2023

Prevention of mother-to-child transmission cascade assessment, Tanzania

MINISTRY OF HEALTH, TANZANIA

INSTITUTIONAL INVOLVEMENT

Collaborating institutions

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US Centers for Disease Control and Prevention (CDC), Division of Global HIV and TB

University of California, San Francisco (UCSF)

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ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Anti-retroviral Therapy
ARV	Anti-retroviral
CDC	US Centers for Disease Control and Prevention
CHMT	Community Health Management Team
CTC	Care and Treatment Clinic for HIV/AIDS
CTC2	Patient medical record for HIV care and treatment
CLHIV	Children living with HIV
DB	Database
DBS	Dried blood spot
DHIS2	District Health Information System 2
DNA	Deoxyribonucleic acid
DOB	Date of birth
DOD	Department of Defense
DRCHCO	District Reproductive and Child Health Coordinator
EDD	Estimated due date
EID	Early infant diagnosis
GCP	Good clinical practice
HEI	HIV-exposed infant
HIV	Human immunodeficiency virus
HTS	HIV testing services
HVL	HIV viral load
ID	Identification
IEC	Information, education, and communication
IIT	Interruption in treatment
IP	Implementing partner
IPTp	Intermittent preventive treatment of malaria for pregnant women
IRB	Institutional Review Board
IQR	Interquartile range
KII	Key informant interview
LTFU	Lost to follow up
MC	Mother-child (Mother-baby pair register)
MoH	Ministry of Health
MTCT	Mother-to-child transmission
NASHCoP	National AIDS, STIs and Hepatitis Control Programme
ODK	Open Data Kit
PBFW	Pregnant and breast-feeding women
PEPFAR	US President's Emergency Plan for AIDS Relief
PCR	Polymerase chain reaction
PMTCT	Prevention of mother-to-child transmission
RCH	Reproductive and Child Health
R/CHMT	Regional Council Health Management Team
RRCHCO	Regional Reproductive and Child Health Coordinator
SOP	Standard operating procedure

STI	Sexually transmitted infections
TO	Transfer out
TI	Transfer in
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
UCSF	University of California, San Francisco
USG	United States Government
WHO	World Health Organization

1 EXECUTIVE SUMMARY

1.1 BACKGROUND

HIV/AIDS remains a significant global concern for pregnant women and children in Tanzania. Despite progress, 20% of the 86,000 pregnant women living with HIV did not receive necessary ART in 2021 (World Health Organization, 2020). Spectrum estimates indicated a vertical transmission rate of 6.9% in Tanzania in 2022 (Joint United Nations Programme on HIV/AIDS 2023).

The Tanzania PMTCT Cascade assessment was conducted to assess uptake of HIV-related services among pregnant, delivering, and postpartum women; to understand how data quality challenges affect the interpretation of program data; and to identify factors contributing to suboptimal outcomes for HIV-exposed infants (HEI).

The PMTCT assessment was a collaborative activity between the PMTCT Unit, Ministry of Health (MoH), United Republic of Tanzania, and the University of California, San Francisco (UCSF). The US Centers for Disease Control and Prevention (CDC) Tanzania provided technical assistance, and funding was provided by the US President's Emergency Plan for AIDS Relief (PEPFAR).

1.2 METHODS

This was a mixed methods assessment comprising five assessment components.

Assessment component	Description	Information collected
Retrospective cohort	Data were abstracted from health facility records for pregnant women living with HIV who had their first antenatal care (ANC) visit from December 2020 to November 2021	ANC services received; maternal HIV care and treatment follow-up visits and services; mother-baby pair follow-up services and infant final HIV status outcomes
Cross-sectional survey	Women attending a 9-month vaccination visit for their child were recruited for an interview using a quantitative questionnaire	Demographics, HIV status of the mother, uptake of ANC and post-natal services, and (if applicable) uptake of PMTCT services; date of birth of the child and (if applicable) PMTCT and EID services received and HIV test results
Key informant interviews	Individuals knowledgeable about the PMTCT program from selected health facilities and local government authorities were interviewed using semi-structured qualitative guides	Perceptions, opinions, experiences, and recommendations related to implementation of PMTCT services and interventions
Facility assessment	Quantitative questionnaire administered through interviews with key health facility-level informants	Health facility characteristics, including facility type, location, staffing levels, service delivery, patient load, and facility size
Data triangulation	Health facility registers were used to recreate routine ANC reports which were compared to reports entered in the routine aggregate HIV reporting system (DHIS2)	Key ANC variables, including HIV testing

We carried out the assessment in 60 facilities in four regions of Tanzania (Dar es Salaam, Mbeya, Mwanza, and Dodoma) and included both PEPFAR-supported and non-PEPFAR supported facilities. We interviewed a total of

60 key informants (KIs), comprising 43 health facility staff and 15 KIs. We recruited 609 women who attended their child's 9-month vaccination appointment for the cross-sectional survey.

The retrospective cohort comprised 2,260 pregnant and breastfeeding women (PBFW) who were living with HIV, identified from facility ANC registers. Of these, 71.7% had a record in the mother-child (MC) cohort register, 71.8% had an individual ART record (or CTC2 card), and 54.4% had a HEI card available at the same facility.

1.3 KEY FINDINGS AND KEY CONSIDERATIONS

1.3.1 HIV TESTING AND MATERNAL RETESTING

Key findings

- More than one-third (35.0%) of women did not know their HIV status prior to their first ANC visit.
- HIV testing was highest during the first ANC visit (94.9%) but decreased in the third trimester (65.2%) and postpartum (41.1%).
- The primary reason for not testing postpartum was that testing was never offered.
- Barriers to retesting included client relocation, long travel distances, healthcare worker burnout, lack of training, privacy concerns, stockouts, and challenges with data collection tools.

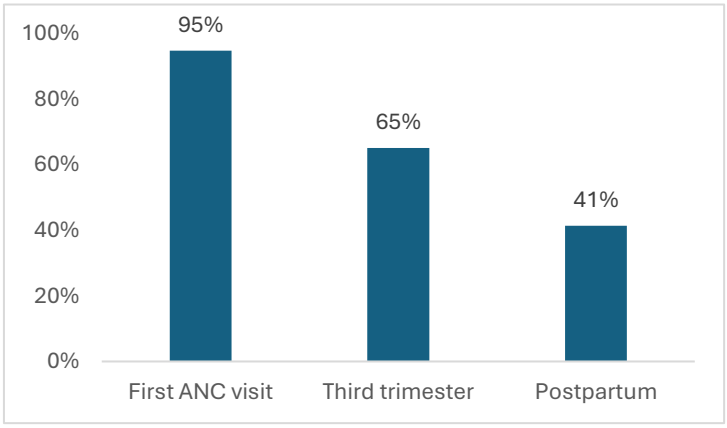

Figure 1: HIV testing among eligible pregnant and breastfeeding women, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Conclusions and key considerations

- Increasing testing among women before ANC enrollment could improve early HIV diagnosis and reduce vertical transmission.
- Providing comprehensive training, coaching and mentorship for maternal retesting could help improve maternal retesting rates.

1.3.2 LINKAGE AND RETENTION ON ANTI-RETROVIRAL THERAPY SERVICES

Key findings

- All pregnant women diagnosed with HIV were linked to ART and most (86.8%) initiated treatment on the same day. Stigma was a barrier to immediate ART initiation.

- ART retention declined over time and was lower among newly diagnosed pregnant women (57.1%) compared to those known to be living with HIV (71.0%).
- Over half of women experienced interruptions in treatment during pregnancy and breastfeeding.

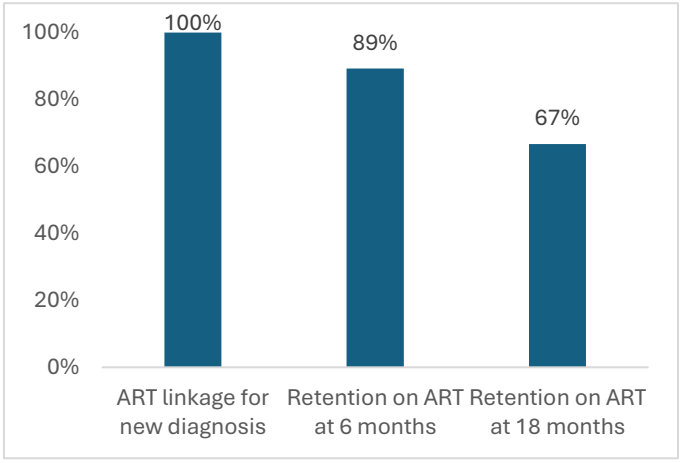

Figure 2: ART linkage and retention for pregnant women living with HIV, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Conclusions and key considerations

- Strengthening post-test counseling and addressing stigma could increase rapid ART initiation, particularly within 7 days of diagnosis.
- Improving tracking and documentation for PBFW accessing ART at different health facilities from ANC could improve data around the proportion of PBFW living with HIV who are on treatment.
- Strengthening existing interventions such as the use of outreach services and mentor mother programs, and introducing new ones focused on retaining PBFW living with HIV on ART, such as 3-month multi-month dispensing for PBFW, could improve ART retention.

1.3.3 HIV VIRAL LOAD AND SUPPRESSION

Key findings

- A high proportion of women had documented HIV viral load tests during pregnancy and breastfeeding; 75.1% had undetectable viral loads (<50 copies/mL) across all tests.
- Conclusions and key considerations
- Targeting PBFW who are virally unsuppressed or have LLV with interventions to improve adherence and ensuring regular HVL testing could improve outcomes.

Conclusions and key considerations

- Targeting PBFW who are virally unsuppressed or have LLV with interventions to improve adherence and ensuring regular HVL testing could improve outcomes.

1.3.4 HIV-EXPOSED INFANTS

Key findings

- The majority of infants received ARV prophylaxis at birth, with better documentation at PEPFAR-supported site
- Cotrimoxazole (CTX) prophylaxis was prescribed to most infants, with the majority starting CTX by age 2 months.
- Attendance at scheduled HEI visits was low, with only 10% attending all expected visits. Barriers included distance, transportation costs, stigma, and lack of phone reminders.
- Nearly all HEI had documentation of at least one DNA PCR test and approximately 80% were tested at aged 2 months or younger.

- While 35.4% of infants met high-risk criteria based on maternal HIV test results, only a small percentage were tested at birth. Poor risk categorization and documentation were major challenges.
- Documentation of final HIV outcomes for HEI was inadequate, with almost half of infants lacking this information.

Conclusions and key considerations

- Improving risk categorization and ensuring timely HIV testing for high-risk infants could help close gaps in care.
- Addressing barriers to HEI clinic attendance (e.g., transportation and stigma), and improving reminder systems could enhance retention.
- Strengthening understanding and capacity for accurate data documentation could help to improve the documentation of HEI final outcomes.

1.3.5 DATA QUALITY AND CROSS-CUTTING ISSUES

Key findings

- The quality of routine data in the PMTCT cascade was consistently poor, often incomplete, and inconsistent across data sources.
- Healthcare workers consistently reported that heavy workloads, stockouts of DBS and HIV test kits and medications, and lack of private spaces were barriers to offering critical PMTCT and EID services.
- Maternal mobility, distance to health facilities, and transportation costs remain major barriers for clients to access services.
- PEPFAR-supported facilities consistently outperformed non-PEPFAR supported facilities.

Conclusions and key considerations

- Routine data quality assessments at the health facility could improve gaps in data quality and documentation.
- Scaling up biometric registration in the CTC2 database and integrating it with the community data systems could streamline information transfer between health facilities and community providers.
- Strengthening referral systems and integrating electronic data management tools could improve data consistency.
- Expanding ANC and PMTCT outreach programs and improving service delivery at the community level might improve service provision and uptake by bringing services closer to women
- Addressing supply chain issues could ensure consistent availability of test kits and medications.
- Expanding technical assistance and mentorship to non-PEPFAR supported facilities might improve service quality and outcomes.

2 INTRODUCTION

At the end of 2022 there were an estimated 1.2 million pregnant women living with HIV globally. Four in five (82%) of these women were estimated to have received anti-retroviral drugs to maintain their own health and wellness, and to prevent mother-to-child transmission (MTCT). While global HIV infections in children are decreasing, there were still 1.5 million children living with HIV (CLHIV) as of the end of 2022(World health Organization 2023)

The majority of new infections among children in Sub-Saharan Africa (88%) occur through vertical transmission. These new infections account for over 90% of all HIV MTCT worldwide (World Health Organization, 2020). In 2009, the Joint United Nations Program on HIV/AIDS (UNAIDS) first called for the elimination of MTCT, aiming to reduce vertical transmission to less than 5% among breastfeeding women and 2% or less among non-breastfeeding women (UNAIDS, 2010).

Tanzania has made remarkable strides in increasing the coverage of health facilities providing prevention of mother-to-child HIV transmission (PMTCT) services; however, the World Health Organization (WHO) reported that in 2022, 8% of the 74,000 pregnant women living with HIV who needed anti-retroviral therapy (ART) for preventing MTCT did not receive them. In addition, in 2022 there were an estimated 79,000 CLHIV in Tanzania, with only 73% receiving anti-retroviral (ARV) drugs. In addition, 2022 Spectrum estimates indicated a vertical transmission rate of 6.9% in Tanzania in 2022 (Joint United Nations Programme on HIV/AIDS 2023). An in-depth assessment was needed to understand the gaps in preventing vertical transmission, particularly gaps in the PMTCT cascade, and to quantify the challenges in the monitoring system used to track the PMTCT cascade.

2.1 RATIONALE FOR THE ASSESSMENT

The PMTCT cascade comprises a series of key stepwise activities, starting with diagnosis and treatment of all pregnant women, continuing with newborn anti-retroviral prophylaxis, and ending with the determination of the HIV status of HIV-exposed infants (HEI) at 2 months and 18 months of age. In Tanzania, PMTCT activities include regular HIV-testing for women during pregnancy, at the time of delivery, and during post-natal care. Moreover, PMTCT services include the provision of lifelong ART for all HIV-infected women and ARV prophylaxis for identified HEI in the first six weeks of life. Although PMTCT activities are in place in Tanzania, there has not been a robust evaluation of the cascade starting from the upstream services provided during antenatal care (ANC) down to early infant diagnosis (EID) outcomes at 2 and 18 months. Therefore, to have an empirical understanding of the gaps in the PMTCT cascade, there is an urgent need to evaluate the level of implementation and quality of documentation at the health facility level, and how this may affect key data related to MTCT. Findings from this proposed assessment will be used to programmatically address identified gaps in the PMTCT cascade. This assessment compliments other existing programmatic activities in-country to scale-up the identification of HEI and CLHIV and ensure timely linkage to care and treatment.

2.2 ASSESSMENT AIMS AND OBJECTIVES

The objectives of the assessment were to:

- Assess the ANC and PMTCT cascades to better understand the uptake of HIV-related services among pregnant, delivering, and postpartum women, factors contributing to attrition along the cascade, and HIV outcomes among HEI.
- Provide insight into how data quality challenges affect the interpretation of PMTCT and EID program performance.
- Improve future HIV modelling and estimation activities by generating empirical data around PMTCT service uptake throughout the perinatal period.

The full list of assessment questions can be found in Appendix A.

3 METHODS

This was a mixed methods assessment comprising five assessment components. An overview of the sampling methods, the corresponding target populations, and the kind of information collected during each component are described in Table 1, followed by more detailed information about each assessment component. The assessment included both facilities that were receiving direct service delivery support from the US Presidents Emergency Plan for AIDS Relief (PEPFAR) and facilities that were not PEPFAR-supported at the time of the assessment.

Table 1: Target population, sampling methods, and data collection methods for each assessment component, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Assessment Component	Target Population	Sampling method	Data Collection Method	Information Collected
Retrospective cohort	Pregnant women living with HIV and their HIV-exposed infants	Cohort participants were obtained by selecting a sample of pregnant women living with HIV from the ANC register among women who had their first ANC visits from December 2020 to November 2021. Alternating months were selected from the 12-month window for a total of six month. All positive women in selected months were included in the cohort.	• Data abstracted from the ANC register, the woman's CTC2 card, the facility CTC2 database, the mother-child cohort register, and the infant's HEI card for each cohort member. • Data collected using a tablet installed with open data kit (ODK) software	• Antenatal care/services received • Maternal HIV care and treatment follow-up visits and services received, including ART and HIV viral load (HVL) • Infant feeding practices • Mother-baby pair follow-up services including ART, EID, and prophylaxis • Infant final outcomes
Cross-sectional survey	Women attending a 9-month vaccination visit for their child	All women were eligible for inclusion, regardless of HIV status. Women were continuously recruited until a total of ten women at each facility had been interviewed.	• Quantitative questionnaire administered in one-on-one interview to consenting women • Data collected using a tablet installed with open data kit (ODK) software	• Women: demographics, HIV status, uptake of ANC and post-natal services, and (if applicable) uptake of PMTCT services • Children: date of birth and (if applicable) PMTCT and EID services received including DNA-PCR HIV testing, and HIV test results
Key informant interviews	Individuals knowledgeable about the PMTCT program	Participants were purposively selected, and included the Regional Reproductive and Child Health (RCH) Coordinator in each sampled region, at least 2 District RCH Coordinators in each sampled region, and health care providers at a subset of facilities, selected to represent high and low volume, urban and rural, and PEPFAR and non-PEPFAR supported facilities	• Interviews conducted using semi-structured qualitative interview guide	• Perceptions, opinions, experiences, and recommendations related to implementation of PMTCT services and interventions

Assessment Component	Target Population	Sampling method	Data Collection Method	Information Collected
Facility assessment	All participating facilities	All participating facilities were included	• Quantitative questionnaire administered through interviews with key facility-level informants, including health facility and RCH in-charges • Data collected using a tablet installed with open data kit (ODK) software	• Facility characteristics, including facility type, location, staffing levels, service delivery, patient load, and facility size
Data triangulation	N/A	All participating facilities were included	• Facility registers used to recreate routine ANC reports which were compared to reports entered in DHIS2	• Aggregate count of ANC HIV testing (1st and 2nd test) for all six months included in retrospective cohort. • Key variables from monthly ANC report for the two most recent months prior to data collection

3.1 METHODS OVERVIEW

3.1.1 REGIONAL AND FACILITY SELECTION

We purposively selected four regions for this assessment: Dar es Salaam, Mwanza, Mbeya, and Dodoma. The choice of these regions was based on several factors, including the programmatic support provided by all three PEPFAR agencies[1] and the need to encompass a diverse mix of urban and rural settings within the assessment.

In each of these regions, the assessment included both PEPFAR-supported and non-PEPFAR supported facilities offering ANC and PMTCT services. Military, prison, and private facilities were intentionally excluded. We used ANC program data from the district health information system (DHIS2) to identify participating facilities. We used two different strategies to select PEPFAR-supported and non-PEPFAR supported facilities.

PEPFAR-supported facilities with a cumulative minimum of 20 pregnant women living with HIV (either newly diagnosed or previously diagnosed) who enrolled in ANC between April and September 2020 were included in the initial sampling frame. This minimum threshold was adjusted to 10 pregnant women living with HIV for Dodoma to ensure enough facilities could be selected. The facilities in the sampling frame were then sorted based on the number of pregnant women living with HIV reported from April to September 2020. This sorted list was then subjected to randomization using random.org, which shuffled and generated a randomized order. The first ten facilities on the randomized list were included in the assessment, while the subsequent five facilities were identified as backup options if any of the selected facilities needed to be excluded for logistical or other reasons.

Due to the relatively small sizes of most non-PEPFAR supported facilities, we purposively selected the five largest non-PEPFAR supported facilities, as determined by the number of pregnant women living with HIV from April to September 2020, to include in the assessment. The next two largest facilities were included as backup alternatives to ensure adequate coverage.

A total of 15 facilities were selected in each region, comprising 10 PEPFAR-supported facilities and 5 non-PEPFAR supported facilities, resulting in a combined total of 60 facilities across all regions. A complete list of selected facilities can be found in Appendix B.

3.1.2 DATA COLLECTION TEAMS AND DATA COLLECTION PROCEDURES

A team of four data collectors was assigned to each region to carry out data collection. Field supervisors and the survey coordinator oversaw the data collection process, ensuring the accuracy, consistency, and completeness of data collection activities. A description of the data collection team can be found in Appendix D.

Prior to fieldwork, all personnel involved in the assessment underwent 7 days of classroom training on the study protocol, assessment objectives, procedures, informed consent protocols, interview techniques, data collection

[1] The United States Centers for Disease Control and Prevention (CDC), the United States Agency for International Development (USAID), and the United States Department of Defense (DoD)

tools, ethical conduct, data security, and how to use ODK. Following this, the team conducted 2 days of pilot testing in facilities that were not selected for assessment. Additionally, each participant completed training in good clinical practice and the protection of human research participants.

The importance of maintaining patient confidentiality was continuously emphasized throughout data collection. Although no personally identifiable information, besides patient identification numbers, were electronically collected, data collectors were able to view patient names during the abstraction process and used them to triangulate data. Thus, all data collectors signed a confidentiality agreement before commencing fieldwork.

Data collection for all assessment components was done using password-protected tablets. Data was uploaded to a secure, password-protected assessment server that is only accessible to members of the assessment team.

3.1.3 DATA SECURITY

All tablets used in data collection were encrypted to prevent unauthorized access in case of theft or other security breaches. Only authorized assessment staff had access. All tablets were stored in a secure location when not in use. The central server was equipped with a firewall device that prevents and filters unwanted packets from the internet. These firewall devices served as gateways between the internet and the organization's internal network, ensuring that packets from the internet were filtered before reaching the internal network. The central server was cloud-based and operated by the University of California, San Francisco (UCSF). Once data had been uploaded to the server, it was no longer available on the tablet.

All data generated during assessment activities are owned by the Ministry of Health (MoH) through the PMTCT Unit. UCSF through its Global Programs Tanzania office supported the MoH in data collection, data cleaning, and finalization of the data set for report writing. Electronic records will be stored at the UCSF Global Programs Tanzania office for five years; thereafter, the records will be destroyed as legal provisions allowed.

3.2 METHODS: FACILITY ASSESSMENT

The facility assessment collected information about the characteristics of sampled facilities (e.g., facility type and location, staffing levels, patient load, facility size and layout, etc.) using a quantitative tool (Appendix G) to understand what might have contributed to challenges, as well as any differences observed between PEPFAR and non-PEPFAR supported sites.

3.2.1 FACILITY ASSESSMENT SITES

All assessment facilities were included.

3.2.2 DATA COLLECTION, MANAGEMENT, AND ANALYSIS

The facility assessment tool was developed based on the WHO Service Availability and Readiness Assessment tool (SARA). This tool measured the availability and facility readiness to offer RCH and PMTCT services. It collected information on key elements such as: services offered, number of staff providing ANC and PMTCT services, ANC and PMTCT patient loads, average number of deliveries per month, number of staff responsible for CTC2 database (DB) data entry, facility procedures for documenting, aggregating, and reporting routine ANC and PMTCT data, and the timeframe of PEPFAR support.

The assessment team interviewed key facility informants, including health facility and RCH in-charges, using the facility assessment tool to understand the extent to which the facility was equipped with necessary prerequisites to offer RCH and PMTCT services. Data were collected using tablets programmed with ODK and submitted to a secure server daily. A dedicated data analyst reviewed data daily to identify inconsistencies and provide feedback to the field teams. This ensured timely correction of data quality issues.

3.3 METHODS: RETROSPECTIVE COHORT

This study component used routinely collected patient-level data from ANC registers, mother-child (MC) cohort registers, CTC2 cards, HEI cards, and facility CTC2 database electronic export for analysis files to respond to the assessment questions. Refer to Appendix I for a detailed description of each data source.

3.3.1 RETROSPECTIVE COHORT POPULATION AND SITES

The assessment population consisted of pregnant women who had their first ANC visits between December 2020 and November 2021 at selected assessment sites, as well as HEI born to HIV-infected mothers who were part of the assessment. The facility ANC register was used to identify women who had their first ANC visits during this period. All women who attended ANC visits and were either known or newly diagnosed HIV positive were eligible for inclusion, regardless of gestational age. The retrospective cohort was conducted in all assessment facilities.

3.3.2 RETROSPECTIVE COHORT SAMPLING

We sampled both newly diagnosed and pregnant women known to be living with HIV from the ANC register whose first visits fell during the retrospective cohort period. We used registers from alternating months during the 12-month cohort window, resulting in a total of six months of data being collected at each facility. If a register for a selected month was missing, the register for the next available month was used. We then abstracted data for all HIV positive women (newly and previously diagnosed) documented in the ANC registers of the six selected months.

3.3.3 DATA COLLECTION, MANAGEMENT, AND ANALYSIS

Data sources

We abstracted data for retrospective cohort members from the ANC register. We then traced those clients to their CTC2 cards, the facility CTC2 database, the MC cohort register, and HEI cards, and abstracted additional data from their sources when possible.

