date available?	☐ Yes ❑ No
3.	If yes, what was the date? (MM/YYYY)	_____
4.	What was the test result?	❑ HIV Positive ❑ HIV Negative ❑ To be repeated ❑ N/A

5.	What was the timeframe between sample collection and the sample results coming back from the lab to the health facility?	❑ Less than 4 weeks ❑ 4-8 weeks ☐ More than 8 weeks ☐ N/A
6.	Was the test result given to the patient?	☐ Yes ❑ No ☐ N/A
7.	What was the timeframe between sample collection and communication of test result?	❑ Less than 4 weeks ❑ 4-8 weeks ☐ More than 8 weeks ☐ N/A
8. Which was the infant feeding option when HIV confirmatory test was performed?		**9. Was infant HIV prophylaxis with NVP ongoing when the HIV confirmatory test was performed?**
❑ Breastfeeding ☐ Not Breastfeeding ☐ N/A		☐ Yes ☐ No ❑ Discontinued for ART initiation ☐ N/A
Antibody test at 18 months		
1.	Was the sample collected at 18 months?	☐ Yes ☐ No ☐ N/A
2.	What was the antibody test result?	❑ HIV Positive ❑ HIV Negative ❑ To be repeated ❑ N/A
2.	Was the 18-month antibody test result given to the patient?	☐ Yes ☐ No ❑ N/A
3.	What was the timeframe between sample collection and communication of the 18-month antibody test result?	❑ Less than 4 weeks ❑ 4-8 weeks ❑ More than 8 weeks ☐ N/A
End of PMTCT and CCC referral at 18 - 24 months		
1.	Was the HIV+ infant referred to the CCC?	☐ Yes ☐ No ☐ First contact at CCC (including transferred in)

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		❑ N/A
2.	Status of pair (mother/infant) at 24 months	❑ Active - Both Mother and baby alive ❑ Lost to follow up ❑ Baby died before finishing program ❑ Mother died before officially finishing program ❑ Transferred to another facility before confirmatory test was completed ❑ N/A
3.	Which was the HIV status of the infant at 24 months?	❑ Infected and Breastfed ❑ Infected and not Breastfed ❑ Infected and Breastfeeding Status unknown ❑ Died ❑ Transferred to another facility ❑ Other (specify): _____ ❑ N/A

Comment box:
_____
_____
_____
_____

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