Data collection and management

We used tablets containing electronic data collection tools created with ODK software for data abstraction. We developed one form for each of the five data sources included in the assessment (ANC register, MC cohort register, HEI card, CTC2 card, and CTC2 database) and linked patient records using a unique assessment ID. Unique assessment IDs were assigned to each participant using preprinted stickers with barcodes and unique assessment ID numbers.

After completing each data abstraction form, the data collector reviewed the entry and uploaded the form from the tablet to a password-protected central server. If the network was unavailable, the form was stored on the tablet and uploaded once network became available. The server was secured and accessible only to authorized assessment staff. Electronic data will be stored by UCSF for five years following publication, at which point it will be deleted from all servers and computers.

Creation of the analytical dataset

During data abstraction, two patient identification numbers were electronically captured for pregnant woman – the ANC number and the CTC2 number. For infants, the HEI number was captured. Other personal identifiable information such as name, address, or phone number was not electronically captured because the MoH CTC2 database does not permit downloading of such identifying data. However, personal identifiers such as the mother's name and date of birth were collected on a paper patient tracking register, in addition to the woman's ANC number and CTC2 ID, as well as the HEI ID number. The tracking register facilitated linkage of clients across data sources and helped data collection teams track whether data had been abstracted for all eligible patients from all required data sources.

The tracking register was completed for each eligible patient identified in the ANC register, with one unique number assigned to each patient. For each patient, a unique assessment ID number was assigned using preprinted stickers with ID numbers and barcodes that could be scanned by the tablets. This unique number was recorded in the tablet during abstraction from each data source. The patient tracking register was kept at the facility in a locked drawer or cabinet by the RCH or Facility in-charge throughout the data collection period. Once the data abstraction was completed, the right-hand side of the tracking register containing the client's name, date of birth, CTC ID, and ANC ID was separated from the rest of the document and destroyed. The data collection team was left with the unique assessment ID number, barcode, and the section of the tracking register that documented data abstraction for each patient across data sources. The remaining half of the tracking register was transferred to UCSF Global Programs Tanzania office and will be stored in locked and fireproof cabinets for at least five years.

In all data tools and databases, we only used identifiable data when creating the analysis files, based on the objectives and required variables of each analysis. Once the analysis files were created, the data were de-identified and fully anonymized by removing all identifiers (CTC ID, ANC ID, HEI ID), leaving only the unique assessment ID. The resulting analytical dataset solely relied on the unique assessment identifier and could not be directly linked to clients during analysis.

Access to the de-identified data during analysis was restricted to UCSF Tanzania assessment staff only. The other co-investigators did not have direct access to the data.

3.3.4 DATA ANALYSIS

We analyzed data using STATA version 17 (STATA Corp, College Station, TX). Data from all data sources were linked at the patient level using the assessment ID. Descriptive statistics were summarized using medians (Interquartile range; IQR) for continuous variables, whereas frequencies, and proportions were used for categorical variables. Descriptive analyses were performed including the comparison of demographic characteristics stratified by facility support status (PEPFAR vs non-PEPFAR supported). We then constructed the

PMTCT cascade by computing the proportion of women and infants completing each stage of the cascade, drawing on data collected across various data sources. When evidence of receipt of service or engagement in the behavior of interest was missing or not documented, that woman or infant was classified as not completing that stage of the cascade (drop-off).

The completeness and consistency of data across data sources was measured by comparing data elements that were available in more than one data source. When conflicting information was abstracted from different data sources for the same data element, the individual-level patient HIV record (CTC2 card) was used for analysis.

Retention on anti-retroviral therapy analysis

We assessed retention on ART using two summary measures: retention at fixed time points and frequency of IITs over the entire follow-up period.

Retention on anti-retroviral therapy at fixed-time points

We calculated retention on ART at 3, 6, 12, and 18-months after the first ANC visits among women in the retrospective cohort. The CTC2 card was the data source, which limited the analysis to women who had a CTC2 card at the facility where they registered for ANC. We did not track client documentation beyond the facilities included in this assessment and so cannot account for women who may have received care from a different facility from where they registered for ANC.

Mothers who experienced an IIT (defined as more than 28 days elapsing since the last scheduled visits with no evidence of attendance or collection of medication) or who opted out of treatment were considered as not retained. Clients who experienced an IIT and then returned to care were considered retained upon return (Table 2). Clients who transferred out of the facility or died were excluded from the analysis starting from the follow-up period during which that event was documented to have occurred. Follow-up of women ceased when they experienced an abortion, stillbirth, or discontinued breastfeeding (i.e., they were excluded from the denominator for the subsequent follow-up period). Women who did not have any of these outcomes documented were included in the analysis until the final documented visits on their CTC2 card.

Table 2: Illustration of how interruptions in treatment were handled during analysis of retention on anti-retroviral therapy at fixed time points, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	3 months	6 months	9 months	12 months	18 months
Client A	●	●	●	●	●
	Retained	Retained	Retained	Retained	Retained
Client B	●	○	○	●	○
	Retained	Not retained	Not retained	Retained	Not retained

Shaded dot: Did not experience IIT; Unshaded dot: Experienced IIT

Frequency of interruptions in treatment

We analyzed IIT frequencies among retrospective cohort members. Data were abstracted from the CTC2 card. We defined an interruption to treatment as missing clinic visits for 28 consecutive days after the last scheduled appointment date. In this assessment, each mother was followed from the time she reported for the first ANC visits until the time her baby stopped breastfeeding or until an event signifying the end of the follow-up period occurred for that specific participant. These events included the death of the mother, abortion, stillbirth, transfer out, and complete loss to follow-up with no re-engagement. Consequently, this approach resulted in varying follow-up periods for each participant.

3.4 METHODS: CROSS-SECTIONAL SURVEY

We implemented the cross-sectional survey at all assessment facilities. We interviewed women who were attending a 9-month vaccination appointment for their biological child. The primary purpose of these interviews was to collect information on the woman's experiences with HIV testing and retesting during pregnancy, labor and delivery, and post-partum. For participants who disclosed that they are living with HIV, we also collected information on experiences with PMTCT and EID services.

3.4.1 CROSS-SECTIONAL SURVEY RECRUITMENT

Facility RCH staff used structured notes to inform all women attending a 9-month vaccination visit for their biological child about the cross-sectional survey. RCH staff referred women who were interested in learning more about the survey to a data collector after their baby had completed vaccination services. The data collector explained the nature of the assessment and what participation included, confirmed the women's eligibility to participate, reviewed the informed consent form (Appendix E), and obtained verbal informed consent. Women who did not consent to participate were thanked by the data collector and did not participate in any other assessment activity.

3.4.2 CROSS-SECTIONAL SURVEY SAMPLING

All women were eligible for inclusion, regardless of their HIV status. The desired sample size was ten women per facility. Women were continuously recruited until the sample size had been reached. In a few facilities the sample size could not be reached because there were not enough women available for recruitment prior to the completion of all other data collection activities and the infrequent timing of vaccination clinics would not allow for the data collection team to wait for the next opportunity.

3.4.3 DATA COLLECTION, MANAGEMENT, AND ANALYSIS

Data collection

Data collectors requested the RCH1 or RCH4 cards from consenting women to extract information on the mother's HIV status and then administered a standardized quantitative questionnaire using a tablet. The questionnaire collected the following information**:** demographics, HIV status, uptake of ANC and post-natal services with a focus on HIV testing, and factors contributing to women not being tested for HIV following delivery. For women who disclosed an HIV positive status, we asked additional questions about the uptake of PMTCT services and information about their child including date of birth (DOB), PMTCT services received by the child, DNA-PCR testing (including the date of the test) and HIV test results.

After the completion of each interview, the data collector reviewed the data entry and uploaded the form to the central server. All data management processes described in the retrospective cohort section were followed.

Confidentiality and unique identifiers

No personal identifiers were collected. Each interviewee was assigned a unique assessment ID.

Data management and analysis

The primary outcome of the cross-sectional assessment was optimal utilization of HIV testing services (HTS) throughout pregnancy and post-partum period as defined by the national HIV maternal testing guidelines. The maternal retesting algorithm indicates that women who had a negative HIV test during their first ANC visit should be retested during their third trimester of pregnancy or at labor and delivery. Those who remain negative should be retested again 3 months, 6 months, and 18 months after delivery. We assessed the number of pre- and post-natal HIV tests participants received and the result of the last test. Because participants were approximately 9 months postpartum, we expected them to have received two post-partum HIV tests. We did not collect the dates of their postpartum HIV tests and so cannot analyze the exact timing of those tests (e.g., whether at 3 months or 6 months postpartum).

Data analysis was conducted using STATA version 17 (STATA Corp, College Station, TX). Descriptive statistics were summarized using the median and interquartile range for continuous variables. Frequencies and proportions were used to describe the distribution of respondent socio-demographic characteristics and to determine the proportion of mothers who had HIV re-testing throughout pregnancy and breastfeeding.

3.5 METHODS: KEY INFORMANT INTERVIEWS

To obtain a holistic understanding of the challenges with service delivery, we conducted qualitative key informant interviews (KIIs) with individuals who were knowledgeable about the PMTCT program. KIs were verbally consented (Appendix F) and interviews followed a standard interview guide (Appendix F).

3.5.1 KEY INFORMANT INTERVIEW DISTRIBUTION

We conducted a total of 60 KIIs across all four regions. Of these, 15 were done with members of R/CHMT, including three with Regional Reproductive Child Health Coordinators (RRCHCo), 12 with District Reproductive Child Health Coordinators (DRCHCo), and two with implementing partner (IP) staff. Additionally, 43 RCH provider interviews were conducted, of which 13 came from non-PEPFAR supported facilities and 30 from PEPFAR-supported facilities.

3.5.2 DATA COLLECTION, MANAGEMENT, AND ANALYSIS

Data collectors conducted interviews in pairs with one person focused on asking questions and one focused on taking notes. Interviews with consenting participants were conducted in private spaces to ensure audio and visual privacy. A semi-structured interview guide was used to obtain perceptions, opinions, and recommendations from KIs. All interview guides were developed in English, translated into Kiswahili, and then back translated into English to ensure accurate translation. Interviews were not recorded and transcribed verbatim. Instead, notes and themes were typed directly into Microsoft Word during the interviews. Interview teams reviewed the notes for accuracy and completeness at the end of each interview. Interviews took approximately one hour.

Notes were taken on password-protected computers that were only accessible to the assessment team. Data were saved in Microsoft Teams, ensuring that it was automatically backed up and available to other members of the assessment team at the UCSF Tanzania office in real-time.

Notes were summarized in an Excel matrix by question/topic and were reviewed with the assessment team at the end of each day to identify common and divergent themes. KIIs were conducted until saturation was determined to be reached as assessed by the lack of new themes being introduced. Saturation was monitored independently within each region.

3.6 METHODS: DATA TRIANGULATION

While abstracting data from facility data collection tools, we also regenerated routine ANC reports and key indicators and compared those to what was reported into DHIS2. The following triangulation activities were conducted:

- Aggregate count of ANC testing (1st and 2nd HIV tests) for all months included in the retrospective cohort. These values were compared to what was reported in DHIS2. When discrepancies were observed, we collaborated with the staff to understand the reasons for these inconsistencies.
- Regenerated key variables from the monthly ANC report for the two most recent (complete) reporting months and compared to what was reported in DHIS2. The triangulation included all variables from the first service and PMTCT sections of the report, as well as variables related to Intermittent Preventive Treatment of Malaria for pregnant women (IPTp).

3.6.1 DATA TRIANGULATION SITES

All assessment facilities were included.

3.6.2 DATA COLLECTION AND DATA MANAGEMENT

We developed an excel tool to capture the necessary information from facility registers to regenerate aggregate counts and key variables for comparison to DHIS2. The corresponding DHIS2 data was downloaded for each facility before the data collection period and made available to data collection teams for their respective facilities. Data collection teams reviewed their findings with facility staff, with a particular emphasis on inconsistencies between regenerated monthly ANC reports and DHIS2 data for the two most recent reporting months. Data collection teams reviewed the correct methods for calculating indicators with facility staff and strategized with them on how to prevent future inconsistencies.

After gathering all the Excel sheets containing indicators collected from the aggregated counts, data were consolidated into a unified spreadsheet. Data management and analysis were conducted using Microsoft Excel, which produced counts and proportions of similarities and mismatches. None of the data utilized for analysis contained identifiable information or any direct links to clients.

3.6.3 DATA ANALYSIS

For ANC testing triangulation, we summed the data for each of the two indicators (first HIV test and second HIV test) across all triangulated months for each data source (ANC register, ANC report, DHIS2). We then compared

the totals for each indicator across data sources. It is important to note that, because national data tools do not capture the date of the second HIV test, we recounted this indicator using the same methods used by facility staff during routine reporting. Staff approaches varied from one facility to another: some had improvised ways to document the date of the second test in the ANC register, some recorded the second test in counter books or improvised registers, some were tallying second tests directly on the ANC report form, and others were documenting second tests in the HIV Testing Service (HTS) register.

We analyzed the following differences between data sources at the regional level:

- Simple difference: The difference between the aggregate values for the two data sources. A negative number indicates underreporting in DHIS2 compared to the primary source, while a positive value indicates overreporting in DHIS2 compared to the primary source. A zero value means the numbers match between the two data sources.
- Absolute difference: We determined the absolute difference by calculating and summing the absolute difference between the reported data points for each facility. These differences were then summed up to generate a total value for the region. This measure provides insight into the magnitude of deviation between the compared sources as it does not allow over and underreporting to cancel each other out during aggregation.
- Percent agreement: We calculated the percent agreement between the regional totals for each data source and each indicator. We defined plus or minus 5% as an acceptable difference. For each region we also determined the number of facilities for which comparisons between data sources were within the acceptable range for all months analyzed. A 100% value indicates no difference between sources. When comparing the ANC register to either ANC reports or DHIS, values below 100% suggest underreporting in the ANC register, while values above 100% indicate overreporting in the ANC register. Conversely, when comparing ANC reports to DHIS values, figures under 100% signify underreporting in the ANC reports, whereas values exceeding 100% point to overreporting in the ANC reports.

3.7 ETHICAL CONSIDERATIONS

3.7.1 ETHICAL REVIEW

This activity was reviewed, and ethical approval was provided by the National Health Research Ethics Committee of the National Institute for Medical Research-Tanzania, and by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.

3.7.2 INFORMED CONSENT

Verbal informed consent was obtained for participants of the cross-sectional survey. The assessment did not involve the collection of biological samples from participants. In addition, there were no assessment procedures for which written consent would have been required outside the context of research. Both of these factors were sufficient on their own for a CDC institutional review board (IRB) to waive the requirement for written consent. Hence, we obtained verbal informed consent from respondents who were not participating in a professional capacity. We provided participants with an information sheet which described the risks, benefits, procedures,

and included information on who to contact for complaints or further information. KIs were given the option to provide verbal or written consent based on their preference.

Trained data collectors obtained informed consent at the interview site during enrollment. Informed consent procedures were conducted in a private and secure place where the discussion could not be overheard.

4 ASSESSMENT FACILITY AND PARTICIPANT CHARACTERISTICS

We conducted this assessment in a total of 60 health facilities. Table 3 provides a summary of data collection activities and the sample sizes reached for each assessment component, broken down by PEPFAR support and by region.

Twenty health facilities from the initial sample had to be exchanged with alternate sites. This was done for a variety of reasons, including: missing ANC registers from the cohort time period (7/20), suggestions from R/CHMTs to include high, medium, and low volume facilities so that data would be more representative of the assessed region or district (6/20), facilities or RCH units being closed (3/20), and facilities no longer offering PMTCT services (2/20). In addition, two (2/20) private facilities had initially been sampled and were replaced with public facilities. All replacement facilities were selected in collaboration with regional and council health management teams (R/CHMT).

Table 3: Summary of assessment methods and sample sizes by region, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Assessment component	Total	PEPFAR Supported	Non-PEPFAR Supported	Dar es Salaam	Dodoma	Mbeya	Mwanza
Facility assessment*	60	41	19	15	15	15	15
Retrospective cohort	2,260	1,971	289	755	260	623	622
Cross-sectional survey	609	420	189	158	152	149	150
Key informant interviews	60	30	13	12	11	19	18

**The facility assessment sample size represents the number of facilities that were assessed and does not represent individual interviews or clients*

4.1 KEY INFORMANT INTERVIEWS

We interviewed a total of 60 KIs: 43 facility staff, 15 regional and council health management team (R/CHMT) members, and two implementing partner (IP) staff. Table 4 shows the breakdown of the KIs by region as well as by position (i.e., R/CHMT, IP staff, or facility-level staff).

Table 4: Key informants by region, disaggregated by staff level and, for facility staff, PEPFAR-support, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Dar es Salaam	Dodoma	Mbeya	Mwanza	Total
Regional/Council Health Management Team members	3	5	4	3	17
Implementing partner staff	1	1	0	0	2
PEPFAR supported facility staff	7	3	10	10	30
Non-PEPFAR supported facility staff	1	2	5	5	13

TOTAL	**12**	**11**	**19**	**18**	**60**

R/CHMT members included regional and district reproductive and child health coordinators (R/DRCH-Co). Table 5 shows the breakdown of KIs by position. For KIs coming from the facility, the table shows the breakdown of PEPFAR versus non-PEPFAR supported facilities.

Table 5: Key informants by position and, for facility staff, disaggregated by PEPFAR-support, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Regional Reproductive Child Health Coordinator	District Reproductive Child Health Coordinator	Implementing partner staff	Reproductive Child Health provider	Total
Regional/Council Health Management Team members and implementing partner staff	3	12	2		**17**
PEPFAR supported facilities				30	**30**
Non-PEPFAR supported facilities				13	**13**
TOTAL	**3**	**12**	**2**	**43**	**60**

4.2 FACILITY ASSESMENT

4.2.1 ASSESSED HEALTH FACILITIES: CHARACTERISTICS, STAFFING, AND CLIENT ATTENDANCE

Sixty health facilities were assessed: 32 dispensaries, 17 health centers, 10 district / designated district hospitals (DDH), and one referral hospital. Two-thirds (68.3%) of the facilities were supported by PEPFAR. Table 6 shows a breakdown of facilities by region and PEPFAR support. While the target was to include five non-PEPFAR supported facilities in each region, it was difficult to find non-PEPFAR supported facilities in Dar es Salaam. Some of the facilities initially selected from the sampling universe had closed and others did not have the expected patient load when visited in person. Although the non-PEPFAR supported facilities in Dar es Salaam that were included in the assessment are currently under PEPFAR support, they were not receiving PEPFAR support during the retrospective cohort time period (December 2020 to November 2021) and were therefore considered as non-PEPFAR supported for this assessment.

Table 6: Breakdown of facilities by region and PEPFAR-support, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
PEPFAR-supported	41 (68.3%)	11 (26.8%)	10 (24.4%)	10 (24.4%)	10 (24.4%)
non-PEPFAR supported	19 (31.7%)	4 (21.1%)	5 (26.3%)	5 (26.3%)	5 (26.3%)

Nearly two-thirds (65.0%) of the facilities were in urban areas and the majority (88.3%) were government-owned. All assessed facilities provided RCH services and nearly all offered PMTCT services. Characteristics of the facilities that were included in the PMTCT cascade assessment were collected during the Facility Assessment and are described in Table 7.

Table 7: Characteristics and types of facilities assessed, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)
Assessed facilities	60 (100%)	41 (68.3%)	19 (31.7%)
Facility location			
Urban	39 (65.0%)	32 (78.0%)	7 (36.8%)
Rural	21 (35.0%)	9 (22.0%)	12 (63.2%)
Type of facility			
Referral Hospital	1 (1.7%)	1 (100%)	0 (0%)
District/District Designated Hospital	10 (16.7%)	10 (100%)	0 (0%)
Health Center	17 (28.3%)	14 (82.3%)	3 (17.7%)
Dispensary	32 (53.3%)	16 (50.0%)	16 (50.0%)
Facility ownership			
Government/public	58 (88.3%)	35 (85.4%)	18 (94.7%)
Non-governmental organization/not-for-profit	1 (1.7%)	1 (2.4%)	0 (0.0%)
Mission/faith-based	6 (10%)	5 (12.2%)	1 (5.3%)
Services offered[¥]			
Inpatient	26 (43.3%)	23 (56.1%)	3 (15.8%)
Outpatient	59 (98.3)	41 (100%)	18 (94.7%)

Care and treatment for people living with HIV	52 (86.7%)	40 (97.6%)	12 (63.2%)
Prevention of mother-to-child transmission services	59 (98.3%)	41 (100%)	18 (94.7%)
Reproductive and child health services	60 (100%)	41 (100%)	19 (100%)
Maternity ward (labor and delivery)	51 (85.0%)	36 (87.8%)	15 (78.9%)
Community outreach services for reproductive and child health	54 (90.0%)	37 (90.2%)	17 (89.5%)

¥ *Denotes variable for which multiple responses were possible*

The majority of assessed facilities reported that they provided PMTCT services five days a week (75.0%), attended to both new and returning ANC clients during the same clinic hours (70.0%), and served HIV-negative and clients living with HIV during the same clinic hours (73.3%). PEPFAR supported facilities had a larger median number of health care workers providing ANC/PMTCT services on any given day compared to non-PEPFAR supported facilities (3 versus 2), a larger median number of new clients on a normal ANC/PMTCT clinic day (12 versus 4), a larger median number of follow-up clients on a normal ANC/PMTCT clinic day (30 versus 12) and a larger median number of rooms for ANC/PMTCT services (2 versus 1). Most facilities (81.7%) had one room dedicated for PMTCT services specifically. However, there was one PEPFAR-supported facility and three non-PEPFAR supported facilities that did not have a room dedicated for PMTCT services (Table 8).

Most assessed facilities (95.0%) provided HIV testing services (HTS) within the same building where ANC/PMTCT services were housed, and 81.7% did DBS sample collection at the ANC/PMTCT clinic. These proportions were notably lower at non-PEPFAR supported facilities. The majority of facilities (81.6%) provided outreach ANC/PMTCT services, and among these, most (81.6%) offered HTS as part of outreach services. However, only 18.4% of facilities offered DBS sample collection through outreach services (Table 8).

Table 8: Availability of antenatal care and prevention of mother-to-child transmission services and staffing and client levels at assessment facilities, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)
Number of assessed facilities	60 (100%)	41 (68.3%)	19 (31.7%)
Median number of days per week that prevention of mother-to-child transmission services were offered			
1 day per week	10 (16.7%)	6 (14.6%)	4 (21.0%)
2-3 days per week	5 (8.3%)	2 (4.9%)	3 (15.8%)
5 days per week	45 (75.0%)	33 (80.5%)	12 (63.2%)
Organization of new and follow-up antenatal care visits			
All visits done together	42 (70.0%)	29 (70.7%)	13 (68.4%)
Provided on same days but different hours	6 (10.0%)	5 (12.2%)	1 (5.3%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)
Offered on different days of the week	12 (20.0%)	7 (17.1%)	5 (26.3%)
Organization of antenatal care visits for HIV-negative women and women living with HIV			
All visits done together	44 (73.3%)	30 (73.2%)	14 (73.7%)
Provided on same days but different hours	3 (5.0%)	2 (4.9%)	1 (5.3%)
Offered on different days of the week	13 (21.7%)	9 (21.9%)	4 (21.0%)
Median number of health care workers providing antenatal care/ prevention of mother-to-child transmission services on any given day (interquartile range)	3 (2,4)	3 (2,5)	2 (1,4)
Median number of new clients on a normal antenatal care/ prevention of mother-to-child transmission clinic day (interquartile range)	8 (3,20)	12 (5,30)	4 (1,10)
Median number of follow-up clients on a normal antenatal care/ prevention of mother-to-child transmission clinic day (interquartile range)	20 (10,48)	30 (15,50)	12 (2,25)
Median number of rooms for antenatal care/ prevention of mother-to-child transmission services	2 (1,3)	2 (2,3)	1 (1,2)
Dedicated rooms for the prevention of mother-to-child services specifically			
Facilities with no rooms dedicated for the prevention of mother-to-child transmissions services	4 (6.7%)	1 (2.4%)	3 (15.8%)
Facilities with one room dedicated for the prevention of mother-to-child transmissions services	49 (81.7%)	33 (80.5%)	16 (84.2%)
Facilities with more than one room dedicated for the prevention of mother-to-child transmissions services	7 (11.6%)	7 (17.1%)	0 (0%)
Services provided within antenatal care/ prevention of mother-to-child transmission clinic			
HTS services offered in antenatal care/ prevention of mother-to-child transmission building	57 (95.0%)	41 (100%)	16 (84.2%)
DBS sample collection done at antenatal care/ prevention of mother-to-child transmission clinic	57 (95.0%)	40 (97.7%)	17 (89.5%)
Facility provides outreach antenatal care/ prevention of mother-to-child transmission services	49 (81.7%)	34 (82.9%)	15 (78.9%)
Services provided during antenatal care/ prevention of mother-to-child transmission outreach			
HIV testing services	40 (81.6%)	29 (85.3%)	11 (73.3%)
Dried blood spot (DBS) sample collection	9 (18.4%)	6 (17.7%)	3 (20.0%)

Qualitative interviews revealed that providers were overwhelmed by the high number of women attending antenatal visits coupled with the large number of registers and forms they are required to complete. This adversely affected service quality and the quality of data documentation.

> *"In terms of staffing, it's insufficient. PMTCT and CTC, TB/HIV services are all managed by one person, and the staff are struggling with their workload. There are many forms to fill out, including CTC, HEID, and DBS tracking."* **PMTCT provider**

4.2.2 AVAILABILITY OF DATA COLLECTION AND REPORTING TOOLS

The majority of facilities had all of the national ANC and PMTCT data collection and reporting tools, although in some cases not the most recent version. This ranged from 78.3% of facilities having the HTS register to 100% of facilities having the ANC register and reporting form, the MC cohort register and reporting form, and the labor and delivery register and reporting form. A small proportion of facilities were lacking specific tools: 10.0% of facilities had no labor and delivery register (MTUHA 12), 10.0% of facilities had no labor and delivery monthly reporting forms, 5.0% of facilities had no HEI cards, 1.7% of facilities had no CTC2 cards, 21.7% of facilities had no HEID facility register, and 1.7% of facilities had no HTS register. The majority (80.0%) of facilities had staff dedicated to tracking women who missed an ANC/PMTCT appointment (Table 9).

Table 9: Availability of antenatal care/ prevention of mother-to-child transmission recording and reporting tools at assessment facilities, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)
Number of assessed facilities	60 (100%)	41 (68.3%)	19 (31.7%)
Antenatal care register			
Most recent version available	57 (95.0%)	38 (92.7%)	19 (100%)
Older version available	3 (5.0%)	3 (7.3%)	0 (0%)
Antenatal care reporting form			
Most recent version available	56 (93.3%)	38 (92.7%)	18 (94.7%)
Older version available	4 (6.7%)	3 (7.3%)	1 (5.3%)
Mother-child cohort register			
Most recent version available	59 (98.3%)	40 (97.6%)	19 (100%)
Older version available	1 (1.7%)	1 (2.4%)	0 (0%)
Mother-child cohort reporting form			
Most recent version available	59 (98.3%)	40 (97.6%)	19 (100%)
Older version available	1 (1.7%)	1 (2.4%)	0 (0%)
HIV-exposed infant card			
Most recent version available	56 (93.3%)	39 (95.1%)	17 (89.4%)
Older version available	1 (1.7%)	0 (0%)	1 (5.3%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)
Tool not available	3 (5.0%)	2 (4.9%)	1 (5.3%)
CTC2 card			
Most recent version available	58 (96.6%)	41 (100%))	17 (89.4%)
Older version available	1 (1.7%)	0 (0%)	1 (5.3%)
Tool not available	1 (1.7%)	0 (0%)	1 (5.3%)
HIV early infant diagnosis facility register			
Most recent version available	47 (78.3%)	34 (82.9%)	13 (68.4%)
Older version available	0 (0%)	0 (0%)	0 (0%)
Tool not available	13 (21.7%)	7 (17.1%)	6 (31.6%)
HIV testing services register			
Most recent version available	58 (96.6%)	40 (97.6%)	18 (94.7%)
Older version available	1 (1.7%)	1 (2.4%)	0 (0%)
Tool not available	1 (1.7%)	0 (0%)	1 (5.3%)
Labor and delivery register (MTUHA 12)[1] (N=51)			
Most recent version available	48 (94.1%)	33 (91.7%)	15 (100%)
Older version available	3 (5.9%)	3 (8.3%)	0 (0%)
Labor and delivery reporting form[1] (N=51)			
Most recent version available	48 (94.1%)	33 (91.7%)	15 (100%)
Older version available	3 (5.9%)	3 (8.3%)	0 (0%)

Data source: Facility assessment

[1] The labor and delivery tools have been analyzed out of 51 facilities as analysis was restricted to facilities providing labor and delivery services.

4.2.3 ENABLING ENVIRONMENT FOR ANTENATAL CARE/ PREVENTION OF MOTHER-TO-CHILD TRANSMISSION SERVICES

During the facility assessment, data collectors verified whether job aids and other materials meant to improve ANC/PMTCT service delivery were present at the facility. Among the 60 assessed facilities, 34 (56.7%) had a dedicated phone for reminding clients of missed ANC/PMTCT appointments and 48 (80.0%) had a person designated to track missed appointments. The majority of facilities displayed maternal HIV retesting schedules (n=50; 83.4%), had provider job aids for DBS sample collection (n=49; 81.7%), had information, education, and communication (IEC) materials to remind mothers about clinic services they should receive (n=43; 71.7%). A smaller proportion (n=36; 60.0%) had DBS collection schedules. Overall, a higher proportion of PEPFAR-supported facilities had these items compared to non-PEPFAR supported facilities (Figure 3; Table 10).

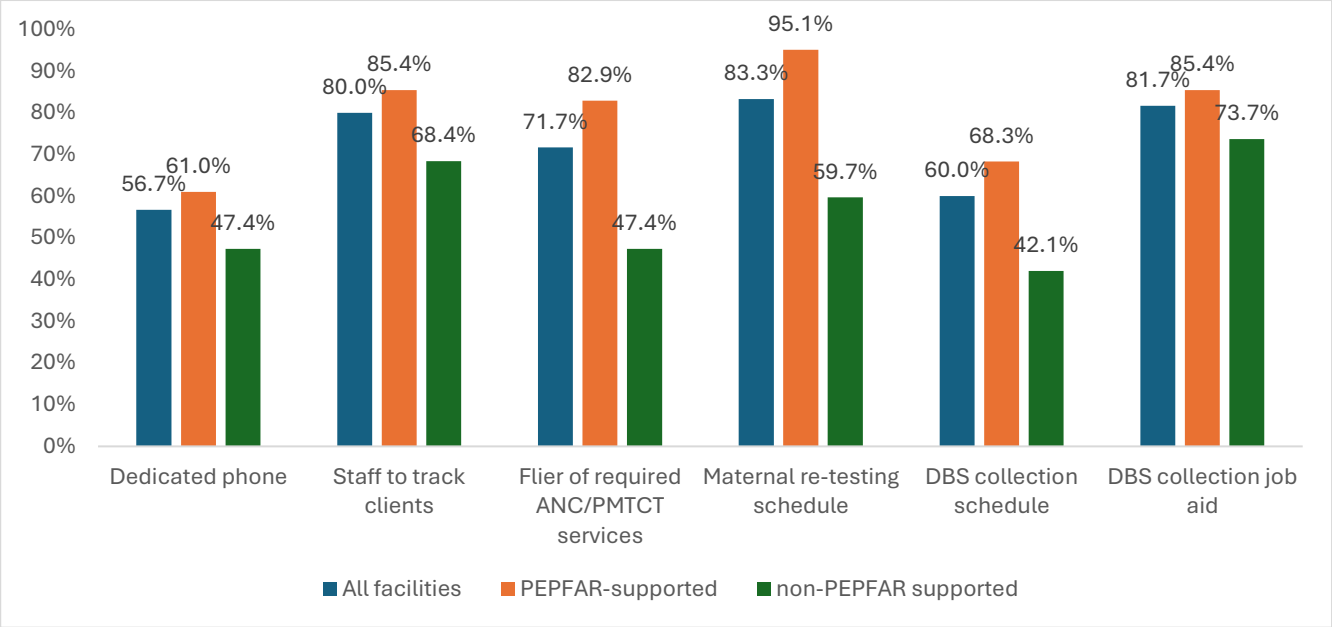

Figure 3: Availability of antenatal care and Prevention of Mother-to-Child Transmission related resources at assessment facilities, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Table 10: Availability of antenatal care and Prevention of Mother-to-Child Transmission related resources at assessment facilities, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)
Number of facilities assessed	60 (100%)	41 (68.3%)	19 (31.7%)
Dedicated phone to remind clients when they miss an Antenatal care/Prevention of Mother-to-Child Transmission appointment	34 (56.7%)	25 (61.0%)	9 (47.4%)
Dedicated staff to track women who miss their Antenatal care/Prevention of Mother-to-Child Transmission appointment	48 (80.0%)	35 (85.4%)	13 (68.4%)
Information education and communication materials to remind women what services they should receive at every Antenatal care/Prevention of Mother-to-Child Transmission visit	43 (71.7%)	34 (82.9%)	9 (47.4%)
Information education and communication materials showing maternal re-testing schedule	50 (83.3%)	39 (95.1%)	11 (57.9%)
Information education and communication materials showing dried blood spot sample collection schedule for HIV-exposed infant	36 (60.0%)	28 (68.3%)	8 (42.1%)
Dried blood spot sample collection Job Aids for providers	49 (81.7%)	35 (85.4%)	14 (73.7%)

Data source: Facility assessment

Qualitative findings showed that providers recognized the importance of IEC materials to remind ANC and PMTCT clients to request necessary services, leading to improved service uptake. Additionally, KIs confirmed that availability of job aids and SOPs help providers adhere to national guidelines.

> *"Yes, the facility has Standard Operating Procedures (SOPs) for DBS sample testing. We received them from our implementing partner xxx, and we have posted them on the wall as you can see. Although we currently don't have pamphlets available, we have already contacted our implementing partner to provide us with some. These materials are very helpful in reminding mothers to bring their children for sample collection."* ***RCH In-charge***

Providers in facilities without phones saw phones as having the potential to improve PMTCT and ANC care through tracking clients who had missed an appointment, sending appointment reminders, and obtaining delivery status and health information.

> *"Yes, having access to phones or at least vouchers from the center would greatly assist us in tracking those mothers who do not attend their clinics regularly. It would also help us reach those who we know have given birth and need various services for themselves and their children. Currently, our approach involves physically searching for them using community health workers, but this can be challenging as some live far away, and we may lack the funds for transportation. A phone-based system would make reminders and communication much more efficient."* ***RCH In-charge***

4.3 CROSS-SECTIONAL SURVEY PARTICIPANT OVERVIEW

We recruited a total of 609 women attending their child's 9-month vaccination appointment. The median age for participants was 27 years. The majority had, at a minimum, completed primary education (86.9%). The most commonly reported occupations were housewife (28.9%), petty trading (26.1%), and farmer (23.8%). These data, disaggregated by PEPFAR versus non-PEPFAR supported facility and by region, can be found in Table 11.

Table 11: Sociodemographic characteristics of participants in cross-sectional survey, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Number of participants (N)	609 (100%)	420 (69.0%)	189 (31.0%)	158 (25.9%)	152 (25.0%)	149 (24.5%)	150 (24.6%)
Age group (in years)							
15-19	42 (6.9%)	20 (4.8%)	22 (11.6%)	3 (1.9%)	22 (14.5%)	8 (5.4%)	9 (6.0%)
20-24	179 (29.4%)	119 (28.3%)	60 (31.8%)	48 (30.4%)	46 (30.3%)	38 (25.5%)	47 (31.3%)
25-29	162 (26.6%)	111 (26.4%)	51 (27.0%)	48 (30.4%)	30 (19.7%)	40 (26.8%)	44 (29.3%)
30-34	136 (22.3%)	104 (24.8%)	32 (16.9%)	36 (22.8%)	31 (20.4%)	32 (21.5%)	37 (24.7%)
≥35	90 (14.8%)	66 (15.7%)	24 (12.7%)	23 (14.5%)	23 (15.1%)	31 (20.8%)	13 (8.7%)
Highest level of education							
No formal education	42 (6.9%)	20 (4.8%)	22 (11.6%)	2 (1.3%)	18 (11.8%)	13 (8.7%)	9 (6.0%)
Did not complete primary	38 (6.2%)	20 (4.8%)	18 (9.5%)	6 (3.8%)	16 (10.5%)	7 (4.7%)	9 (6.0%)
Completed primary	266 (43.7%)	174 (41.4%)	92 (48.7%)	65 (41.1%)	67 (44.1%)	61 (41.0%)	73 (48.6%)
Did not complete secondary	75 (12.3%)	54 (12.8%)	21 (11.1%)	25 (15.8%)	10 (6.6%)	21 (14.1%)	19 (12.7%)
Completed secondary	145 (23.8%)	119 (28.3%)	26 (13.8%)	43 (27.2%)	26 (17.1%)	37 (24.8%)	39 (26.0%)
Higher than secondary	43 (7.1%)	33 (7.9%)	10 (5.3%)	17 (10.8%)	15 (9.9%)	10 (6.7%)	1 (0.7%)
Occupation							
Housewife	176 (28.9%)	128 (30.5%)	48 (25.4%)	71 (44.9%)	39 (25.7%)	25 (16.8%)	41 (27.3%)
Petty trading	159 (26.1%)	109 (25.9%)	50 (26.5%)	48 (30.4%)	32 (21.1%)	38 (25.5%)	41 (27.3%)
Farmer	145 (23.8%)	81 (19.3%)	64 (33.8%)	0 (0%)	56 (36.8%)	52 (35.0%)	37 (24.7%)
Private business	49 (8.0%)	37 (8.8%)	12 (6.4%)	15 (9.5%)	5 (3.3%)	16 (10.7%)	13 (8.7%)
Self-employed	34 (5.6%)	26 (6.2%)	8 (4.2%)	16 (10.1%)	3 (1.9%)	10 (6.7%)	5 (3.3%)
Employed in formal sector	31 (5.1%)	26 (6.2%)	5 (2.6%)	6 (3.8%)	12 (8.0%)	6 (4.0%)	7 (4.7%)
Unemployed	12 (2.0%)	10 (2.4%)	2 (1.1%)	2 (1.3%)	2 (1.3%)	2 (1.3%)	6 (4.0%)
Other	3 (0.5%)	3 (0.7%)	0 (0%)	0 (0%)	3 (1.9%)	0 (0%)	0 (0%)

Data source: Cross-sectional survey, self-report

4.4 RETROSPECTIVE COHORT OVERVIEW

4.4.1 CHARACTERISTICS OF RETROSPECTIVE COHORT MEMBERS

We included a total of 2,260 PBFW living with HIV in the retrospective cohort, with a median age of 30 years. The majority of retrospective cohort members (87.2%) received services at PEPFAR-supported facilities, with Dar es Salaam having the largest proportion of participants (33.4%) of any of the regions. Seven in ten retrospective cohort members (71.4%) had been diagnosed with HIV prior to ANC enrollment while 28.6% were newly diagnosed as living with HIV at their first ANC visit. The proportion of women who were diagnosed as living with HIV at their first ANC visit was higher at non-PEPFAR supported facilities compared to PEPFAR facilities (39.8% versus 26.9%, respectively) and was highest in Dodoma region (41.5%) (Table 12).

Table 12: Age and HIV status at enrollment of retrospective cohort members, by region, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Number of women living with HIV abstracted from antenatal care register	2,260 (100%)	1,971 (87.2%)	289 (12.8%)	755 (33.4%)	260 (11.5%)	623 (27.6%)	622 (27.5%)
Age							
15-19	81 (3.6%)	65 (3.3%)	16 (5.5%)	12 (1.6%)	8 (3.1%)	36 (5.8%)	25 (4.0%)
20-24	415 (18.4%)	351 (17.8%)	64 (22.2%)	105 (14.0%)	54 (20.8%)	119 (19.1%)	137 (22.0%)
25-29	622 (27.5%)	552 (28.0%)	70 (24.2%)	196 (25.9%)	75 (28.8%)	167 (26.8%)	184 (29.6%)
30-34	594 (26.3%)	519 (26.3%)	75 (25.9%)	219 (29.0%)	62 (23.8%)	156 (25.0%)	157 (25.3%)
≥35	548 (24.2%)	484 (24.6%)	64 (22.2%)	223 (29.5%)	61 (23.5%)	145 (23.3%)	119 (19.1%)
HIV status at antenatal care enrollment							
Previously diagnosed	1,614 (71.4%)	1,440 (73.1%)	174 (60.2%)	563 (74.6%)	152 (58.5%)	458 (73.5%)	441 (70.9%)
Newly diagnosed	646 (28.6%)	531 (26.9%)	115 (39.8%)	192 (25.4%)	108 (41.5%)	165 (26.5%)	181 (29.1%)

Data source: Antenatal care register

Women who were known to be living with HIV at their first ANC visit had a higher median age than women who were newly diagnosed at their first ANC visit (30 years and 27 years, respectively). Women known to be living with HIV also had a higher median parity of two compared to one among newly diagnosed women (Table 13).

Table 13: Median age and parity of retrospective cohort members who were newly diagnosed and previously diagnosed with HIV at first antenatal care visit, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Previously diagnosed women living with HIV	Newly diagnosed women living with HIV
Median age (interquartile range)	30 years (26, 35)	27 years (23, 32)
Median parity (interquartile range)	2 (1, 3)	1 (1, 2)

Data source: Antenatal care register

4.4.2 AVAILABILITY OF RECORDS OF RETROSPECTIVE COHORT ACROSS DATA SOURCES

Overall, 71.7% of women living with HIV registered at ANC had a record in the MC cohort register at the same facility. A similar proportion (71.8%) had a CTC2 card at the same facility. This was notably different between PEPFAR and non-PEPFAR supported facilities. At PEPFAR-supported facilities, 74.2% of women could be located in the MC cohort register and had a CTC2 card compared to 55.0% at non-PEPFAR supported facilities (Table 14).

Providers reported that, among women who did not have a record in the MC cohort register, the main reasons were either that the woman had started or was already on ART at a different facility (48.0%) and that the facility staff forgot to record them (47.4%). These proportions were very different between PEPFAR-supported and non-PEPFAR supported facilities (Table 14). It is important to note that all pregnant women living with HIV who are attending ANC are supposed to be documented in the MC cohort register, regardless of where they access ART services.

The primary reasons given for why CTC2 cards were not available were similar: for 54.4% of women the CTC2 card could not be located in the facility (despite documentation suggesting the client had initiated ART at that facility), 23.0% of the women were reported to already be on ART at a different facility, and 20.5% were reported to have initiated ART at a different facility (Table 14).

Among women with an available CTC2 card, 77.3% had a record in the facility CTC2 database. This proportion was higher at PEPFAR-supported facilities compared to non-PEPFAR supported facilities (79.3% and 58.5%, respectively). Of the four regions included in the assessment, Mwanza had the lowest proportion of women found in the CTC2 database among those with an available CTC2 card at 62.8% (Table 14).

Only half (54.4%) of women living with HIV who were registered at ANC had a HEI card available for their baby at the same facility. The proportion was higher at PEPFAR-supported facilities (57.3%) compared to non-PEPFAR supported facilities (34.6%). The proportion was also higher among women who had a CTC2 card at the same

facility (75.6% overall; 77.0% at PEPFAR-supported facilities versus 62.9% at non-PEPFAR supported facilities) (Table 14).

Among those women for whom a HEI card was not available, for 33.9% of the women the HEI card could not be located despite documentation (in the mother's CTC2 card or the MC cohort register) or information from a provider that the baby had received services at that facility and had a HEI card), 24.3% of the women did not start ART at that facility, and 13.9% of the women were reported to have transferred out of the facility, among other reasons (Table 14).

Among HEI with an available HEI card, 62.9% had a record in the facility CTC2 database. This proportion was higher at PEPFAR-supported facilities compared to non-PEPFAR supported facilities (64.1% and 49.5%, respectively). Mwanza had an especially low proportion of babies having a record in the CTC2 database, with only one-third (33.1%) of HEI who had an available HEI card having a record in the CTC2 database (Table 14).

We also analyzed whether the women in the retrospective cohort had a record in three data sources: a record in the MC cohort register, an available CTC2 card, and an available HEI card. We excluded 98 women who had a record of experiencing an abortion or still birth from this analysis. Half (53.1%) of women had a record in all three data sources, with a higher proportion at PEPFAR-supported facilities compared to non-PEPFAR supported facilities (55.9% and 34.8%, respectively) (Table 14).

Table 14: Proportion of women living with HIV in the retrospective cohort successfully tracked in the mother-child cohort register, CTC2 card, CTC2 database, and those whose infant had a HIV-exposed infant card, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Matching women from antenatal register to mother-child cohort register [N=2,260]							
Was documented in mother-child cohort register	1,620 (71.7%)	1,461 (74.2%)	159 (55.0%)	579 (76.7%)	144 (55.4%)	499 (80.1%)	398 (64.0%)
Was not documented in mother-child cohort register	640 (28.3%)	510 (25.8%)	130 (45.0%)	176 (23.3%)	116 (44.6%)	124 (19.9%)	224 (36.0%)
Reason women were not registered in mother-child cohort register							
Started or already on anti-retroviral therapy at a different facility	303 (48.0%)	200 (39.3%)	103 (79.2%)	109 (62.0%)	34 (29.6%)	76 (61.3%)	84 (37.5%)
Staff forgot to document in mother-child register	307 (47.4%)	285 (56.0%)	22 (16.9%)	60 (34.0%)	71 (61.7%)	40 (32.3%)	136 (60.7%)
Refused anti-retroviral therapy initiation	7 (1.1%)	5 (1.0%)	2 (1.5%)	2 (1.1%)	2 (1.7%)	2 (1.6%)	1 (0.5%)
Was not documented for other reasons	23 (3.2%)	20 (3.7%)	3 (2.3%)	5 (2.9%)	9 (7%)	6 (4.8%)	3 (1.3%)
Matching women from antenatal register to CTC2 card [N=2,260]							
CTC2 card was available	1,622 (71.8%)	1,463 (74.2%)	159 (55.0%)	545 (72.3%)	171 (65.8%)	471 (75.6%)	435 (69.9%)
CTC2 card was not available	638 (28.2%)	508 (25.8%)	130 (45.0%)	210 (27.8%)	89 (34.2%)	152 (24.4%)	187 (30.1%)
Reason that CTC2 card was not available							
CTC2 card could not be found	347 (54.4%)	325 (64.0%)	22 (16.9%)	112 (53.3%)	47 (52.8%)	74 (48.7%)	114 (60.9%)
Woman already on anti-retroviral therapy at a different facility	146 (23.0%)	104 (20.5%)	42 (32.3%)	41 (19.5%)	20 (22.5%)	45 (29.6%)	40 (21.4%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Woman started anti-retroviral therapy at different facility	131 (20.5%)	66 (13.0%)	65 (50.0%)	52 (24.8%)	17 (19.1%)	31 (20.3%)	31 (16.6%)
Woman lost to follow-up	6 (0.9%)	6 (1.2%)	0 (0%)	2 (1.0%)	4 (4.5%)	0 (0%)	0 (0%)
Woman refused to start anti-retroviral therapy	6 (0.9%)	5 (0.9%)	1 (0.8%)	2 (1.0%)	1 (1.1%)	1 (0.7%)	2 (1.1%)
CTC2 card not available for other reasons	2 (0.3%)	2 (0.4%)	0 (0%)	1 (0.4%)	0 (0%)	1 (0.7%)	0 (0%)
Women with a record in the CTC2 database among those with an available CTC2 card [N=1,622]							
Had record in CTC2 database	1,253 (77.3%)	1,160 (79.3%)	93 (58.5%)	427 (78.4%)	133 (77.8%)	420 (89.2%)	273 (62.8%)
Did not have record in CTC2 database	369 (22.7%)	303 (20.7%)	66 (41.5%)	118 (21.6%)	38 (22.2%)	51 (10.8%)	162 (37.2%)
Matching women from antenatal register to HIV-exposed infant card [N=2,260]							
HIV-exposed infant card was available	1,230 (54.4%)	1,130 (57.3%)	100 (34.6%)	437 (57.9%)	120 (46.2%)	376 (60.4%)	297 (47.8%)
HIV-exposed infant card was not available	1030 (45.6%)	841 (42.7%)	189 (65.4%)	318 (42.1%)	140 (53.8%)	247 (39.6%)	325 (52.2%)
Reason that HIV-exposed infant card was not available							
HIV-exposed infant card was not found	349 (33.9%)	325 (38.6%)	24 (12.7%)	99 (31.1%)	51 (36.4%)	74 (30.0%)	125 (38.5%)
Woman did not start anti-retroviral therapy at that facility	250 (24.3%)	148 (17.6%)	102 (54.0%)	87 (27.4%)	33 (23.6%)	51 (20.7%)	79 (24.3%)
Woman transferred out to another facility	144 (13.9%)	128 (15.2%)	16 (8.5%)	30 (9.4%)	16 (11.4%)	52 (21.0%)	46 (14.2%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Pregnancy resulted in stillbirth or abortion	143 (13.9%)	134 (16.0%)	9 (4.7%)	65 (20.4%)	10 (7.1%)	31 (12.6%)	37 (11.4%)
Woman lost to follow-up	39 (3.8%)	25 (3.0%)	14 (7.4%)	5 (1.7%)	10 (7.1%)	11 (4.5%)	13 (4.0%)
Infant initiated on anti-retroviral therapy at a different facility	24 (2.3%)	17 (2.0%)	7 (3.7%)	10 (3.1%)	8 (5.7%)	5 (2.0%)	1 (0.3%)
Infant not registered in HIV-exposed infant services	24 (2.3%)	16 (1.9%)	8 (4.2%)	6 (1.9%)	6 (4.3%)	6 (2.4%)	6 (1.9%)
Woman or infant died	21 (2.0%)	18 (2.0%)	3 (1.6%)	6 (1.9%)	1 (0.7%)	7 (2.8%)	7 (2.1%)
Woman delivered at another facility	13 (1.3%)	13 (1.6%)	0 (0%)	8 (2.5%)	0 (0%)	2 (0.8%)	3 (0.9%)
Woman refused anti-retroviral therapy initiation	9 (0.9%)	8 (1.0%)	1 (0.5%)	0 (0%)	4 (3.0%)	1 (0.4%)	4 (1.2%)
HIV-exposed infant card not available for other reasons	14 (1.4%)	9 (1.1%)	5 (2.7%)	2 (0.6%)	1 (0.7%)	7 (2.8%)	4 (1.2%)
Availability of HIV-exposed infant card for women with an available CTC2 card [N=1,622]							
HIV-exposed infant card was available	1226 (75.6%)	1126 (77.0%)	100 (62.9%)	436 (80.0%)	119 (70.0%)	376 (79.8%)	295 (67.8%)
HIV-exposed infant card was not available	396 (24.4%)	337 (23.0%)	59 (37.1%)	109 (20.0%)	52 (30.0%)	95 (20.2%)	140 (32.2%)
HIV-exposed infant with a record in the CTC2 database among those with an available HEI card [N=1,230]							
HIV-exposed infant had record in CTC2 database	774 (62.9%)	725 (64.1%)	49 (49.5%)	311 (70.8%)	80 (66.1%)	286 (75.9%)	97 (33.1%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
HIV-exposed infant did not have record in CTC2 database	456 (37.1%)	406 (35.9%)	50 (50.5%)	128 (29.2%)	41 (33.9%)	91 (24.1%)	196 (66.9%)
Matching women from Antenatal care to mother-child cohort, CTC2 card, and HIV-exposed infant card [N=2,162]							
Had record in all three data sources	1148 (53.1%)	1050 (55.9%)	98 (34.8%)	413 (57.6%)	102 (40.5%)	371 (62.1%)	262 (44.0%)
Did not have record in all three data sources	1,014 (46.9%)	919 (44.1%)	184 (65.2%)	304 (42.4%)	150 (59.5%)	226 (37.9%)	334 (56.0%)

5 ANTENATAL CARE, DELIVERY, AND MATERNAL RETESTING

5.1 UPTAKE OF ANTENATAL CARE SERVICES

Approximately one in three (28.2%) women in the retrospective cohort attended their first ANC appointment before 12 weeks of pregnancy, as recommended by WHO. This varied from 31.5% in Mbeya to 21.9% in Dodoma. Fewer than half of cohort members (44.6%) had at least four ANC visits with a higher proportion of women at PEPFAR-supported facilities (46.5%) having four or more visits compared to non-PEPFAR-supported facilities (31.5%).

Documentation of women being provided with counseling on infant feeding was limited, with half of women (55.7%) lacking documentation. The majority of women (84.1%) had a documented negative malaria test outcome and 81.2% of women received a Long-Lasting Insecticidal Net (LLIN). More than half of women overall (59.4%) and across all regions did not receive any dose of Malaria IPTp.

Among women who received a referral for other services, 78.4% were referred to a facility within the same district where they attended ANC.

Table 15: Antenatal care attendance and services received by pregnant women during antenatal care visits, by region, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Number of women living with HIV abstracted from antenatal care register	2260 (100%)	1971 (87.2%)	289 (12.8%)	755 (33.4%)	260 (11.5%)	623 (27.6%)	622 (27.5%)
Gestational age at first antenatal care visit (weeks)							
<12	638 (28.2%)	551 (27.9%)	87 (30.1%)	231 (30.6%)	57 (21.9%)	196 (31.5%)	154 (24.8%)
12-31	1,584 (70.1%)	1,385 (70.3%)	199 (68.9%)	512 (67.8%)	197 (75.8%)	421 (67.6%)	454 (73%)
≥32	38 (1.7%)	35 (1.8%)	3 (1%)	12 (1.6%)	6 (2.3%)	6 (0.9%)	14 (2.2%)
Number of antenatal care visits							
1-3	1,251 (55.3%)	1,053 (53.4%)	198 (68.5%)	399 (52.9%)	220 (64.6%)	384 (61.6%)	248 (39.9%)
≥4	1,008 (44.6%)	917 (46.5%)	91 (31.5%)	356 (47.1%)	39 (15.0%)	239 (38.4%)	374 (60.1%)
Blank	1 (0.1%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)
Received counseling on infant feeding							
Yes	934 (41.3%)	800 (40.6%)	134 (46.4%)	309 (41%)	78 (30%)	341 (54.7%)	206 (33.1%)
No	76 (3.4%)	73 (3.7%)	3 (1.0%)	4 (0.5%)	17 (6.5%)	12 (2.0%)	43 (6.9%)
Blank	1,250 (55.3%)	1,098 (55.7%)	152 (52.6%)	442 (58.5%)	165 (64.5%)	270 (43.3%)	373 (60.0%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Malaria rapid diagnostic test (mRDT) or blood slide (BS) outcome							
Positive	47 (2.1%)	38 (1.9%)	9 (3.1%)	6 (0.8%)	3 (1.2%)	8 (1.3%)	30 (4.8%)
Negative	1,900 (84.1%)	1,651 (83.8%)	249 (85.2%)	605 (80.1%)	195 (75%)	572 (91.8%)	528 (84.9%)
Blank	313 (13.8%)	282 (14.3%)	31 (10.7%)	144 (19.1%)	62 (23.8%)	43 (6.9%)	64 (10.3%)
Received long lasting insecticidal nets (LLIN)							
Yes	1836 (81.2%)	1608 (81.6%)	228 (78.9%)	595 (78.8%)	195 (75%)	484 (77.7%)	562 (90.4%)
No	97 (4.3%)	93 (4.7%)	4 (1.4%)	49 (6.5%)	31 (11.9%)	12 (1.9%)	5 (0.8%)
Blank	327 (14.5%)	270 (13.7%)	57 (19.7%)	111 (14.7%)	34 (13.1%)	127 (20.4%)	55 (8.8%)
Number of intermittent preventive treatment (IPT) doses documented							
No doses documented	1342 (59.4%)	1208 (61.3%)	134 (46.4%)	486 (64.4%)	146 (56.1%)	344 (55.2%)	366 (59.0%)
One	357 (15.8%)	290 (14.7%)	67 (23.2%)	123 (16.3%)	71 (27.3%)	98 (15.7%)	65 (10.4%)
Two	169 (7.5%)	126 (6.4%)	43 (14.9%)	44 (5.8%)	16 (6.2%)	67 (10.8%)	42 (6.7%)
Three	150 (6.6%)	130 (6.6%)	20 (6.9%)	55 (7.3%)	7 (2.7%)	47 (7.5%)	41 (6.6%)
Four	242 (10.7%)	217 (11%)	25 (8.6%)	47 (6.2%)	20 (7.7%)	67 (10.8%)	108 (17.3%)
Among women who received referrals, location of facility to which client was referred							

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Within the district	87 (78.4%)	72 (75.0%)	15 (100%)	46 (86.8%)	2 (100%)	29 (70.7%)	10 (66.7%)
Within the region but different district	10 (9.0%)	10 (10.4%)	0 (0%)	3 (5.6%)	0 (0%)	5 (12.2%)	2 (13.3%)
Outside the region	8 (7.2%)	8 (8.3%)	0 (0%)	2 (3.8%)	0 (0%)	3 (7.3%)	3 (20%)
Blank	6 (5.4%)	6 (6.3%)	0 (0%)	2 (3.8%)	0 (0%)	4 (9.8%)	0 (0%)

Data source: Antenatal Care register

5.2 DELIVERY

The majority of the 609 women who participated in the cross-sectional survey (n=583; 95.7%) reported delivering their baby at a health facility. Among those who delivered at a health facility, less than half (n=267; 45.8%) delivered at the same facility where they registered for ANC while 54.2% delivered at a different facility. Among women who delivered at a different facility from where they registered for ANC, the primary reasons for this decision were: wanting to deliver at a facility near their parents or in-laws (n=114; 36.1%), a perception that services at the chosen facility were better than where they attended ANC (n=81; 25.6%), and referral (n=65; 20.6%). Notably, only five women (1.6%) said they opted for a different delivery facility because it was less expensive than where they accessed ANC, and three (0.8%) said their ANC facility did not have delivery services (Table 16).

Table 16: Facility-based delivery and reasons for delivering at a facility different from where they were accessing antenatal care services among cross-sectional survey participants, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	n (%)
Delivered at a health facility [N=609]	583 (95.7%)
Delivered at the same health facility where registered for antenatal care [N=583]	267 (45.8%)
Primary reason for delivering at a different facility [N=316]	
I wanted to deliver near my parents'/in-law's home	114 (36.1%)
Services were better than at the antenatal care site where I registered	81 (25.6%)
I was referred	65 (20.6%)
The facility was closer to my home	32 (10.1%)
My spouse/family decided for me	10 (3.2%)
It was cheaper than the antenatal care site where I registered	5 (1.6%)
My antenatal care facility did not have delivery services	3 (0.8%)
Other	6 (2.0%)

Data source: Cross-sectional survey

5.3 HIV TESTING AMONG PREGNANT WOMEN AND MATERNAL RETESTING

National guidelines require that pregnant women be tested for HIV during pregnancy (both at their first ANC visit and between weeks 32 and 36 of pregnancy) as well as throughout the postpartum period if they are breastfeeding. A higher proportion of women interviewed in the cross-sectional survey reported being tested for HIV during their first ANC visit (94.9%) than during their third trimester (65.2%) or the postpartum period (41.1%) (Figure 4).

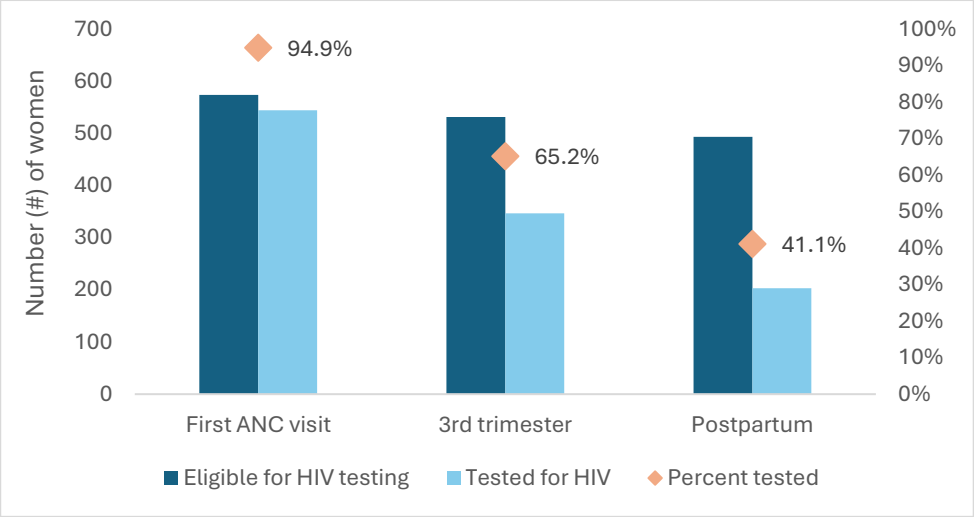

Figure 4: Number and percent of women eligible for and tested during first antenatal care visit, pregnancy, and postpartum, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023 (Data source: Cross-sectional survey)

Of the 609 women interviewed in the cross-sectional survey, 213 (35.0%) reported that they did not know their HIV status prior to their first ANC visit. Of those who knew their HIV status before attending ANC, 35 (8.8%) reported that they had already been diagnosed with HIV and so were not eligible for testing. Of the 574 women eligible for HIV testing at their first ANC visit, 545 (95.0%) were tested during their first ANC visit, of whom 10 (1.8%) reported a positive HIV test result and 532 (97.6%) reported an HIV-negative result (Figure 5). The remaining three women did not receive their test results. Among women with an HIV-negative result during their first ANC visit, 347 (65.2%) were retested during pregnancy. In the postpartum period, 494 women returned for a visit and were eligible for maternal retesting. However, only 203 (41.1%) were tested. The retesting positivity rate during pregnancy and the postpartum period was below 1% (0.3% and 0.5%, respectively).

Among the 13 women who were not tested during ANC, 10 (76.9%) reported the main reason for not testing was that HIV testing was never offered to them. Similarly, of the 291 women who were not tested for HIV during any postpartum visit, 84.2% said the main reason they did not test was that HIV testing was never offered to them.

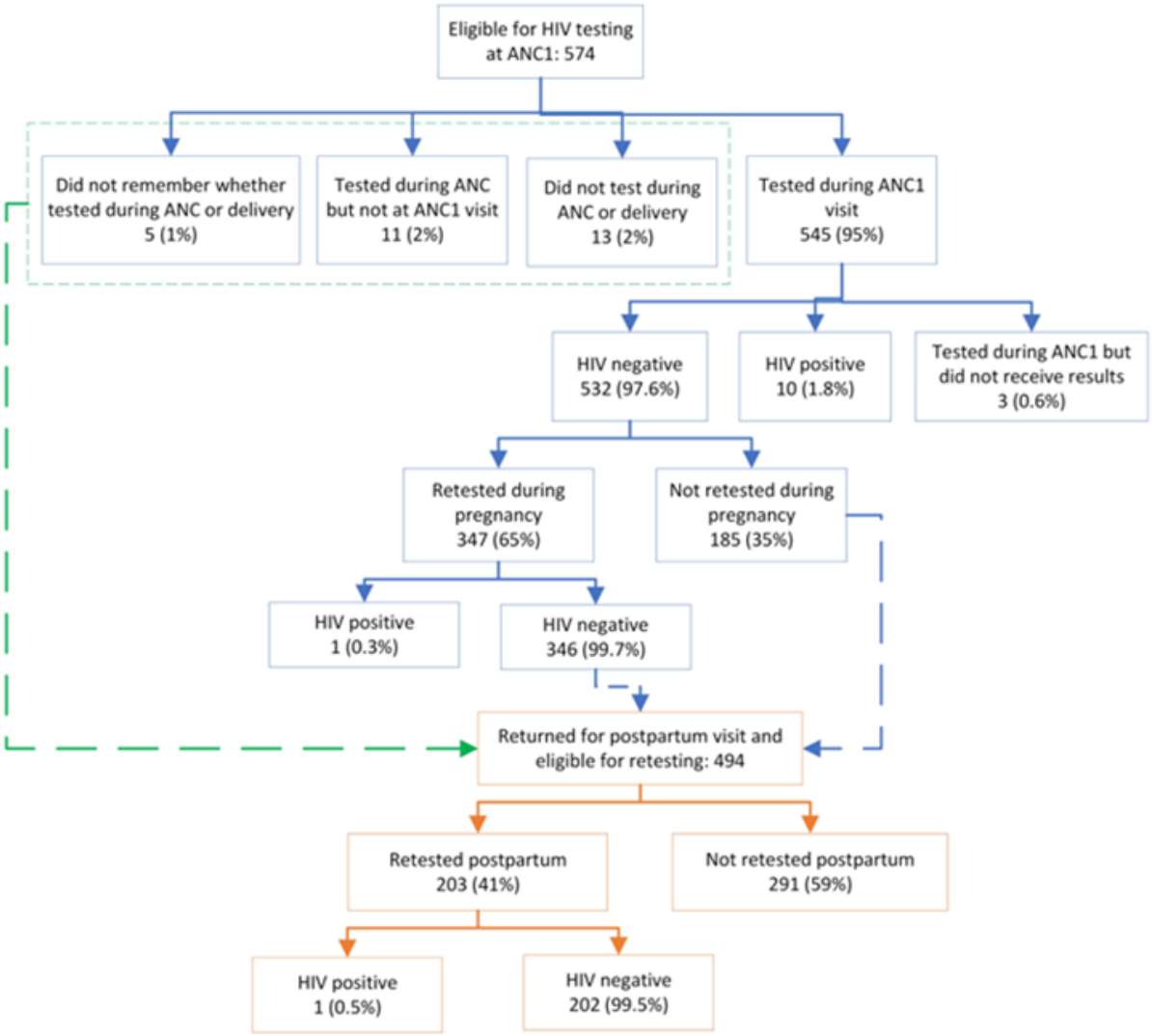

Figure 5: HIV testing at first antenatal care visit and maternal retesting, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023 (Data source: Cross-sectional survey)

Qualitative findings attributed the successful uptake of HIV testing at the first ANC visit to effective communication with pregnant women, availability of test kits, prioritization of HIV testing during the first ANC visit and maintaining detailed MTUHA records for this indicator.

> *"All mothers are tested for HIV during their first ANC booking. Normally we make sure all women who start ANC clinic are counselled and educated about the importance of HIV testing."* ***PMTCT provider***

In addition to factors that contribute to the success of HIV testing at women's first ANC visit, KIs also discussed barriers to implementing maternal retesting, which were described at all levels of the health care system (Figure 6).

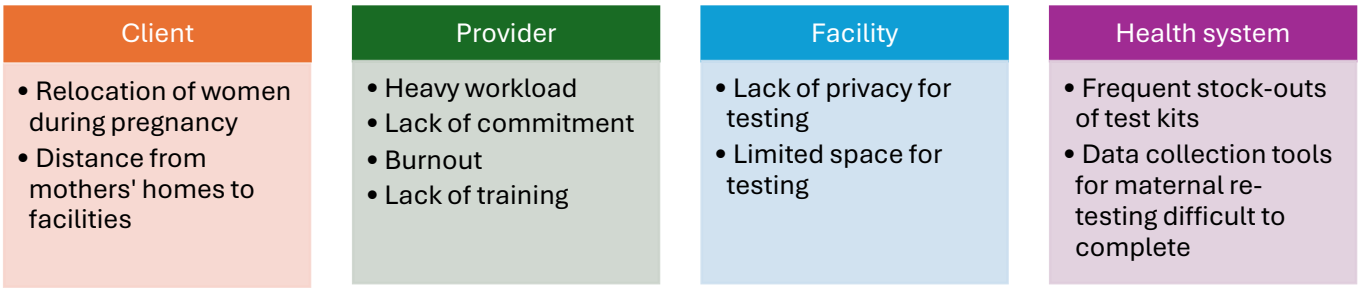

Figure 6: Barriers to implementing maternal retesting at each level of the health care system, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023 (Data source: Key informant interviews)

The range of challenges that health care providers face in implementing maternal retesting are also captured in the quote below.

> *"……There is a shortage of providers compared to the number of pregnant women attending RCH clinics. Sometimes pregnant women are requested to test in a PMTCT room which is inappropriate. Also, there is a shortage of HIV test kits – sometimes we face stockouts and have to borrow from nearby facilities. Our facility does not have a private room for HIV testing, all testing is performed at a vaccination desk which is an open space. We do not have enough rooms."* ***PMTCT provider***

6 HIV CARE AND TREATMENT SERVICES

6.1 LINKAGE TO PREVENTION OF MOTHER-TO-CHILD TRANSMISSION AND ANTI-RETROVIRAL SERVICES

We extracted data for 646 newly diagnosed pregnant women living with HIV from the ANC register as part of the retrospective cohort. Among these newly diagnosed women, 501 (77.5%) had a CTC2 card available at the same facility, all of whom had documentation of initiating ART. Among these, 86.8% had documentation of initiating ART exactly on the same day of diagnosis,7.6% between 1–7 days of diagnosis, 5.0% had documentation of initiating ART more than 7 days after diagnosis, and 0.6% were missing a date of ART initiation. Documentation of initiation on ART on the same day of diagnosis was higher at PEPFAR-supported (88.7%) and non-PEPFAR supported (77.9%) facilities (Table 17).

Table 17: Proportion of newly identified HIV positive women in the retrospective cohort who had a CTC2 card available and were initiated on anti-retroviral therapy at the same facility where they were diagnosed, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Newly diagnosed pregnant women living with HIV	646 (100%)	531 (82.2%)	115 (17.8%)	192 (29.7%)	108 (16.7%)	165 (25.5%)	181 (28.0%)
Availability of CTC2 card at same facility among new positives [N=646]							
CTC2 card available	501 (77.5%)	415 (78.2%)	86 (74.8%)	143 (74.5%)	79 (73.2%)	139 (84.2%)	140 (77.4%)
CTC2 card not available	145 (22.5%)	116 (21.8%)	29 (25.2%)	49 (25.5%)	29 (26.8%)	26 (15.8%)	41 (22.6%)
Anti-retroviral therapy initiation among new positives with available CTC2 card [N=501]							
Initiated anti-retroviral therapy on exactly same day of diagnosis	435 (86.8%)	368 (88.7%)	67 (77.9%)	119 (83.2%)	58 (73.4%)	129 (92.8%)	129 (92.1%)
Initiated on anti-retroviral therapy within 1-7 days of diagnosis	38 (7.6%)	26 (6.2%)	12 (13.9%)	17 (11.9%)	12 (15.1%)	5 (3.6%)	4 (2.9%)
Initiated on anti-retroviral therapy more than 7 days after diagnosis	25 (5.0%)	19 (4.6%)	6 (7.0%)	6 (3.5%)	9 (11.4%)	5 (3.6%)	6 (4.3%)
Date of anti-retroviral therapy initiation blank	3 (0.6%)	2 (0.5%)	1 (1.1%)	2 (1.4%)	0 (0%)	0 (0%)	1 (0.7%)

Data source: CTC2 card

We were not able to verify whether the 22.5% of women who did not have a CTC2 card available at the same facility where they started ANC were initiated on ART elsewhere. Qualitative interviews with service providers indicated that some women were missing a CTC2 card because they refused to initiate ART. Stigma was cited as one of the main reasons why pregnant women either choose not to start ART or opt to start ART at a facility other than where they were diagnosed.

> *"Most women refuse to start ART because of stigma from their partners and family. Sometimes they even miss their drug refill or avoid being followed to their homes for sample collection. They normally opt to receive services away from their residential areas. Also, spouses do not support their partners in receiving PMTCT services. Some women have lost their marriages, and they are afraid to inform their spouse due to stigma."*
>
> ***Health care provider***

6.2 ANTI-RETROVIRAL THERAPY REGIMEN

Among retrospective cohort members with available CTC2 cards, 1,573 (97.0%) were prescribed the tenofovir-lamivudine-dolutegravir (TLD) regimen at their last clinical visit, while 49 (3.0%) received another regimen. Across all regions the percentage of clients prescribed TLD exceeded 95%, with the highest proportion observed in the Mbeya region at 99.0% (Table 18).

Among the 49 patients not receiving TLD, 38 (77.6%) had already been diagnosed with HIV before their first ANC visit, while 11 (22.4%) were newly diagnosed. The distribution of regimens for these clients was as follows: 27 (55.1%) were on second-line ARV regimens, 21 (42.9%) were on tenofovir-lamivudine-efavirenz (TLE), and 1 (2.0%) was on another DTG-based first-line regimen (different from TLD). Among the patients on TLE, 14 were from PEPFAR-supported facilities and 7 from non-PEPFAR-supported facilities. The regional distribution was uniform, with 4 clients in each region, except for Dodoma, which had 9 clients.

Table 18: Anti-retroviral regimen prescribed at last visit, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Anti-retroviral therapy regimen (N=1622)	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Tenofovir disoproxil, Lamivudine, Dolutegravir (TLD)	1573 (97.0%)	1421 (97.1%)	152 (95.6%)	522 (96.0%)	161 (94.0%)	467 (99.0%)	423 (97.0%)
Non-tenofovir disoproxil, Lamivudine, Dolutegravir (TLD) regimen	49 (3.0%)	42 (2.9%)	7 (4.4%)	23 (4.0%)	10 (6.0%)	4 (1.0%)	12 (3.0%)

6.3 RETENTION ON ANTI-RETROVIRAL THERAPY

6.3.1 RETENTION ON ANTI-RETROVIRAL THERAPY AT FIXED-TIME PERIODS

Overall, retention on ART at the same facility at where pregnant women had their first ANC visit decreased over time, declining to 66.7% at the eighteen-month mark (Figure 7; Table 19). Retention was higher at PEPFAR-supported facilities than non-PEPFAR-supported facilities at all time points and varied across regions. Retention was poorest in Dodoma at all time points. This analysis does not account for women who may have continued to receive ART, but at a facility that was different from where they accessed ANC services.

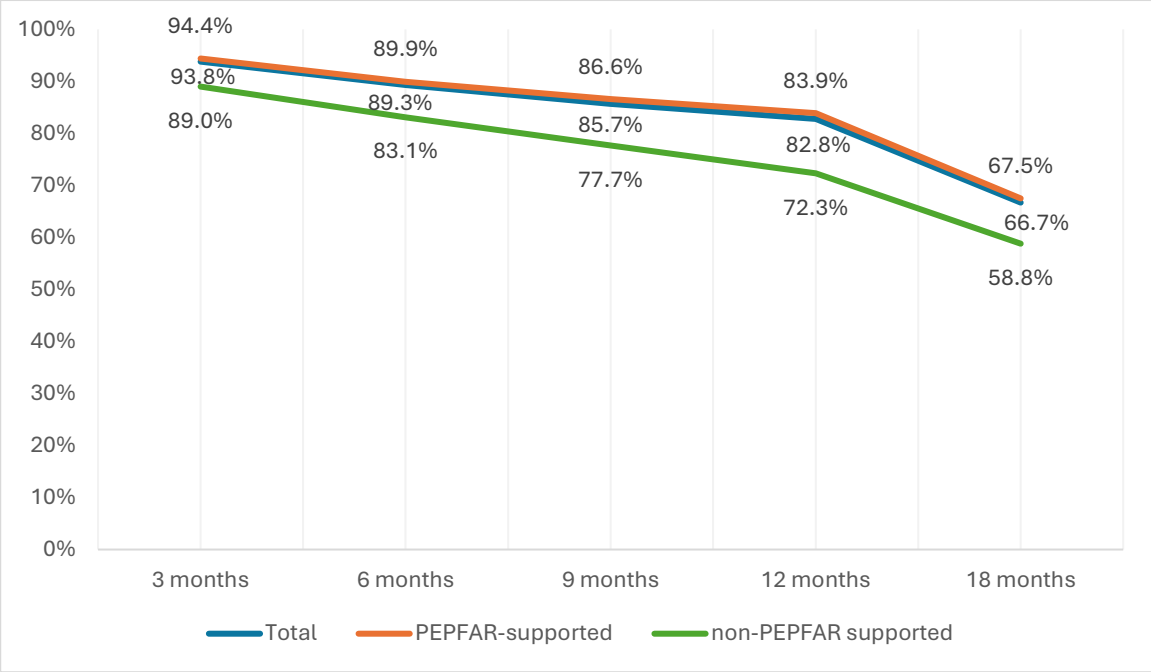

Figure 7: Retention on anti-retroviral therapy among retrospective cohort members, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Table 19: Retention on anti-retroviral of retrospective cohort member, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Months since first ANC visit	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
3 months [N=1603]	1500 (93.6%)	1364 (94.1%)	136 (88.3%)	516 (95.4%)	149 (88.2%)	444 (95.3%)	391 (91.6%)
6 months [N=1520]	1358 (89.3%)	1235 (90.0%)	123 (83.1%)	470 (92.7%)	132 (80.9%)	410 (91.7%)	346 (85.9%)
9 months [N=1520]	1303 (85.7%)	1190 (86.7%)	113 (76.4%)	453 (89.4%)	128 (78.5%)	399 (89.3%)	323 (80.2%)
12 months [N=1520]	1263 (83.1%)	1156 (84.3%)	107 (72.3%)	437 (86.2%)	118 (72.4%)	391 (87.5%)	317 (78.7%)
18 months [N=1520]	1014 (66.7%)	927 (67.6%)	87 (58.8%)	328 (64.7%)	92 (56.4%)	349 (78.1%)	245 (60.8%)

Data source: CTC2 card

Retention also differed between women in the retrospective cohort who were newly diagnosed with HIV at their first ANC visit and those who were previously diagnosed. Retention was higher at all time points for women who were known to be living with HIV at their first ANC visit compared to women who were newly diagnosed. At 18 months, retention among women who were previously diagnosed was 71.0% compared to 57.1% among those who were newly diagnosed (Figure 8; Table 20).

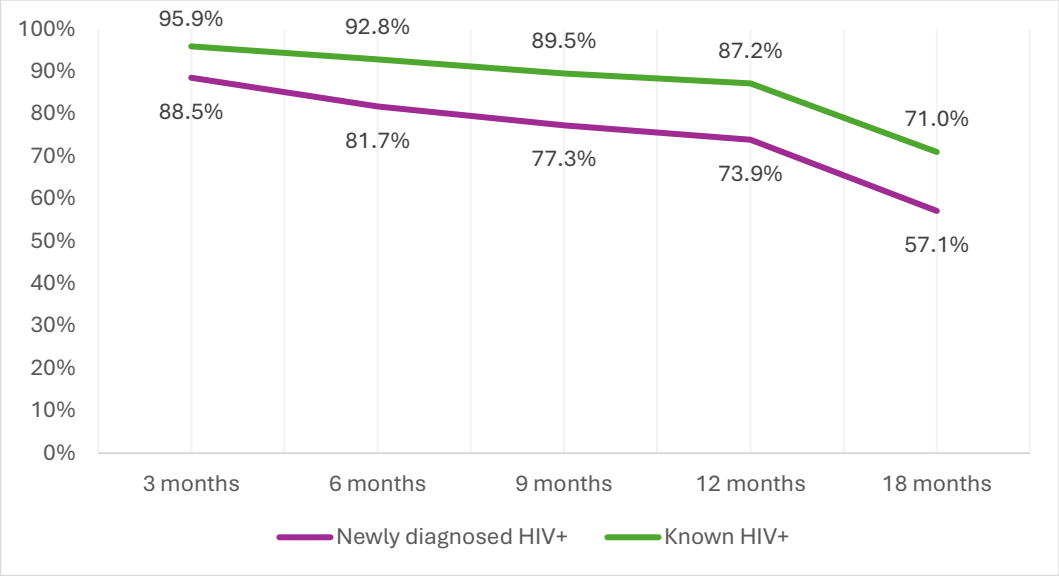

Figure 8: Retention on anti-retroviral therapy among retrospective cohort members, by HIV status at first antenatal care visit, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Table 20: Retention on anti-retroviral therapy among retrospective cohort members, by HIV status at first antenatal care visit, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

HIV status at first ANC visit	Retention status	3 months n (%)	6 months n (%)	9 months n (%)	12 months n (%)	18 months n (%)
Newly diagnosed with HIV at first ANC visit	Retained	437 (88.5%)	385 (81.7%)	364 (77.3%)	348 (73.9%)	269 (57.1%)
	Not retained	57 (11.5%)	86 (18.3%)	107 (22.7%)	123 (26.1%)	202 (42.9%)
Previously diagnosed with HIV	Retained	1063 (95.9%)	973 (92.8%)	939 (89.5%)	915 (87.2%)	745 (71.0%)
	Not retained	46 (4.1%)	76 (7.2%)	110 (10.5%)	134 (12.8%)	304 (29.0%)

Data source: CTC2 card

6.3.2 FREQUENCY OF INTERRUPTIONS IN TREATMENT

Among the 1622 mothers in the retrospective cohort who had an available CTC2 card, 12 had no documentation of any visit after their first ANC visit and were consequently excluded from this analysis, leaving 1610 women. Of

these 1610 women, 739 (45.9%) had no interruption in treatment (IIT) throughout the follow-up period, 499 (31.0%) had one IIT, and 372 (23.1%) had more than one IIT during the follow-up period. The proportion of clients with IITs was slightly higher in PEPFAR-supported facilities compared to non-PEPFAR supported facilities (54.3% versus 51.3%, respectively). IITs also varied by region with Dodoma and Mbeya having higher proportions of clients with at least one IIT (63.3% and 60.7%, respectively) compared to Mwanza and Dar es Salaam (50.1% and 49.1%, respectively) (Figure 9; Table 21).

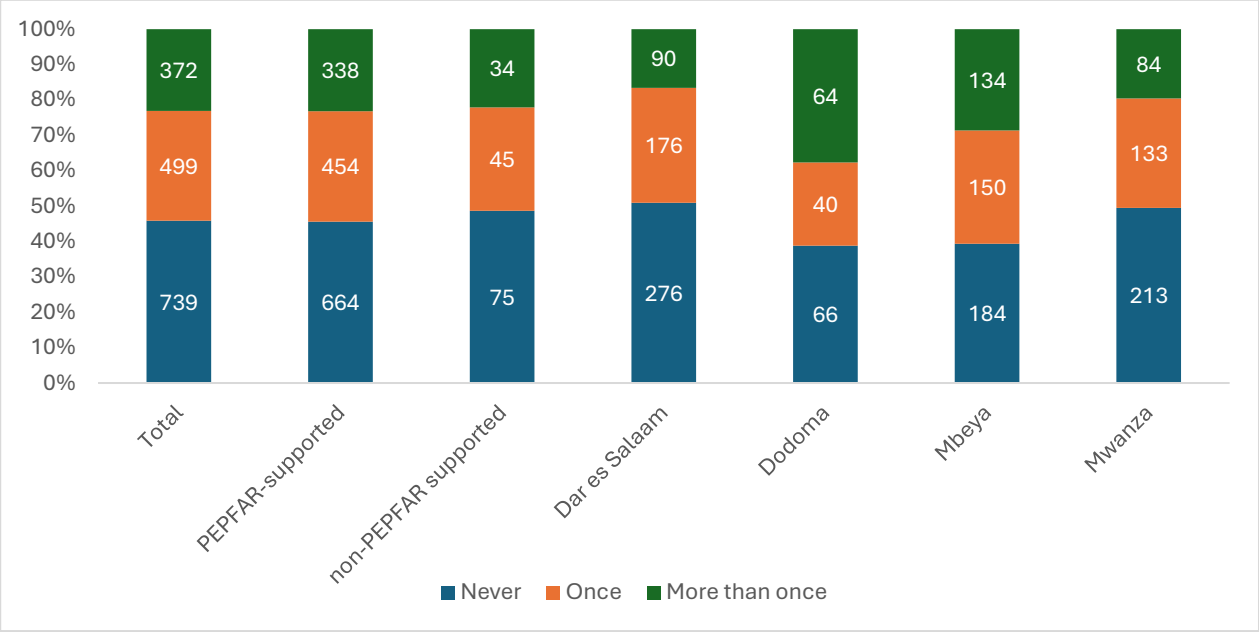

Figure 9: Frequency of interruptions in treatment among pregnant and breastfeeding women living with HIV in the retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Table 21: Frequency of interruptions in treatment among pregnant and breastfeeding women living with HIV in the retrospective cohort (N=1610), Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Frequency of interruptions in treatment (IIT)	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Never	739 (45.9%)	664 (45.6%)	75 (48.7%)	276 (50.9%)	66 (38.8%)	184 (39.5%)	213 (49.5%)
Once	499 (31.0%)	454 (31.2%)	45 (29.2%)	176 (32.5%)	40 (23.5%)	150 (32.1%)	133 (30.9%)
More than once	372 (23.1%)	338 (23.1%)	34 (22.1%)	90 (16.6%)	64 (39.8%)	134 (28.6%)	84 (19.5%)

Data source: CTC2 card

KIs qualitatively reported that the distance to health facilities and costs associated with transportation are among the main barriers for retaining pregnant women in treatment.

"Some mothers don't come on their clinic dates as scheduled due to financial hardship. Also, during the rainy season, when rivers overflow, they are unable to come. In such cases, we sometimes have to provide them with 60 days of drugs for their convenience. For those who are breastfeeding, we advise them to have their child's weight measured at the nearest center and then send us the information." ***Healthcare provider***

6.4 HIV VIRAL LOAD AND VIRAL SUPPRESSION

Among retrospective cohort members with an available CTC2 card, 1439 (88.7%) had documentation of at least one HIV viral load (HVL) test and corresponding test results during pregnancy and/or breastfeeding on their CTC2 card. A higher proportion of women attending PEPFAR-supported facilities had documentation of at least one HVL test with results compared to women attending non-PEPFAR supported facilities (90.9% versus 68.6%, respectively). The median number of HVL tests taken among women with at least one HVL test was three. This was higher at PEPFAR-supported facilities (four) compared to non-PEPFAR supported facilities (three) (

Table 22).

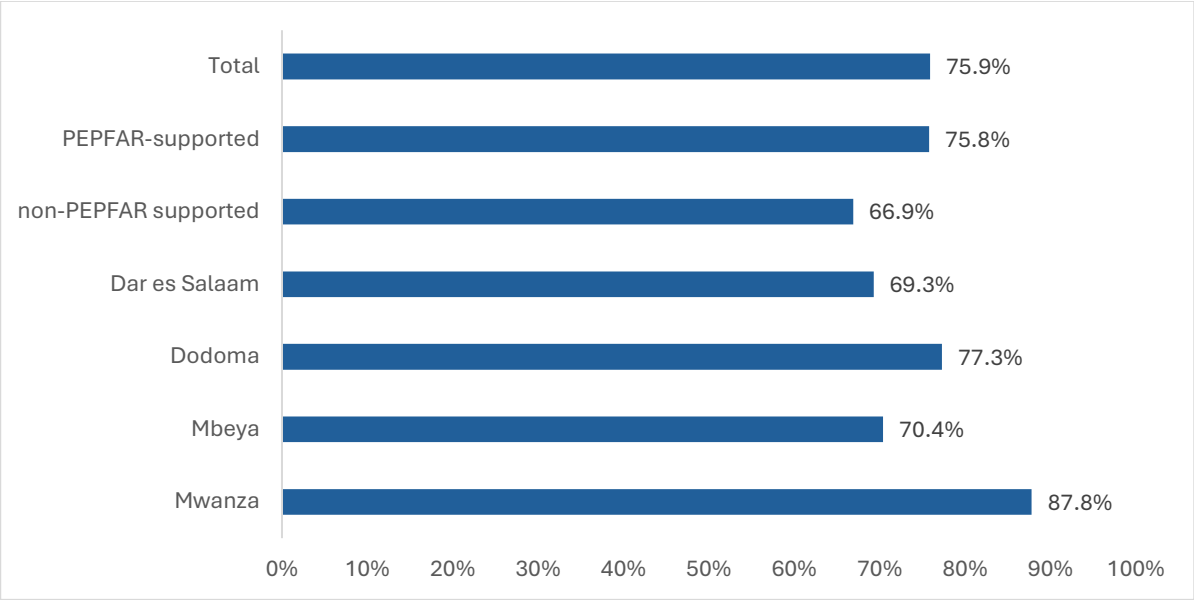

Figure 10: Proportion of women in the retrospective cohort who have documentation of at least one HIV viral load test and result during pregnancy or breastfeeding for whom all HIV viral load results are <50 copies/mL, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Among women who had documentation of HVL results during pregnancy and/or breastfeeding, 1295 (90.0%) were virally suppressed at <1,000 copies/mL on all tests while 1081 (75.1%) were suppressed at <50 copies/ mL on all tests. However, 117 (8.1%) women had at least one HVL result that was not suppressed (≥1,000 copies/mL) while 27 (1.9%) were unsuppressed on all of their HVL test results. When comparing PEPFAR supported and non-supported facilities as well as across regions, the starkest contrast was in HVL suppression at <50 copies/mL. A higher proportion of women had all HVL results suppressed at <50 copies/mL at PEPFAR-supported facilities compared to non-PEPFAR supported facilities (75.8% versus 66.9%, respectively). Mwanza and Dodoma had the highest levels of viral suppression at <50 copies/mL (87.8% and 77.3%, respectively) (

Table 22).

We compared the first and last HVL results among women who had two or more documented HVL results. Among 1,006 women whose first HVL result was suppressed at <50 copies/mL, 91.7% were still suppressed at <50 copies/mL on their last HVL result. However, 6.2% had moved into the LLV range and 2.1% had become unsuppressed. Among 84 women whose first HVL result was in the low-level viremia (LLV) range (50-999 copies/mL), 79.8% were suppressed at <50 copies/mL on their last HVL test, 14.3% still had LLV, and 5.9% had become unsuppressed. Finally, among 64 women whose first HVL test was unsuppressed, 14.1% were in the LLV range on their last test, 70.3% had become suppressed at <50 copies/mL, and 15.6% remained unsuppressed (

Table 22).

Table 22: HIV viral load suppression among retrospective cohort members with documentation of at least one HIV viral load test and corresponding result during pregnancy and/or breastfeeding, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Women with an available CTC2 card	1622	1463	159	545	171	471	435
Women who have documentation in their CTC2 card of at least one HIV viral load test with results during pregnancy and breastfeeding [N=1622]	1439 (88.7%)	1330 (90.9%)	109 (68.6%)	521 (95.6%)	132 (77.2%)	416 (88.3%)	370 (85.1%)
HIV viral load results [N=1439]							
Women for whom all HIV viral load results were suppressed (<50 copies/mL)	1081 (75.1%)	1008 (75.8%)	73 (66.9%)	361 (69.3%)	102 (77.3%)	293 (70.4%)	352 (87.8%)
Women for whom all HIV viral load results were suppressed (<1000 copies/mL)	1295 (90.0%)	1202 (90.4%)	93 (85.3%)	455 (87.3%)	119 (90.1%)	372 (89.4%)	349 (94.3%)
Women who had at least one HIV viral load result that was not suppressed (≥1000 copies/mL)	117 (8.1%)	104 (7.8%)	13 (11.9%)	56 (10.7%)	8 (6.1%)	34 (8.2%)	19 (5.2%)
Women for whom all HIV viral load results were not suppressed (≥1000 copies/mL)	27 (1.9%)	24 (1.8%)	3 (2.8%)	10 (2.0)	5 (3.8%)	10 (2.4%)	2 (0.5%)
Final HIV viral load result among women whose first HIV viral load result was suppressed at <50 copies/mL [N=1097]							
Suppressed <50 copies/mL	1006 (91.7%)	949 (92.1%)	57 (86.4%)	380 (89.8%)	78 (87.6%)	276 (92.0%)	272 (95.4%)
Low-level viremia (50-999 copies/mL)	68 (6.2%)	61 (5.9%)	7 (10.6%)	36 (8.5%)	8 (9.0%)	15 (5.0%)	9 (3.2%)
Unsuppressed (≥1000 copies/mL)	23 (2.1%)	21 (2.0%)	2 (3.0%)	7 (1.7%)	3 (3.4%)	9 (3.0%)	4 (1.4%)

	Total	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Final HIV viral load result among women whose first HIV viral load result was low level viremia (50-999 copies/mL) [N=84]							
Suppressed at <50 copies/mL)	67 (79.8%)	62 (82.7%)	5 (55.6%)	30 (85.7%)	3 (75.0%)	25 (75.8%)	9 (75.0%)
Low-level viremia (50-999 copies/mL)	12 (14.3%)	9 (12.0%)	3 (33.3%)	3 (8.6%)	1 (25.0%)	6 (18.2%)	2 (16.7%)
Unsuppressed (≥1000 copies/mL)	5 (5.9%)	4 (5.3%)	1 (11.1%)	2 (5.7%)	0 (0%)	2 (6.1%)	1 (8.3%)
Final HIV viral load result among women whose first HIV viral load result was unsuppressed (≥1000 copies/mL) [N=64]							
Suppressed at <50 copies/mL	45 (70.3%)	39 (67.2%)	6 (100%)	19 (67.9%)	3 (60.0%)	16 (72.7%)	7 (77.8%)
Low-level viremia (50-999 copies/mL)	9 (14.1%)	9 (15.5%)	0 (0%)	6 (21.4%)	0 (0%)	2 (9.1%)	1 (11.1%)
Unsuppressed (≥1000 copies/mL)	10 (15.6%)	10 (17.3%)	0 (0%)	3 (10.7%)	2 (40.0%)	4 (18.2%)	1 (11.1%)

Data source: CTC2 card

7 HIV-EXPOSED INFANT SERVICES

In Tanzania, services provided to HIV-exposed infants are documented in two tools: the HEI card and the MC cohort register. The following analysis of HEI services was done with both data sources individually.

7.1 DOCUMENTATION OF HIV-EXPOSED INFANTS

Of the 2,260 women in the retrospective cohort, 71.7% had a record in the MC cohort register. Among those, 76.6% had documentation of a live birth. Still births and abortions were documented at 1.7% and 3.8%, respectively, while 17.9% of women had no documentation of a pregnancy outcome. The proportion of women missing a pregnancy outcome was higher at non-PEPFAR supported facilities (24.5%) compared with those supported by PEPFAR (17.2%) (Table 23).

HEI cards were available for 1,226 infants, representing 75.6% of women who had an available CTC2 card. It is standard practice for HEI cards to be stored within the mother's CTC2 file at the facility (Table 23).

Table 23: Documentation of pregnancy outcomes in the mother-child cohort register and available HIV-exposed Infants cards among members of retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Number of women in retrospective cohort	2260 (100%)	1971 (87.2%)	289 (12.8%)	755 (33.4%)	260 (11.5%)	623 (27.6%)	622 (27.5%)
Number of women with record in MC cohort register	1620 (71.7%)	1461 (74.2%)	159 (55.0%)	579 (76.7%)	144 (55.4%)	499 (80.1%)	398 (64.0%)
Pregnancy outcome in MC cohort register [N=1620]							
Live birth	1241 (76.6%)	1127 (77.1%)	114 (71.7%)	438 (75.6%)	117 (80.7%)	401 (80.4%)	285 (71.6%)
Still birth	28 (1.7%)	24 (1.6%)	4 (2.5%)	13 (2.3%)	2 (1.4%)	7 (1.4%)	6 (1.5%)
Abortion	61 (3.8%)	59 (4.0%)	2 (1.3%)	23 (4.0%)	5 (3.5%)	16 (3.2%)	17 (4.3%)
Not documented	290 (17.9%)	251 (17.2%)	39 (24.5%)	105 (18.1%)	20 (13.9%)	75 (15.0%)	90 (22.6%)
Woman's CTC2 card was available	1622 (71.8%)	1463 (74.2%)	159 (55.0%)	545 (72.3%)	171 (65.8%)	471 (75.6%)	435 (69.9%)
HEI card available among women with a CTC2 card	1226 (75.6%)	1126 (77.0%)	100 (62.9%)	436 (80.0%)	119 (70.0%)	376 (79.8%)	295 (67.8%)

7.2 ANTI-RETROVIRAL PROPHYLAXIS AT BIRTH

Of 1,230 infants with available HEI cards, 1,131 (92.0%) had documentation indicating they received ARV prophylaxis at birth, 17 (1.4%) had documentation stating they were not given ARV prophylaxis at birth, and 82 (6.7%) had no documentation either way. Documentation on the HEI card of infants receiving ARV prophylaxis at birth was higher at PEPFAR-supported facilities than non-PEPFAR supported facilities (93.6% versus 85.0%), with a higher proportion of non-PEPFAR supported facilities having no documentation of whether an infant did or did not receive ARVs at birth compared to PEPFAR-supported facilities (13.0% versus 6.1%, respectively). The highest proportion of HEI who had documentation of receiving ARV prophylaxis at birth was in Dar es Salaam (95.0%) and Mbeya (94.7%). Mwanza had the highest proportion of missing information (14.5%) (Table 24).

Of 1,241 infants with documentation of a live birth in the MC cohort register, similar proportions had documentation indicating they received ARV prophylaxis at birth (91.3%), documentation stating they were not given ARV prophylaxis at birth (2.3%), and missing documentation (6.4%). As seen with the HEI card, a higher proportion of HEI were missing documentation of receiving ARV prophylaxis in non-PEPFAR supported facilities (19.3%) compared to PEPFAR-supported facilities (5.1%). There were also notable differences between the number of HEI with documentation of not receiving ARVs at birth between the two data sources (Table 24).

Table 24: Documentation of anti-retroviral prophylaxis at birth among HIV-exposed infants in the HIV-exposed infant card and the mother-child cohort register, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
HIV-exposed infant card							
Infants with available HIV-exposed infant card	1230 (100%)	1130 (91.9%)	100 (8.1%)	437 (35.5%)	120 (9.8%)	376 (30.6%)	297 (24.1%)
Anti-retroviral prophylaxis at birth (HIV-exposed infant card)							
Received anti-retroviral prophylaxis	1131 (92.0%)	1046 (93.6%)	85 (85.0%)	415 (95.0%)	110 (91.7%)	356 (94.7%)	250 (84.2%)
Did not receive anti-retroviral prophylaxis	17 (1.4%)	15 (1.3%)	2 (2.0%)	1 (0.2%)	6 (5.0%)	6 (1.6%)	4 (1.3%)
Not documented	82 (6.7%)	69 (6.1%)	13 (13.0%)	21 (4.8%)	4 (3.3%)	14 (3.7%)	43 (14.5%)
Mother-child cohort register							
Infants with record in mother-child cohort register	1241 (100%)	1127 (90.8%)	114 (9.2%)	438 (35.3%)	117 (9.4%)	401 (32.3%)	285 (23.0%)
Anti-retroviral prophylaxis at birth (mother-child cohort register)							

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Received anti-retroviral prophylaxis	1133 (91.3%)	1047 (92.9%)	86 (75.4%)	397 (90.6%)	105 (89.7%)	376 (93.8%)	255 (89.5%)
Did not receive anti-retroviral prophylaxis	29 (2.3%)	23 (2.0%)	6 (5.3%)	12 (2.7%)	3 (2.6%)	8 (2.0%)	6 (2.1%)
Not documented	79 (6.4%)	57 (5.1%)	22 (19.3%)	29 (6.6%)	9 (7.7%)	17 (4.2%)	24 (8.4%)

Data source: HIV-exposed infant card and mother-child cohort register

KIs qualitatively gave several reasons as to why some infants do not receive ARV prophylaxis at birth, including stockouts of nevirapine at the facility. One DRCH-Co, in particular, reported that providers at the health facility face challenges in forecasting and ordering supplies in a timely manner which can lead to stock-outs. Another contributing factor was reported to be mothers who deliver at different facilities from where they enroll in PMTCT, especially when the mother does not disclose her HIV status to healthcare providers during delivery.

> *"…Some centers lack skills or timely forecasting on ordering high-risk infants' ARV prophylaxis, resulting in the absence of drugs for high-risk infants….staff shortages and limited understanding of some healthcare providers."* ***DRCH-Co***

7.3 COTRIMOXAZOLE PROPHYLAXIS

Overall documentation of receipt of cotrimoxazole prophylaxis (CTX) among HEI differed only slightly between the HEI card and the MC cohort register. Of the 1,230 infants with a HEI card, 1,147 (93.3%) had documentation that they received CTX prophylaxis. Of these, 967 (84.3%) initiated prophylaxis at aged 2 months or younger, as per Government of Tanzania guidelines. Of the 1,241 infants documented in the MC cohort register, 1,156 (93.2%) had documentation that they received CTX prophylaxis with 1,098 (95.0%) of those initiated at aged 2 months or younger (Table 25).

The completeness of the documentation differed between PEPFAR-supported and non-PEPFAR supported facilities. In non-PEPFAR supported sites, 14.0% of HEI had no documentation of CTX initiation in the HEI card compared to 4.2% of PEPFAR-supported sites. Similarly, in the MC cohort register, 21.1% of HEI at non-PEPFAR supported sites were missing documentation of CTX initiation compared to 5.4% at PEPFAR-supported sites (Table 25).

There were also notable discrepancies between the two sources regarding the age at which HEI initiated CTX prophylaxis, with higher proportions documented as initiating CTX prophylaxis at aged 2 months or younger in the MC cohort register (95.0%) than in the HEI card (84.3%) (Table 25).

Table 25: Documentation of cotrimoxazole prophylaxis among HIV-exposed infants in the HIV-exposed infant card and the mother-child cohort register, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
HIV-exposed infant card							
Infants with available HIV-exposed infant card	1230 (100%)	1130 (91.9%)	100 (8.1%)	437 (35.5%)	120 (9.8%)	376 (30.6%)	297 (24.1%)
cotrimoxazole at birth (HIV-exposed infant card)							
Received cotrimoxazole	1147 (93.3%)	1064 (94.2%)	83 (83.0%)	426 (97.5%)	114 (95.0%)	327 (87.0%)	280 (94.3%)
Did not receive cotrimoxazole	22 (1.8%)	19 (1.7%)	3 (3.0%)	2 (0.5%)	0 (0%)	15 (4.0%)	5 (1.7%)
Not documented	61 (4.9%)	47 (4.2%)	14 (14.0%)	9 (2.1%)	6 (5.0%)	34 (9.0%)	12 (4.0%)
Age during cotrimoxazole initiation (HIV-exposed infant card)							
<2 months	967 (84.3%)	897 (84.3%)	70 (84.3%)	389 (91.3%)	78 (68.4%)	279 (85.3%)	221 (78.9%)
2–12 months	174 (15.2%)	161 (15.1%)	13 (15.7%)	34 (8.0%)	36 (31.6%)	45 (13.8%)	59 (21.1%)
>12 months	6 (0.5%)	6 (0.6%)	0 (0%)	3 (0.7%)	0 (0%)	3 (0.9%)	0 (0%)
Mother-child cohort register							
Infants with record in mother-child cohort register	1241 (100%)	1127 (90.8%)	114 (9.2%)	438 (35.3%)	117 (9.4%)	401 (32.3%)	285 (23.0%)
Cotrimoxazole at birth (mother-child cohort register)							
Received cotrimoxazole	1156 (93.2%)	1066 (94.6%)	90 (78.9%)	419 (95.7%)	105 (89.7%)	378 (94.3%)	254 (89.1%)
Not documented	85 (6.8%)	61 (5.4%)	24 (21.1%)	19 (4.3%)	12 (10.3%)	23 (5.7%)	31 (10.9%)
Age during cotrimoxazole initiation (mother-child cohort register)							
<2 months	1098 (95.0%)	1025 (96.1%)	73 (81.1%)	406 (96.9%)	93 (88.6%)	364 (96.3%)	235 (92.5%)
>2 months	58 (5.0%)	41 (3.9%)	17 (18.9%)	13 (3.1%)	12 (11.4%)	14 (3.7%)	19 (7.5%)

Data source: HIV-exposed infant card and mother-child cohort register

KIs qualitatively reported that the prescription of cotrimoxazole prophylaxis was high. However, the dispensing of CTX was not straightforward as some mothers cannot afford to purchase the prescribed medicine.

> *" ….CTX has become a significant issue here; we have been out of cotrimoxazole (CTX) for a long time, almost 2 years now. We advise mothers to buy Septrine, but there's no way for us to confirm if they actually purchase it."* ***RCH In-charge***

7.4 INFANT FEEDING PRACTICES AT BIRTH

Among 1,230 HEI with available HEI cards, 92.5% had documentation of exclusive breastfeeding at birth, in line with WHO recommendations. Fewer than 1% were reported to have received alternative feeding practices (e.g., formula or mixed feeding). Documentation of feeding practices was lacking for 6.7% of infants (Table 26).

Table 26: Documented infant feeding practices at birth among women living with HIV in the retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Exclusive breastfeeding (EBF)	1138 (92.5%)	1048 (92.7%)	90 (90.0%)	418 (95.6%)	112 (93.3%)	347 (92.3%)	261 (87.9%)
Replacement feeding (RF)	6 (0.4%)	6 (0.5%)	0 (0%)	5 (1.1%)	0 (0%)	0 (0%)	1 ()
Mixed feeding (MF)	2 (0.2%)	2 (0.2%)	0 (0%)	2 (0.5%)	0 (0%)	0 (0%)	0
Breastfeeding and food (BF+)	1 (0.1%)	0 (0%)	1 (1.0%)	0 (0%)	0 (0%)	1 (0.3%)	0
Breastfeeding (BF)	1 (0.1%)	1 (0.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
Blank	82 (6.7%)	73 (6.5%)	9 (9.0%)	12 (2.8%)	8 (6.7%)	28 (7.4%)	34

Data source: HEI card

7.5 HIV-EXPOSED INFANT ADHERENCE TO SCHEDULED VISITS

National guidelines indicate that HEI should attend clinic appointments every month to receive services. In this analysis, we identified the number of visits that infants were supposed to complete up to 18 months of age, when they would be eligible to have a final outcome. For those infants who did not reach 18 months of age during the analysis period, we computed the number of expected visits up to the date of data abstraction. The percentage of expected visits attended was calculated by dividing the number of visits documented in the HEI card by the total number of expected visits. Infants were considered to have attended all scheduled visits if the number of visits documented in the HEI card matched the expected number of visits. Of note, four infants had their registration information documented at the top of the HEI card but lacked information in the visits section. These infants were assigned zero visits.

Overall, HEI attendance at expected clinic appointments was low. Among 1,230 HEI with available HEI cards only 134 (10.9%) attended all expected visits. Nearly three-quarters (74.3%) attended at least half of their required visits but not all. Performance varied between PEPFAR-supported and non-PEPFAR supported facilities. A higher proportion of HEI attended at least half of expected visits at PEPFAR supported sites compared to non-PEPFAR-supported sites (86.3% versus 77.0%, respectively). HEI attendance also varied by region. Three-quarters (75.0%) of HEI attended at least half of expected visits in Dodoma, the region with the lowest proportion in this category (Table 27).

Table 27: HIV-exposed infant attendance at scheduled clinic visits, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Infants with available HIV-exposed infant card	1230 (100%)	1130 (91.9%)	100 (8.1%)	437 (35.5%)	120 (9.8%)	376 (30.6%)	297 (24.1%)
Percent of expected visits attended							
0% of visits	4 (0.3%)	3 (0.3%)	1 (1.0%)	0 (0%)	2 (1.7%)	0 (0%)	2 (0.7%)
<50% of visits	178 (14.5%)	155 (13.7%)	23 (23.0%)	51 (11.7%)	30 (25.0%)	49 (13.0%)	48 (16.2%)
≥50% but <100% of visits	914 (74.3%)	847 (74.9%)	67 (67.0%)	318 (72.8%)	85 (70.8%)	281 (74.7%)	230 (77.4%)
All required visits (100%)	134 (10.9%)	125 (11.1%)	9 (9.0%)	68 (15.5%)	3 (2.5%)	46 (12.3%)	17 (5.7%)

Data source: HIV-exposed infant card

KIs qualitatively reported that geographical distance to health facilities, fear of stigma, and limited resources, including lack of money for transportation and not having access to a phone to receive reminders about upcoming appointments, contribute to mothers not bringing their infants for scheduled visits. They also cited facilities not having phones to use to call mothers to remind them of appointments as a barrier. Notably, early HEI registration (an initiative to register all HEI within 7 days of birth) and interventions involving peer support among mothers were cited as enhancing attendance and reducing the risk of children being lost to follow-up.

> *"……Lack of resources to follow up the mothers and children for instance. Here we use our own phones, but we aren't even provided with mobile credit……The lack of motivation needs to be addressed and motivation increased…"* ***PMTCT in-charge***

> *"…… Early HEI registration greatly helps in preventing children from being lost to follow-up. The Ministry should continue to improve services as currently we are in a really good place..."* ***PMTCT in-charge***

7.6 HIV TESTING AMONG HIV-EXPOSED INFANTS

7.6.1 HIV TESTING AT BIRTH AMONG HIGH-RISK INFANTS

HIV-exposed infants are categorized as either high-risk or low-risk based on maternal risk stratification criteria which consider the timing of a mother's HIV diagnosis in relation to her pregnancy, her HIV viral load, and her adherence to ART. Government of Tanzania guidelines recommend HIV testing at birth for infants classified as high-risk. We used data from the CTC2 cards of women in the retrospective cohort to determine whether their infants should have been classified as high-risk or low-risk and compared that to the information documented on the infant's HEI card.

Among infants of retrospective cohort members who had an available HEI card, only 50 (4.1%) were documented as high-risk, while 865 (70.3%) were documented as low-risk and 315 (25.6%) had no documentation of risk categorization. However, considering results from the mother's HVL tests done during pregnancy and the timing of their HIV diagnosis, we determined that 436 (35.4%) infants met the criteria to be categorized as high-risk. The proportion of infants who met the criteria to be categorized as high-risk based on the mother's history was higher in non-PEPFAR supported facilities compared to PEPFAR-supported facilities (62.0% and 33.1%, respectively). Of the four regions included in the assessment, Dodoma had the highest proportion of infants eligible for high-risk categorization (50.0%) as well as the highest proportion of infants for whom no risk categorization was documented on their HEI card (80.8%).

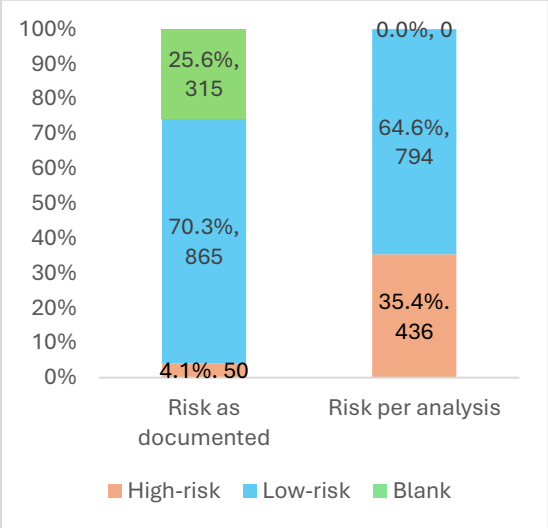

Figure 11: Documentation of infant risk in HIV-exposed infant card versus computed risk based on analysis of mother's diagnosis and treatment history, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Among the 436 infants we identified as high-risk based on the mothers' records, only 6 (1.4%) had documentation of being tested for HIV at birth (Table 28).

Table 28: Risk classification of HIV-exposed infants and DNA PCR testing among high-risk infants, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Infants with available HIV-exposed infant card	1230 (100%)	1130 (91.9%)	100 (8.1%)	437 (35.5%)	120 (9.8%)	376 (30.6%)	297 (24.1%)
Infant risk at birth as documented on HIV-exposed infant card							
High-risk	50 (4.1%)	47 (4.2%)	3 (3.0%)	8 (1.8%)	2 (1.7%)	20 (5.3%)	20 (6.7%)
Low-risk	865 (70.3%)	815 (72.1%)	50 (50.0%)	305 (69.8%)	21 (17.5%)	322 (85.6%)	217 (73.1%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Blank	315 (25.6%)	268 (23.7%)	47 (47.0%)	124 (28.4%)	97 (80.8%)	34 (9.1%)	60 (20.2%)
Infant risk at birth as determined through analysis of mothers' record							
High-risk	436 (35.4%)	374 (33.1%)	62 (62.0%)	157 (35.9%)	60 (50.0%)	125 (33.2%)	94 (31.7%)
Low-risk	794 (64.6%)	756 (66.9%)	38 (38.0%)	280 (64.1%)	60 (50.0%)	251 (66.8%)	203 (68.3%)
DNA PCR among high-risk (determined through analysis) HIV-exposed infants							
At birth	6 (1.4%)	5 (1.3%)	1 (1.6%)	0 (0%)	0 (0%)	4 (3.2%)	2 (2.1%)
Not at birth / not documented	430 (98.6%)	369 (98.7%)	61 (98.4%)	157 (100%)	60 (100%)	121 (96.8%)	92 (97.9%)

Data source: CTC2 card / HEI card

KIs qualitatively reported a challenge in providers distinguishing between high-risk and low risk infants primarily arising from inadequate documentation. Being unable to categorize an infant as high or low risk means providers cannot identify which infants should be tested for HIV at birth.

> *"…… There are few facilities that have issues in HEI card documentation. Identifying these children in high or low-risk groups is a challenge, especially for those who are relocating from other areas. To address this, it is crucial to ensure there is effective communication between health facilities. Sometimes it's essential to inquire about their medical history and previous testing when they move to try to determine their risk...."* ***DRCH-Co***

7.6.2 FIRST HIV TEST AMONG HIV-EXPOSEDS INFANTS

We analyzed documentation of HIV testing among HEI, both in the HEI card and the MC cohort register.

Among 1,230 infants of retrospective cohort members who had an available HEI card, the majority (97.1%) had documentation of at least one DNA PCR test for HIV. Only a small percentage (2.9%) had no documentation of an HIV test. Among those with at least one DNA PCR test, 973 (79.1%) had their first test at aged 2 months or younger, as recommended by Government of Tanzania guidelines. The majority of the remaining infants (n=189; 15.4%) tested between 2–12 months while 32 (2.6%) tested after 12 months (Table 29).

Of 1,241 infants with records in the MC cohort register, 1180 (95.1%) had at least one DNA PCR test for HIV, while 61 (4.9%) lacked documentation of being tested. Among those tested, 1030 (83.0%) were tested at aged 2

months or younger, 56 (4.5%) were tested between 2–12 months, 7 (0.6%) were tested after 12 months, and 87 (7.0%) were tested but the age at which the testing was conducted was not documented (Table 29).

There was a notable disparity in the proportion of infants tested at aged 2 months or younger between PEPFAR-supported facilities and non-PEPFAR-supported facilities in both data sources and performance varied across regions. Dodoma had the lowest proportion of HEI tested at aged 2 months or younger, both in the HEI card (56.7%) and the MC cohort register (65.8%). The highest proportions of HEI tested at aged 2 months or younger were in Dar es Salaam at 90.9% in the HEI card and 85.6% in the MC cohort register (Table 29).

Table 29: Age at first HIV test among HIV-exposed infants, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Infants with available HIV-exposed infant card	1230 (100%)	1130 (91.9%)	100 (8.1%)	437 (35.5%)	120 (9.8%)	376 (30.6%)	297 (24.1%)
Age at first HIV test in HIV-exposed infant card							
<2 months	973 (79.1%)	908 (80.4%)	65 (65.0%)	397 (90.9%)	68 (56.7%)	309 (82.2%)	199 (67.0%)
2–12 months	189 (15.4%)	167 (14.8%)	22 (22.0%)	26 (5.9%)	44 (36.7%)	53 (14.1%)	66 (22.2%)
>12 months	32 (2.6%)	31 (2.7%)	1 (1.0%)	9 (2.1%)	3 (2.5%)	5 (1.3%)	15 (5.1%)
Blank	36 (2.9%)	24 (2.1%)	12 (12.0%)	5 (1.1%)	5 (4.1%)	9 (2.4%)	17 (5.7%)
Infants with record in mother-child cohort register	1241 (100%)	1127 (90.8%)	114 (9.2%)	438 (35.3%)	117 (9.4%)	401 (32.3%)	285 (23.0%)
Age at first HIV test in mother-child cohort register							
<2 months	1030 (83.0%)	965 (85.6%)	65 (57.0%)	375 (85.6%)	77 (65.8%)	342 (85.3%)	236 (82.8%)
2–12 months	56 (4.5%)	51 (4.5%)	5 (4.4%)	10 (2.3%)	16 (13.6%)	17 (4.2%)	13 (4.6%)
>12 months	7 (0.6%)	5 (0.4%)	2 (1.7%)	3 (0.7%)	0 (0%)	2 (0.5%)	2 (0.7%)
No age documented	87 (7.0%)	64 (5.7%)	23 (20.2%)	35 (8.0%)	12 (10.3%)	27 (6.7%)	13 (4.5%)
Blank	61 (4.9%)	42 (3.7%)	19 (16.7%)	15 (3.4%)	12 (10.3%)	13 (3.2%)	21 (7.4%)

Data source: HIV-exposed infant card and mother-child cohort register

KIs qualitatively reported that HEI are not tested due to test kit unavailability, limited capacity of providers to take the required samples, long distances to health facilities for the mothers, mothers moving to new facilities, and transportation costs.

> *"We do not have enough staff to support DBS collection. Also, we do not understand most of the guidelines on DBS Collection. We were trained to collect DBS; however, we are not very knowledgeable on many issues. for example, I am hearing HEI Card and registers today for the first time. ..."* ***PMTCT-in-charge***

> *"There is a shortage of providers who are capable of collecting DBS since it is taken at the heel. Most of our providers do not have the capacity to do that. As I said earlier there is a challenge with DBS kit availability and sometimes we fail to collect DBS due to kits not being available. Also, the turn-around time is so long."* ***PMTCT-in-charge***

7.7 HIV-EXPOSED INFANT FINAL HIV OUTCOMES

We analyzed final outcomes for HEI born to retrospective cohort members who reached at least 18 months of age during the analysis period, or who had stopped breastfeeding at least 3 months prior to analysis. Infants who tested HIV positive or passed away before reaching 18 months were also included as having a final outcome (Table 30).

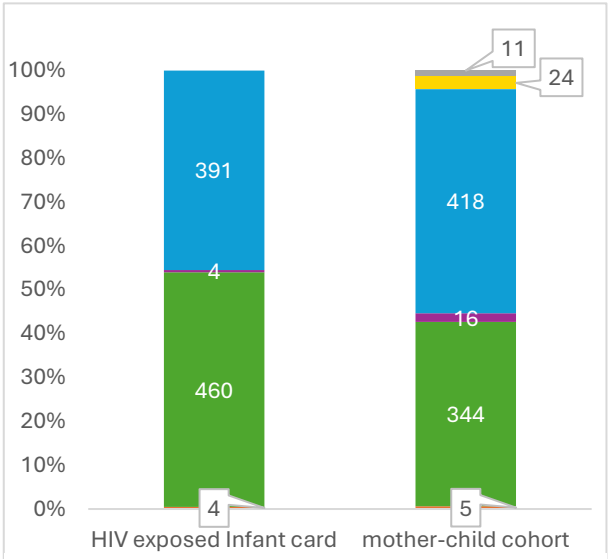

Figure 12: Documentation of HIV exposed infants' final outcomes in HIV-exposed infant cards versus mother-child cohort register, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Among 1,230 infants with HEI cards, 859 (69.8%) were expected to have a final outcome The remaining 29.2% were not yet eligible to have a final outcome eligibility because they were younger than 18 months of age and either still breastfeeding or had stopped breastfeeding within 3 months of data collection. Of HEI expected to have a final outcome, nearly half (n=391; 45.5%) had no documentation of a final outcome, while 463 (37.6%) had an HIV-negative final outcome, four (0.5%) died, and four (0.5%) were confirmed HIV positive (**Error! Reference source not found.**; Table 30).

Of the 1,241 infants with information in the MC cohort register, 812 (65.4%) were expected to have a final outcome. Among these, 418 (51.5%) had no documentation of a final outcome, while 344 (42.4%) had an HIV-negative final outcome, 10 (1.2%) died, 24 (2.9%) transferred out, 11 (1.4%) were lost to follow-up, and 5 (0.6%) were confirmed HIV positive (**Error! Reference source not found.**; Table 30).

For both data sources, a higher proportion of HEI were missing documentation of a final outcome in non-PEPFAR supported facilities compared to PEPFAR-supported facilities (HEI card: 55.3% versus 44.6%, respectively; MC cohort register: 58.2% versus 50.8%, respectively) (Table 30).

Among the four infants with a documented HIV-positive final outcome in the HEI card, only one had a matching HIV-positive final outcome in the MC cohort register. One had a record in the MC cohort register but had no documented final outcome and two did not have records in the MC cohort register. Among the five infants with an HIV-positive final outcome in the MC cohort register, one had a matching HIV-positive final outcome in the HEI card. Two did not have a documented outcome in their HEI card and two did not have a HEI card. Among the four infants documented as living with HIV in their HEI card, one had a recorded CTC ID, indicating that this baby was linked to ART. Of the five infants with an HIV-positive outcome in the MC cohort register, three had documented CTC IDs.

Table 30: Final outcomes among HIV-exposed infants, retrospective cohort, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Infants with available HIV-exposed infant card	1230 (100%)	1130 (91.9%)	100 (8.1%)	437 (35.5%)	120 (9.8%)	376 (30.6%)	297 (24.1%)
Infants with available HIV-exposed infant card who were eligible for a final outcome	859 (69.8%)	783 (69.3%)	76 (76.0%)	302 (69.1%)	76 (63.3%)	283 (75.3%)	198 (66.7%)
Final outcome in HIV-exposed infant card							
HIV-positive	4 (0.5%)	2 (0.3%)	2 (2.6%)	2 (0.7%)	1 (1.3%)	0 (0%)	1 (0.5%)
HIV-negative	460 (53.5%)	428 (54.7%)	32 (42.1%)	189 (62.6%)	33 (43.4%)	124 (43.8%)	114 (57.6%)
Died	4 (0.5%)	4 (0.5%)	0 (0%)	1 (0.3%)	0 (0%)	1 (0.4%)	2 (1.0%)
Blank	391 (45.5%)	349 (44.6%)	42 (55.3%)	110 (36.4%)	42 (55.3%)	158 (55.8%)	81 (40.9%)
Infants with record in mother-child cohort register	1241 (100%)	1127 (90.8%)	114 (9.2%)	438 (35.3%)	117 (9.4%)	401 (32.3%)	285 (23.0%)
Infants with record in mother-child cohort register who were eligible for a final outcome	818 (65.9%)	739 (65.6%)	79 (69.3%)	263 (60.1%)	67 (57.3%)	301 (75.1%)	187 (65.6%)
Final outcome in mother-child cohort register							
HIV-positive	5 (0.6%)	4 (0.5%)	1 (1.3%)	0 (0%)	1 (1.5%)	2 (0.7%)	2 (1.1%)
HIV-negative	344 (42.1%)	315 (42.9%)	29 (36.7%)	108 (41.4%)	25 (37.3%)	127 (42.8%)	84 (44.9%)
Died	16 (2.0%)	14 (1.9%)	2 (2.5%)	3 (1.1%)	0 (0%)	8 (2.6%)	5 (2.7%)
Transferred out	24 (2.9%)	24 (3.3%)	0 (0%)	6 (2.3%)	2 (3%)	11 (3.6%)	5 (2.7%)

	Total n (%)	PEPFAR Supported n (%)	Non-PEPFAR Supported n (%)	Dar es Salaam n (%)	Dodoma n (%)	Mbeya n (%)	Mwanza n (%)
Lost to follow-up	11 (1.3%)	10 (1.4%)	1 (1.3%)	3 (1.1%)	3 (4.5%)	2 (0.7%)	3 (1.6%)
No final outcome documented	418 (51.1%)	372 (50.8%)	46 (58.2%)	143 (54.8%)	36 (53.7%)	151 (50.2%)	88 (47.0%)

Data source: HIV-exposed infant card and mother-child cohort register

Qualitative interviews revealed that poor documentation of final outcomes and lack of testing for final outcomes can be attributed to several factors including frequent relocation of mothers, excessive workloads for healthcare staff, disorganized record-keeping systems that hinder retrieval of records during a mothers' visit, the distance to health facilities for women to travel, and the associated transportation costs.

"Challenges in documenting the HEI card and cohort, especially during the confirmatory test, due to file retrieval failures…" ***DRCHCo***

"Challenge of the confirmatory test at 18 months is due to mothers' mobility. Sometimes there's a shortage of DBS, and they opt to test a younger child rather than the confirmatory one ..." ***DRCHCo***

8 DATA TRIANGULATION FINDINGS

8.1 HIV TESTING SERVICES

Overall and in all regions except for Dodoma, the aggregate number of first HIV tests at ANC decreased from what was recounted in the facility registers (overall 33,352), to what was in the facility reports (overall 32,258), to what was reported in DHS2 (overall 31,970). This represents an underreporting of 1,382 tests in DHIS2 corresponding to 4.1% of the tests recorded in the ANC register. This discrepancy was driven by differences across data sources in Dar es Salaam which had 92% agreement between what was recounted from the ANC register and what was reported in DHIS2 (Table 31).

While the difference between aggregate totals was largely within the defined acceptable range, the analysis of the absolute differences across data sources shows much larger discrepancies. The absolute difference between what was recounted in the facility registers and what was in the facility reports was 5,546 tests, the difference between the facility reports and the DHIS2 reports was 1,706, and the difference between what was recounted in the facility registers and the DHIS2 reports was 5,906 (Table 31).

The second HIV test at ANC had more inconsistencies across data sources compared to the first test. The total values in facility reports (10,592) were higher than what was recounted from registers at ANC (8,576), while the total value in DHIS2 (10,066) was lower than the reports yet still higher than what was recorded in the ANC registers. In all regions, the final value in DHIS2 was higher than what was recounted from facility registers (Table 31).

Table 31: Comparison of first and second HIV test data for months included in the retrospective cohort that were reported in DHIS2, on facility antenatal care report forms, and values recounted from antenatal care registers, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	Regional totals			Simple difference			Absolute difference			Percent agreement based on simple difference*		
	DHIS2	Report	Register	DHIS2 vs report	DHIS2 vs register	Report vs register	DHIS2 vs report	DHIS2 vs register	Report vs register	DHIS2 vs report	DHIS2 vs register	Report vs register
First HIV test												
Dar	11142	11272	12067	-130	-925	-795	794	3089	2693	99%	92%	93%
Mbeya	5737	5645	5848	92	-111	-203	386	1010	1176	102%	98%	97%
Mwanza	9577	9680	9924	-103	-347	-244	215	1091	1046	99%	97%	98%
Dodoma	5514	5661	5513	-147	1	148	311	716	631	97%	100%	103%
Total	31970	32258	33352	-288	-1382	-1094	1706	5906	5546	99%	96%	97%
Second HIV test												
Dar	4633	4989	4345	-356	288	644	356	288	644	93%	**107%**	**115%**
Mbeya	1824	1864	1411	-40	413	453	40	413	453	98%	**129%**	**132%**
Mwanza	2164	2248	1706	-84	458	542	84	458	542	96%	**127%**	**132%**
Dodoma	1445	1491	1114	-46	331	377	46	331	377	97%	**130%**	**134%**
Total	9090	10592	8576	-526	1490	2016	526	1490	2016	86%	**117%**	**124%**

**Green color indicates (±5% difference), Yellow (>5-15% difference) and pale red (>15% difference)*

We analyzed how many facilities in each region had data for the first and second HIV tests an ANC that agreed between data sources, within the defined acceptable range, for all months included in the analysis. Findings are displayed in Table 32. The agreement was higher for the first HIV test than the second HIV test.

Table 32: Number and proportion of facilities in each region whose antenatal care HIV test data agreed for all months included in the analysis within the defined acceptable range, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

	First test			Second test		
Region	**DHIS2 vs Antenatal care report**	**DHIS2 vs Antenatal care register**	**Report vs Antenatal care register**	**DHIS2 vs Antenatal care report**	**DHIS2 vs Antenatal care register**	**Report vs Antenatal care register**
Dar es Salaam	10 (66.7%)	8 (53.3%)	12 (80.0%)	5 (33.3%)	4 (26.7%)	8 (53.3%)
Mbeya	7 (46.7%)	8 (53.3%)	8 (53.3%)	6 (40.0%)	4 (26.7%)	3 (20.0%)
Mwanza	12 (80.0%)	11 (73.3%)	12 (80.0%)	9 (60.0%)	4 (26.7%)	4 (26.7%)
Dodoma	11 (73.3%)	6 (40.0%)	8 (53.3%)	4 (26.7%)	1 (6.7%)	4 (26.7%)

8.2 OTHER KEY ANTENATAL CARE INDICATORS

When comparing the values reported in DHIS2 in the monthly ANC report to values recounted from facility registers across all assessment regions and facilities, the percent agreement on selected indicators ranged from 73% to 121%. The indicators with agreement within the defined acceptable range of plus or minus 5% were: the total number of women attending their first ANC visit, the number of pregnant women who were known HIV positive at their first ANC visit, the number of pregnant women whose partner tested HIV positive during their first HIV test at ANC, the number of pregnant women who tested HIV positive on their second test, and the number of pregnant women who received IPT2. Several indicators were underreported in DHIS2 compared to what was recounted in the registers by more than 5%, including the number of pregnant women who tested HIV positive on their first HIV test (191 in the ANC register compared to 155 in DHIS2) and the number of pregnant women who received infant feeding counselling (915 in the ANC register compared to 664 in DHIS2). The number of pregnant women who received four doses of IPTp was overreported in DHIS2 compared to what was recounted from facility registers (7544 in DHIS2 compared to 6235 in the ANC register) (Table 33).

Table 33 also includes comparisons between the DHIS2 and the ANC report as well as the ANC report versus the ANC register. Individual regional analyses can be found in Appendix H.

Table 33: Comparison of aggregated data from the two most recent reporting months in the retrospective cohort between DHIS2, facility antenatal care report forms, and values recounted from antenatal registers, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, Assessment, 2023

	Aggregated totals			Simple difference			Absolute difference			Percent agreement based on simple difference*		
Indicator	**DHIS2**	**Antenatal care Report**	**Antenatal care register**	**DHIS2 vs antenatal care register**	**DHIS2 vs antenatal care report**	**Antenatal care report vs register**	**DHIS2 vs Antenatal register**	**DHIS2 vs Antenatal care report**	**Antenatal report vs register**	**DHIS2 vs Antenatal care register**	**DHIS2 vs Antenatal care report**	**Antenatal care report vs register**
Total number of pregnant women attending antenatal care visit	53115	53765	49981	3134	-650	3784	6682	2726	5422	106%	99%	108%
Total number of pregnant women attending first antenatal care visit	11133	10994	10967	166	139	27	252	139	135	102%	101%	100%
Number of pregnant women who are known HIV positive before antenatal care visit.	471	470	470	1	1	0	13	3	12	100%	100%	100%
Number of pregnant women who tested HIV positive during first test	155	157	191	-36	-2	-34	42	2	42	81%	99%	82%
Number of pregnant women who are below 25 years old, tested HIV positive (1st test)	38	40	41	-3	-2	-1	15	2	15	93%	95%	98%
Number of pregnant women whose partner tested HIV positive during 1st HIV test at antenatal clinic	28	24	27	1	4	-3	11	4	13	104%	117%	89%
Number of pregnant women and their partners who received discordant results after HIV testing in antenatal clinic	32	34	41	-9	-2	-7	19	2	17	78%	94%	83%
Number of pregnant women who tested HIV positive during a second test	4	4	4	0	0	0	4	2	2	100%	100%	100%
Number of pregnant women who received infant feeding practices counselling	664	1138	915	-251	-474	223	463	618	681	73%	58%	124%
Number of pregnant women who received intermittent preventive treatment dose 2	15637	15481	15119	518	156	362	1084	284	1220	103%	101%	102%
Number of pregnant women who received intermittent preventive treatment dose 4	7544	7440	6235	1309	104	1205	1729	258	1821	121%	101%	119%

**Green color indicates (±5% difference), Yellow (>5-15% difference) and pale red (>15% difference)*

9 CONCLUSIONS AND KEY CONSIDERATIONS

9.1.1 MATERNAL TESTING AND RETESTING

More than one-third of women who participated in the cross-sectional survey reported not knowing their HIV status, whether or not they were living with HIV, prior to their first ANC visit. The retrospective cohort revealed that **nearly one in three pregnant women living with HIV were newly diagnosed at ANC enrollment.** And the majority of newly diagnosed women were enrolling at ANC for their first or second pregnancy. This highlights a gap in diagnosing young women before they become pregnant and enroll in ANC services. There was a notable difference between PEPFAR-supported and non-PEPFAR supported facilities, with a higher proportion of women diagnosed at ANC enrollment at non-PEPFAR supported facilities.

- **Increasing HIV testing among women of child-bearing age before they become pregnant** may lead to earlier HIV diagnosis, safer pregnancies, and ultimately less risk of vertical transmission. These efforts could be especially important in communities served by non-PEPFAR supported facilities.

HIV testing for pregnant women at ANC enrollment was high. However, the proportion of women retested during pregnancy decreased, and the proportion tested during the postpartum period decreased further. Among those not tested during the postpartum period, the majority stated that they were not offered HIV testing. This simultaneously highlights a success in HIV testing at first ANC visit and a gap in maternal retesting.

- Providing **comprehensive training, monitoring, supportive supervision, and coaching and mentorship on maternal retesting** could improve maternal retesting rates. Training sessions that highlight the significance of maternal retesting during pregnancy and breastfeeding, orient providers on the latest guidelines, and include detailed instructions on how to accurately document maternal retesting could strengthen implementation and improve documentation and reporting.
- **Ensuring availability of IEC materials** for pregnant women at all facilities could also increase demand for maternal retesting services.

While very few new HIV diagnoses were identified through third trimester and postpartum testing, maternal retesting was not reaching all eligible women.

- Continuing to monitor seroconversion of PBFW as coverage of maternal retesting increases will provide more complete information about the magnitude of seroconversion and the women most likely to seroconvert.

9.1.2 CARE AND TREATMENT FOR HIV POSITIVE PREGNANT AND BREASTFEEDING WOMEN

Most newly diagnosed pregnant women living with HIV were initiated on ART on same day of diagnosis or within 7 days of diagnosis. However, these findings were **limited to women who initiated ART at the same facility where they attended ANC**, which was not the case for approximately one-quarter of newly diagnosed pregnant women. In this study, it was not possible to verify whether women who were not initiated on ART at the same facility were initiated on ART elsewhere.

- While findings showed strong performance on linkage to ART within the same facility, there was a small gap in initiation on same day of diagnosis or within 7 days. There were also a few reports of some pregnant women living with HIV refusing ART initiation. **Strengthening post-test counseling for newly diagnosed pregnant women living with HIV**, with a specific focus on addressing stigma and other barriers to initiating ART, could increase the proportion of women who initiate ART immediately after diagnosis. One possible strategy would be to provide more comprehensive counseling sessions that not only educate mothers about their diagnosis but also offer support and guidance in overcoming psychological, social, and practical challenges they face in initiating and adhering to ART.
- **Improving tracking and documentation of uptake of ART for PBFW who opt to access ART at a different facility from ANC** could improve data around the proportion of PBFW living with HIV who are on treatment. This could be done by strengthening routine referral and feedback systems to confirm and document ART initiation for newly diagnosed PBFW and by developing standardized guidance for how to document the ART status for PBFW who access ANC while already on ART at a different facility.

Retention on ART among PBFW at the same facility where they started ANC decreased over time, with eight in ten women retained on ART 12 months after their first ANC visit and two-thirds of women retained on ART 18 months after their first ANC visit. There was a notable difference between PEPFAR-supported and non-PEPFAR supported facilities, with PEPFAR-supported facilities having higher rates of retention at all time points assessed. There was also a difference between women who were newly diagnosed with HIV at ANC enrollment and those who had been previously diagnosed, with newly diagnosed women having lower retention at all time points. In addition, **more than half of women in the retrospective cohort experienced an IIT during the follow-up period**, with three in ten having a single interruption and two in ten having multiple interruptions.

- **Strengthening existing and introducing new interventions focused on retaining PBFW living with HIV on ART** could improve retention on ART rates, minimize IITs, and ultimately improve viral suppression. **Providing technical support and resources to ensure implementation of these kinds of interventions at non-PEPFAR supported facilities** could help to close the gap in performance between PEPFAR-supported and non-PEPFAR supported facilities. Strategies to consider include:
    - Emphasizing proper documentation of mothers' home address and phone number
    - Ensuring that facilities have phones to enable staff to send appointment reminders and track mothers who do not come to the facility when expected
    - Supporting scale-up of the Unified Community Solution application (the national electronic data collection system for community health services) which has modules to support tracking of PBFW who have missed an appointment by community health workers and mentor mothers
    - Using outreach modalities to offer PMTCT services, especially in areas where transportation and transport-related costs present a barrier to women accessing services
    - Introducing or expanding existing mentor mother programs to ensure all PBFW living with HIV are linked with a mentor mother
    - Supporting the rapid roll-out of the updated national guidelines allowing for 3-month multi-month dispensing for PBFW who are well-established on ART
- **Further investigating the difference observed in retention between newly diagnosed and previously diagnosed women** living with HIV could provide additional information as to whether this is a true difference in retention or whether there are other factors contributing to the difference.

Viral suppression among PBFW was approaching the UNAIDS 95 target. Nine in ten PBFW living with HIV had at least one HIV VL test during pregnancy or breastfeeding. Among these, nine in ten PBFW living with HIV were virally suppressed at <1,000 copies/mL on all tests while three-quarters had undetectable viral loads at <50 copies/mL on all tests. When comparing the results of a woman's first and last HVL test we observed that a small proportion of women had an increase in their HIV VL. Nearly one in ten women had an undetectable VL on their first test but had a detectable VL by their last test. Two in ten women whose first test was in the LLV range either still had LLV or had become unsuppressed by their last test. And three in ten women whose first VL test was unsuppressed had not achieved an undetectable VL by their last test.

- **Targeting PBFW who are virally unsuppressed and those who have LLV** with interventions to ensure good ART adherence and that they receive HIV VL testing as per the national algorithm could help to bring their viral loads to undetectable levels.
- **Providing technical assistance and resources to non-PEPFAR supported facilities to ensure that PBFW living with HIV are tested for HIV VL** according to national guidelines could improve performance on HVL coverage and suppression at these facilities.

Documentation of PBFW living with HIV and their infants across data sources was a challenge:

- All pregnant women living with HIV should be documented in the MC cohort register, regardless of where they access ART services. However, **three in ten pregnant women living with HIV in the retrospective cohort did not have a record in the MC cohort register** and one of the most common reasons reported by providers was because the woman was on ART at a different facility. These findings highlight a gap in knowledge among providers about who should be documented in the MC cohort register.
- **Three in ten pregnant women living with HIV in the retrospective cohort did not have an available CTC2 card.** While this may be explained by women accessing ART and ANC services at different facilities, it also results in some women having their medical records divided between facilities.
- Among women who had an available CTC2 card, **one-quarter did not have a HEI card for their infant**. This points to challenges with HEI documentation which could have a negative impact on the delivery of high-quality services as well as accurate reporting of HEI services.
  - The movement of mothers during pregnancy as well as mothers accessing ANC and ART services at different facilities can disrupt continuity of care and negatively affect consistency of documentation. **Strengthening the use of the existing referral system and ensuring full utilization of the integrated data management features of the Unified Community Solution to ensure the efficient transfer of crucial medical information between facilities** would enable consistent, high-quality care and improve documentation for individual women across facilities.
  - **Providing on-the-job refresher trainings on how to complete national data collection and reporting tools, as well the importance of data quality**, could improve the accuracy of PMTCT performance indicators.

9.1.3 HIV-EXPOSED INFANT SERVICES AND OUTCOMES

Documentation of ARV and cotrimoxazole prophylaxis among HEI was high. Nine in ten HEI had documentation of receiving ARV prophylaxis at birth. The same proportion had documentation of being prescribed CTX, with

eight in ten of these being prescribed CTX at aged 2 months or younger. However, differences in the timing and documentation of these services were observed between PEPFAR-supported and non-PEPFAR supported facilities. PEPFAR-supported facilities had more timely provision of both ARV and CTX prophylaxis as well as more complete documentation. This highlights a gap at non-PEPFAR supported facilities in the documentation of these services.

- **Using quality improvement strategies to strengthen documentation of ARV and cotrimoxazole prophylaxis, in particular at non-PEPFAR supported facilities, could ensure that they are received by all HEI**. Emphasizing the ideal timing of CTX provision in these strategies could help to ensure all HEI receive CTX at aged 2 months or younger. Coupling these efforts with better education to mothers about the services their babies should receive as well as the timing of these services may help to increase demand.

Correct risk categorization and documentation of HEI risk was an extreme challenge. Fewer than 5% of infants followed in the retrospective cohort who had HEI cards were documented as high-risk. However, when determining their risk status based on the mother's HIV status and HVL test results, more than one-third met the criteria for high-risk. In addition, one-quarter of HEI lacked risk classification. Challenges in being able to correctly identify high-risk HEI was one factor that contributed to very few high-risk HEI being tested for HIV at birth as recommended by national guidelines.

- The Ministry of Health has revised national guidelines to adopt the WHO recommendation for universal HIV testing of all HEI at birth; however, the guidelines have not yet been rolled-out. This new approach should help to address the gap of high-risk HEI not being tested at birth. However, it will still be important for HEI to be correctly categorized as high or low risk to ensure they receive the proper follow-on services. **Developing a thorough training program for healthcare providers and ensuring clear protocols for HEI risk categorization, HEI DBS testing, results interpretation, and follow-up actions** will likely increase the impact of the new guidelines and quality of care for HEI. **Conducting mentorship and coaching sessions with facility staff on HEI risk categorization** could also improve DBS coverage. These skills will be particularly important at non-PEPFAR supported facilities.

Most HEI had documentation of at least one DNA PCR test for HIV. **Approximately eight in ten HEI had their first DNA PCR test within 2 months of birth**, as recommended by national guidelines. There was a large gap between PEPFAR-supported and non-PEPFAR supported facilities, both in testing within 2 months of birth and the completeness of the documentation.

- **Scaling up point of care platforms for HIV early infant diagnosis** could facilitate HIV testing for HEI at all required time points and could help to eliminate challenges related to turn-around time and documentation of results.
- **Regular mentorship and coaching and ensuring availability of DBS sample collection job aids** could help to address knowledge gaps on DBS sample collection and increase the proportion of HEI who are tested for HIV at the appropriate time.

HEI attendance at all expected clinic visits was low. Only one in ten HEI attended all expected clinic visits while three-quarters attended at least half of their required appointments but not all.

- **Improving appointment systems, reminders, and regular counselling for mothers** can enhance clinic attendance among HIV-exposed infants. One-on-one counselling during antenatal and postnatal care could be used to educate mothers about the importance of attending follow-up visits, including risks of HIV transmission to their babies and benefits of early diagnosis. Additionally, addressing barriers like transportation and stigma, and providing emotional support can offer practical solutions to challenges that prevent mothers from bringing their babies for follow-up.
- **Consistent implementation of early HEI registration guidelines** could ensure that all HEI are registered with a health facility within 7 days of birth. This could improve tracking of HEI and this adherence to clinic appointments, early infant diagnosis, and documentation of their final PMTCT outcome.

Documentation of HEI final outcomes was poor. Among HEI who were expected to have a final outcome in their HEI card, approximately half had no final outcome documented. Documentation of individual final outcomes was also inconsistent between data sources with the number of HEI with a final outcome of HIV-positive differing between the HEI card and MC cohort register in three of the four regions included in the assessment. HEI who had a documented HIV-positive final outcome in one data source often did not have an HIV-positive final outcome in the other.

- Developing and implementing **quality improvement strategies to improve client filing systems, strengthen the understanding of the importance of accurate documentation, and strengthening training on how to correctly complete national data collection tools could help to improve the documentation of HEI final outcomes** in the HEI card and the MC cohort register.

9.1.4 ANTENATAL CARE AND PREVENTION OF MOTHER-TO-CHILD TRANSMISSION DATA QUALITY

The quality of routine data was a persistent challenge affecting all parts of the PMTCT cascade. Incomplete data and inconsistencies across data sources were commonly observed. Availability of national tools was a challenge that resulted in one in ten sampled facilities being replaced during data collection. In addition, a number of facilities were using outdated versions of national data collection and reporting tools.

- **Implementing routine external data quality assessments and strengthening continuous data quality checks at the facility level** with a focus on PMTCT and EID data collection and reporting tools could improve the completeness and quality of documentation for these programs. **Including data comparisons between data sources (e.g., comparing a mother's record in the MC cohort register versus her CTC2 card) could help to improve data consistency.**
- **Ensuring that national tools adequately capture all required data elements**, in particular for maternal retesting, will promote improved data quality and data use.
- **Scaling up biometric registration in the CTC2 database and integrating it with the UCS** could enhance the efficiency of information transfer between health facilities and community-based providers. This could improve client identification, facilitate more accurate and timely service documentation, and improve tracking of care continuity.

9.1.5 CROSS-CUTTING ISSUES

Healthcare workers qualitatively reported that **heavy workloads, stockouts of DBS and HIV test kits and medications, and lack of private spaces were barriers to offering critical PMTCT and EID services. Relocation of women during pregnancy, long distances from women's homes to health facilities, and transportation costs**

were cited as challenges that prevented clients from attending all clinic visits and accessing these services. Heavy workloads and gaps in provider knowledge were also cited as factors that contribute to services not being well-documented.

- Ensuring that facilities have **enough private spaces** to conduct HIV testing for all women attending ANC and postnatal care may improve rates of maternal retesting.
- **Providing mentorship and coaching to improve supply chain management skills at the facility level** could help to ensure consistent availability of HIV test kits and EID commodities by giving facility teams the skills to accurately forecast commodity requirements and order supplies in time to avoid stock-outs.
- **Expanding the coverage and increasing the services (HTS, ART refill, DBS testing) available through ANC and PMTCT outreach programs** may help to close some of the gaps in service provision and uptake by making these services available closer to where women live.

10 APPENDICES

10.1 APPENDIX A: PMTCT CASCADE ASSESSMENT QUESTIONS

The full list of questions that this assessment aimed to address, the data sources, and the data collection methods used to answer each question are displayed in the below table.

Question	Data source	Data collection methods
1. **What proportion of pregnant women are screened for HIV during pregnancy, at delivery, and after delivery as per national guidelines?**	• Retrospective cohort • Cross-Sectional	• Data abstraction from ANC and delivery registers • Cross-sectional quantitative interviews
2. **What proportion of newly diagnosed pregnant women living with HIV are linked and adherent to ART services?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, CTC2 cards, and CTC2 DB
3. **What is the extent of attrition and interruptions in treatment along each point in the PMTCT cascade?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB
4. **What are the potential risk factors, including demographic characteristics, and programmatic gaps that contribute to attrition and interruptions in treatment (ITT) along the PMTCT cascade?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB
5. **To what extent do HIV positive pregnant women who experience ITTs return to care and treatment services and what are the implications for their HIV-exposed infants?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB
6. **How complete are infant HIV outcomes resulting from PMTCT services across data sources?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB

7. **What are the differences in final outcomes for HEI whose mothers experience ITT and return to treatment versus those whose mothers experience ITT and do not return to treatment?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB
8. **What are the individual and facility-level factors that contribute to women with a negative first test at ANC not being re-tested for HIV?**	• Cross-sectional • Qualitative KIIs	• Cross-sectional quantitative interviews KIIs with facility staff
9. **What are the challenges to identify and document infants who are exposed to HIV during seroconversion by breastfeeding mothers?**	• Cross-sectional • Qualitative KIIs	• Cross-sectional quantitative interviews KIIs with facility staff
10. **To what extent have data quality and data visualization activities made program evaluation easier or harder?**	• Qualitative KIIs	• KIIs with facility staff and IP staff
11. **What proportion of PBFW have valid HVL results documented at all time points throughout the pregnancy and breastfeeding periods as per national guidelines?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB
12. **What proportion of PBFW maintain HIV viral suppression throughout pregnancy and breastfeeding?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB
13. **What proportion of HIV-exposed infants receive prevention, care, HIV EID test, and treatment services as per national guidelines, including for both low-risk and high-risk infants?**	• Retrospective cohort	• Data abstraction and triangulation from ANC register, MC cohort register, CTC2 cards, and CTC2 DB

10.2 APPENDIX B: LIST OF FACILITIES INCLUDED IN PMTCT CASCADE ASSESSMENT

Table 34 provides the final list of facilities that were included in the PMTCT cascade assessment.

Table 34: Facilities included in Tanzania PMTCT cascade assessment, 2023

SN	REGION	DISTRICT	FACILITY	PEPFAR/NON PEPFAR SUPPORT
1	Dar es Salaam	Dar City Council (Ilala)	Buyuni Dispensary	Supported
2	Dar es Salaam	Dar City Council (Ilala)	Tabata A Dispensary	Supported
3	Dar es Salaam	Dar City Council (Ilala)	Kipawa Dispensary	Unsupported
4	Dar es Salaam	Dar City Council (Ilala)	Mnazi Mmoja Hospital	Supported
5	Dar es Salaam	Ubungo Municipal Council	Sinza Hospital	Supported
6	Dar es Salaam	Ubungo Municipal Council	Mburahati Dispensary	Unsupported
7	Dar es Salaam	Ubungo Municipal Council	St Benedict Hospital	Unsupported
8	Dar es Salaam	Kigamboni Municipal Council	Mji Mwema Dispensary	Supported
9	Dar es Salaam	Kinondoni Municipal Council	Tegeta Mission Dispensary	Supported
10	Dar es Salaam	Kinondoni Municipal Council	Magomeni Health Center	Supported
11	Dar es Salaam	Kinondoni Municipal Council	Kambangwa Health Center	Unsupported
12	Dar es Salaam	Temeke Municipal Council	Maji Matitu Health Center	Supported
13	Dar es Salaam	Temeke Municipal Council	St Francis Xavier Hospital	Supported
14	Dar es Salaam	Temeke Municipal Council	Mbagala Kizuiani Health Center	Supported
15	Dar es Salaam	Temeke Municipal Council	Yombo Vituka Dispensary	Supported
16	Dodoma	Bahi District Council	Makanda Dispensary	Unsupported
17	Dodoma	Bahi District Council	Chimendeli Dispensary	Unsupported
18	Dodoma	Chamwino District Council	Chamwino Health Center	Supported
19	Dodoma	Chamwino District Council	Buigiri Dispensary	Unsupported
20	Dodoma	Dodoma Municipal Council	Chamwino DTC Dispensary	Supported
21	Dodoma	Dodoma Municipal Council	Kikuyu Dispensary	Supported
22	Dodoma	Dodoma Municipal Council	Umati Dispensary	Supported
23	Dodoma	Dodoma Municipal Council	Hombolo Health Center	Supported
24	Dodoma	Dodoma Municipal Council	Ntyuka Dispensary	Unsupported
25	Dodoma	Dodoma Municipal Council	Nala Dispensary	Unsupported
26	Dodoma	Kondoa Town Council	Kondoa District Hospital	Supported
27	Dodoma	Kongwa District Council	Mlali Health Center	Supported
28	Dodoma	Mpwapwa District Council	Mpwapwa District Hospital	Supported
29	Dodoma	Mpwapwa District Council	Rudi Health Center	Supported
30	Dodoma	Mpwapwa District Council	Makole Health Center	Supported
31	Mbeya	Mbeya City Council	Kiwanja Mpaka Health Center	Supported
32	Mbeya	Mbeya City Council	Isyesye Dispensary	Supported
33	Mbeya	Mbeya City Council	Iganzo Dispensary	Unsupported

34	Mbeya	Mbarali District Council	Mbarali Health Center	Supported
35	Mbeya	Mbarali District Council	Chimala Mission Hospital	Supported
36	Mbeya	Mbarali District Council	Kapunga Dispensary	Unsupported
37	Mbeya	Mbarali District Council	Itamboleo Dispensary	Unsupported
38	Mbeya	Chunya District Council	Chalangwa Health Center	Supported
39	Mbeya	Chunya District Council	Sangambi Dispensary	Supported
40	Mbeya	Chunya District Council	Shoga Dispensary	Unsupported
41	Mbeya	Kyela District Council	Kyela District Hospital	Supported
42	Mbeya	Kyela District Council	Ipinda Health Center	Supported
43	Mbeya	Kyela District Council	Njisi Dispensary	Supported
44	Mbeya	Rungwe District Council	Igogwe Mission Hospital	Supported
45	Mbeya	Rungwe District Council	Masebe Dispensary	Unsupported
46	Mwanza	Buchosa District Council	Nyehunge Health Center	Supported
47	Mwanza	Ilemela Municipal Council	Kirumba Dispensary	Supported
48	Mwanza	Ilemela Municipal Council	Pasiansi Dispensary	Supported
49	Mwanza	Misungwi District Council	Mwamazengo Dispensary	Non-Supported
50	Mwanza	Misungwi District Council	Usagara Health Center	Non-Supported
51	Mwanza	Magu District Council	Kisesa A Health Center	Supported
52	Mwanza	Nyamagana Municipal Council	Kanyama Dispensay	Non-Supported
53	Mwanza	Nyamagana Municipal Council	Igoma Health Center	Supported
54	Mwanza	Nyamagana Municipal Council	Bugando Medical Center	Supported
55	Mwanza	Nyamagana Municipal Council	Buhongwa Dispensary	Supported
56	Mwanza	Nyamagana Municipal Council	Nyamagana District Hospital	Supported
57	Mwanza	Nyamagana Municipal Council	Mkolani Dispensary	Supported
58	Mwanza	Ukerewe District Council	Nakatunguru Dispensary	Non-Supported
59	Mwanza	Ukerewe District Council	Kigara Dispensary	Non-Supported
60	Mwanza	Sengerema DC	Sengerema District Hospital	Supported

10.3 APPENDIX C: DESCRIPTION OF DATA SOURCES USED IN RETROSPECTIVE COHORT

Table 35: Data sources used in retrospective cohort and their description, Tanzania Prevention of Mother-to-Child Transmission Cascade Assessment, 2023

Sn	Data Source	Description
1	ANC register (MTUHA 6)	The ANC register is a longitudinal record that documents antenatal care provided to a client throughout a single pregnancy. It is utilized in all health facilities offering antenatal services. Healthcare personnel fill in the necessary information in the register during service provision. Each client's entry spans a single row.
2	CTC2 card	The CTC2 card is utilized in care and treatment clinics as well as option B sites to document and monitor clients' HIV care and treatment services. These cards document treatment history, prescribed medications, test results, and follow-up appointments. They are critical for maintaining care continuity and ensuring healthcare providers have accurate and up-to-date information about their clients' health status and treatment progress. The cards are filled by the health providers and are stored at the facility. These cards serve as the primary record for data entry into the CTC2 database.
3	HEI Card	The HIV-Exposed Infant (HEI) card is a tool that documents longitudinal information on care provided to infants who are exposed to HIV. This card is structured in three main sections: 1. Registration: This section records essential information and services provided to both the mother and infant at the time of delivery. 2. Visit Details: This portion captures information and services provided during each of the infant's follow-up appointments. 3. Final Outcome: Located at the bottom of the card, this section documents the infant's ultimate HIV status and overall health outcome. HEI cards are filled by the health providers and stored at the facility together with the CTC2 card of the infant's mother.
4	Mother-Child (MC) cohort register	The mother-child cohort register documents essential PMTCT and HEI data and outcomes for mother-baby pairs. These outcomes include retention throughout the PMTCT program, services received by both mother and baby, and the final health outcome for the infant. The register is maintained by healthcare providers and stored at the facility.
5	CTC2 database	The CTC2 database is an electronic health information system used to manage and track the care and treatment of individuals living with HIV. Data officers at HIV care and treatment clinics enter data into the CTC2 database from the CTC2 card after a client has completed their visit.

10.4 APPENDIX D: DATA COLLECTORS AND ALLOCATED REGIONS

Error! Reference source not found. presents the list of the data collectors and the respective regions assigned to them. Each region had a UCSF staff member in the role of a team lead and field supervisor.

Table 36: List of data collectors and their respective regions or assignment, Tanzania PMTCT Cascade Assessment, 2023

Dodoma	Dar es Salaam	Mbeya	Mwanza
Mtoro J. Mtoro (UCSF)*	Immaculate Kessy (UCSF)*	Ritha Mboneko (UCSF)*	Juma Alawi (UCSF)*
Thabit Mwiyombela	Getrude Mwangamilo	Benjamin Chikira	Joyce Joseph
Winfrida Kaaya	Jackson Erasto	Rosalia Munishi	Rahab Wanjara
Laurent Tungaraza	Godfrey Njiku	Grace Ngowi	Nickson Rweyemamu
Nuru Essau	Anastazia Kangwa	Elyton Mushobozi	Cecilia Shangali
	Hosiana Kwayu		
	Patric Mosha		

**Field supervisors*

10.5 APPENDIX E: CROSS-SECTIONAL SURVEY INFORMED CONSENT FORM

Title: Assessment of the PMTCT cascade in Tanzania

Introduction and Purpose

My name is _____. I am part of a team working with the U.S. Centers for Disease Control and Prevention and the University of California, San Francisco, in support of the Government of Tanzania. The Ministry of Health is working to prevent the transmission of HIV from pregnant women to their infants. We are working with the Ministry of Health to conduct an assessment to learn more about the HIV prevention, care, and treatment services that PBFW receives. You are being asked to take part in this assessment because you are a woman who has delivered a baby within the past year. The information collected during this assessment will be used to understand the experiences of pregnant women during antenatal care, delivery, and breastfeeding. The information will focus on experiences with HIV-related services, such as HIV testing. The findings from this assessment will be used to improve services to prevent the transmission of HIV from mothers to their babies.

Procedures

We will ask you to do a one-one-one interview today. The interview is voluntary. We will not record your name. We will make all efforts to keep what we discuss secret. The interview will take approximately 30 minutes of your time. If you agree to take part in the assessment, we will ask you some questions related to your behaviors and experiences. Some examples of topics that we will ask about include:

- Experiences with HIV testing throughout your pregnancy and since you delivered your baby
- Your HIV status
- If you are HIV-positive, we will ask about care and treatment services that you and your baby are receiving
- If you or your baby are not receiving HIV services, we will ask about why

In addition, we would like to look at your RCH card. We would like to record your HIV status. Remember that we will not ask your name and we will keep what we discuss today secret. We will use a tablet to conduct the interview and record your HIV status. The tablet contains the questions that we want to ask and makes it easy for us to record your answers. We will not use the tablet to take your picture or record your voice. We will not collect any blood. You will not be asked to take any kind of test. Your participation in this study will not impact your involvement in any health services you are receiving or intend to receive.

Benefits

For your time today, you will receive a reimbursement of up to 15,000 Tanzanian Shillings (USD $6.70). Aside from this monetary reimbursement, you may not benefit directly from being in the study. However, you or someone you know may benefit indirectly because what we learn will help us make suggestions for how to improve services to prevent the transmission of HIV from mothers to their infants.

Risks or discomforts

It is possible that talking about your experiences with health services related to HIV will make you feel uncomfortable. You are free to not answer any questions that you are uncomfortable with.

In order to protect your privacy, I ask that you do not share what we discuss with anyone outside of this interview.

Confidentiality

We will not record or use your name. All assessment staff have signed agreements and will not discuss what they learn or hear during interviews outside of the team.

Cost

There is no cost to you for being in the assessment.

Compensation

We will give you up to 15,000 Tanzania Shillings as compensation for your participation today.

Right to refuse or withdraw

You are free to choose to not take part in this interview. If you choose not to take part, there is no penalty. If you decide to be interviewed, you are free to stop at any time without any penalty. You do not have to give us a reason for stopping. Refusing to participate or withdrawing will not result in denial of care at this or any other health facility.

Persons to contact

If you have questions about the assessment or believe that you have been harmed by being in the assessment, about your rights as a participant or report violations, please contact:

The National Institute for Medical Research (NIMR)

2448, Ocean Road, P.O.BOX 9653

Dar es salaam, Tanzania

Tel: +255 22 2121400

Do you have any questions about what I have just said?

Participant unique ID: _____

Statement of Staff Obtaining Consent

I have explained the assessment to the subject. I have answered all questions regarding the evaluation, and I am available to answer questions in the future regarding the assessment and the subject's participation in the study.

Interviewer assessment:

1. Is participant able to grant informed consent?
   _____ Yes → Continue with question #2
   _____ No → End consent process and terminate interview

2. Do you understand that taking part in this interview is voluntary? _____ Yes _____ No

3. Do you understand that you can ask me to stop the interview at any time and that you do not have to answer any questions that you do not wish to answer? _____ Yes ____ No

4. Do you understand that you can leave the interview at any time? _____ Yes _____ No

5. Do you understand that your responses to the questions will be kept secret? _____ Yes _____ No

6. Do you agree to take part in the interview? _____ Yes _____ No

7. Do you agree to me recording your HIV status from your RCH card? _____ Yes _____ No

_____ _____

Signature of study staff Date

10.6 APPENDIX F: KEY INFORMANT INTERVIEW VERBAL CONSENT FORM

Project title: PMTCT cascade evaluation

My name is _____. Thank you for meeting with us today. I am part of a team working with the U.S. Centers for Disease Control and Prevention and the University of California, San Francisco, in support of the Government of Tanzania. The National AIDS Control Program ($_{NACP}$), with support from PEPFAR and the University of California, San Francisco is conducting a PMTCT cascade evaluation to understand the process of PMTCT and HEI health care delivery, monitoring, and evaluation modalities and how it affects treatment mother and child follow up outcomes. We are interested in learning about your experiences with PMTCT program implementation/ health care delivery and how it impacts mother and child outcomes. This evaluation will help both PEPFAR and the MoH learn more about the challenges facing those who provide PMTCT and HEI services and to hear your recommendations for improvement.

This interview will take approximately one hour. There is no right or wrong answer to the questions that we will be asking. We do not believe that we are asking any sensitive questions, but you are free to not answer any question you wish or to stop the interview at any time. Refusing to take part will not have any effect on your job.

Your taking part in this assessment is voluntary; however, your inputs are very valuable to us. We will not be recording your name or any other personal information about you. If you agree to take part, we want you to share your perceptions and opinions about the services you support or provide, and issues related to data quality. If you decide to take part, the information that you provide should not harm you in any way. Similarly, there is no direct benefit to you in taking part, other than helping to improve data reporting and clinical services at your health care facility or at facilities that you support.

You will not be given any money for your time in taking part in this assessment.

All data collected and information generated will be secure and the confidentiality of those taking part will be protected. Only project staff or MoH staff will have access to the non-personally identifiable interview data. Feedback on our findings will be provided to the health care facility and implementing partner staff after the completion of the assessment. As stated above, your name or any other personal information about you will not be recorded. Your responses to the interviews will only be identified by a unique code, which will identify the health care facility or the implementing partner. Results will be combined before reporting to others.

If you have any questions about taking part in these interviews or about the evaluation, please ask them now. Your taking part in the interviews will indicate that you agree to take part in this part of the evaluation. It will also indicate that you have had the opportunity to ask any questions about this and that these have been answered to your satisfaction. You are also free to sign this consent form if you wish. If you have any further questions, please contact:

REPRESENTATIVE, Ministry of Health, PMTCT Programme

You will be offered a copy of this consent document if you wish. You will not need to sign it, since this would identify you as having agreed to take part.

Interviewer:

I have read this informed consent form aloud to the interviewee and confirm that he/she agrees to take part in this interview.

Name of the interviewer: _____

Signature of the interviewer: _____

Date: _____

Facility name: _____

Interview unique ID: _____

OPTIONAL:

Interviewee signature: _____

10.7 APPENDIX G: CROSS-SECTIONAL SURVEY QUESTIONNAIRE (ENGLISH)

Participant Identification Code	
Region	
District	
Facility Name	
Facility HFR Code	
Name of Interviewer	
Date of Interview dd___/mm_____/yy____	
Start Time HH:MM	
End Time HH:MM	
Interview Result 01=Interview Completed **02= Partially completed (give reasons)** **03= Other (specify)**	

	. Can I see your RCH card first?		
Q#	**QUESTIONS**	**RESPONSES**	
A00	*Take RCH card from mother and record the HIV status and the gestation age at which the status was made. (Note HIV status is recorded as PMTCT (0,1,2)*	**PMTCT** **Gestation age**	_____ _____
	Let us start with some information about you		
	I. SOCIO-DEMOGRAPHIC INFORMATION		
A01	How old were you at your last birthday?	Years	___ ___ **If age <15 end the interview** **If 15 and above continue**
A02	What is your marital status?	Single Cohabiting Married Divorced Separated Widowed Other (Specify) No response	1 2 3 4 5 6 88 98
A03	Have you ever attended school?	Yes No	1 2 → **Skip to A05**
A04	What is the highest level of school you attended:	Primary Secondary College/University or higher	1 2 3
A05	What is your current occupation	Stay at home mom Daily wage laborer Bar tender Sex worker Housemaid Self employed Formally employed Other, specify	1 2 3 4 5 6 7 88

A06	Not counting this pregnancy, how many times have you been pregnant before?	Prior pregnancies	___ ___ 00 SKIP TO A08
A07	How many times have you given birth during your life; that is, any baby who cried or showed signs of life at birth?	Children ever born	___ ___
A08	How many weeks were you into your pregnancy when you attended the first ANC?	Weeks	_____
A09	How many ANC visits did you attend before delivering this child?	ANC visits	----------

I want to learn more about the services you received throughout your attendance at ANC – in particular HIV testing services.

	HIV SERVICES, STATUS, AND ART STATUS		
B01	Were you aware of your HIV status before your 1st ANC visit?	Yes No No response	1 2 → Go to B03 98 → Go to B03
B02	What was your HIV status before your 1st ANC visit?	HIV positive HIV negative No response	1 → Go to B12a 2 98
B03	Were you tested for HIV at any time during your pregnancy or at delivery?	Yes No I don't remember No response	1 2 → Go to B18 97→ Go to B18 98→ Go to B18
B04	How many times during your pregnancy, including during delivery, were you tested for HIV?	One Two More than two No response	1 2 3 98
B05	Was your first test done at your first ANC visit?	Yes No I don't remember	1 2 97
B06	What were your test results?	Positive Negative Indeterminate	1 → Go to B11 2 3

		Test results were not given	4
		No response / do not want to say	98
B07	[If reported 2 HIV tests, else go to D01] At what point during your pregnancy was your second HIV test done?	Between 32-36 weeks	1
		At delivery	2
		Another time	3
		Don't remember	97
B08	[If reported 2 HIV tests] What was the result of your second test?	Positive	1 → Go to B11
		Negative	2
		Indeterminate	3
		Test results were not given	4
		No response / do not want to say	98
B09	[If reported >2 HIV tests, else go to D01] At what point during your pregnancy was your last HIV test done?	Between 32-36 weeks	1
		At delivery	2
		Another time	3
		Don't remember	97
B10	[If reported >2 HIV tests] What was the result of your last test?	Positive	1 → Go to B11
		Negative	2 → Go to D01
		Indeterminate	3 → Go to D01
		Test results were not given	4 → Go to D01
		No response / do not want to say	98 → Go to D01
B11	Were you counseled to start ART?	Yes	1
		No	2
		No response	98
B12	Did you start ART?	Yes	1 → Go to B14
		No	2
		No response	98 → Go to E01
B12a	(Known positive) Were you already on ART?	Yes	1 → Go to B14
		No	2
		No response	98→ Go to E01
B13	Why didn't you start ART?	I feared the side effects	1→ Go to E01
		I believed ARVs will harm my baby	2→ Go to E01
		People will know my HIV status	3→ Go to E01
		I was still feeling well	4→ Go to E01
		I wanted to use alternative treatment	5→ Go to E01
		Other, specify	88 → Go to E01

		No response	98→ Go to E01
B14	During your pregnancy, did you stop taking your ARVs at any time?	Yes No No response	 → Go to E01 → Go to E01
B15	Why did you stop taking your ARVs?	I believe ARVs will harm my baby The pregnancy has been making me feel sick A HCW told me to Other, specify No response	1 2 3 88 98
B16	After stopping, did you start taking your ARVs again?	Yes No No response	 → Go to E01 → Go to E01
B17	Why did you start taking your ARVs again?	A health care provider told me to A family member/friend convinced me I started to feel sick I was worried about my baby getting HIV I was feeling well enough to restart Other No response	1 2 3 4 ALL GO TO E01 5 88 98
B18	Why were you never tested for HIV during any ANC visit?	I refused to be tested The test kits were always out of stock Waiting time for the test was always too long HIV testing was never offered to me Other, specify No response	1 2 3 4 88 98
	MATERNAL HIV RETESTING AFTER DELIVERY & DURING BREASTFEEDING		

D01	After delivering the baby that you brought for vaccination today, did you return to the RCH clinic for post-natal services at least once?	Yes No	1 2 → Go to D20
D02	How many visits did you make for postnatal services?	Number of visits	_____
D03	Did you receive HIV testing during any of those visits?	Yes No Don't remember	1 2 → Go to D19 97 → Go to D19
D05	How many times after delivery were you tested for HIV?	One Two More than two No response	1 2 3 98
D06	How long after delivery was your first test done?	3 months 6 months Another time period I don't remember	1 2 3 97
D07	What were the test results?	Positive Negative Indeterminate Test results were not given No response / do not want to say	1 → Go to D12 2 3 4 98
D08	[If reported 2 HIV tests, else go to E01] At what point following delivery was your second HIV test done?	6 months 9 months Another time period when I stopped BF Another time period unrelated to BF I don't remember	1 2 3 4 97
D09	[If reported 2 HIV tests] What was the result of your second test?	Positive Negative Indeterminate Test results were not given No response / do not want to say	1 → Go to D12 2 3 4 98
D10	[If reported >2 HIV tests, else go to E01] At what point after delivery was your last HIV test done?	6 months 9 months Another time period when I stopped BF Another time period unrelated to BF	1 2 3 4

		I don't remember	97
D11	[If reported >2 HIV tests] What was the result of your last test?	Positive	1 → Go to D12
		Negative	2 → Go to E01
		Indeterminate	3 → Go to E01
		Test results were not given	4 → Go to E01
		No response / do not want to say	98 → Go to E01
D12	Were you counseled to start ART?	Yes	1
		No	2
		No response	98
D13	Did you start ART?	Yes	1→ Go to D15
		No	2
		No response	98→ Go to E01
D14	Why didn't you start ART?	I feared the side effects	1
		People might find out my HIV status	2
		I was still feeling well	3
		I wanted to use alternative treatment	4
		Other, specify	88
		No response	98
D15	At time after your delivery, did you stop taking your ARVs at any time?	Yes	1
		No	2→ Go to E01
		No response	98→ Go to E01
D16	Why did you stop taking your ARVs?	I believe ARVs will harm my baby	1
		The pregnancy has been making me feel sick	2
		A HCW told me to	3
		Other, specify	88
		No response	98
D17	After stopping, did you start taking your ARVs again?	Yes	
		No	→ Go to E01
		No response	→ Go to E01
D18	Why did you start taking your ARVs again?	A health care provider told me to	1
		A family member/friend convinced me	2
		I started to feel sick	
		I was worried about my baby getting	3

		HIV	4 ALL GO TO E01
		I was feeling well enough to restart	
		Other	5
		No response	88
			98
D19	Why were you not tested for HIV during any post-natal visit?	I refused to be tested	1
		The test kits were always out of stock	2
		Waiting time for the test was always too long	3
		HIV testing was never offered to me	4
		Other, specify	88
		No response	98
D20	Why didn't you return for post-partum services?	The baby and I were fine / I did not see a reason to go	1
		I was too busy	2
		The clinic is too difficult/expensive to get to	3
		Other, specify	88
		No response	98

	PART E: This section should be filled for HIV-positive women		
	Now I will ask a few questions regarding the baby you brought today for vaccination		
E01	Date of birth of a child	Day____Month_Year ___	
E02	Child's sex	Boy	1
		Girl	2
E03	Was s/he born in a health facility?	Yes	1
		No	2 →Go to E06
E04	Was s/he born at the same facility where you registered for ANC?	Yes	1 →Go to E07
		No	2

E05	Why did you deliver at a different facility than where you most recently attended ANC?	My spouse/family decided for me The facility is closer to my home It is cheaper than the ANC site where I registered Services are better compared to the ANC site where I registered I wanted to deliver near my parents'/in-law's home My ANC facility does not have delivery services Other, specify	1 2 3 4 ALL GO TO E07 5 6 88
E06	Why didn't you deliver in a health facility?	I delivered on the way to the facility I preferred to deliver at home My spouse/family pressured me not to It would have been too expensive The facility with delivery services was too far away Other No response	
E07	Was your baby taking ARV prophylaxis during the first six weeks of life?	Yes No Don't know	1→Go to E09 2 97→Go to E09
E08	Why was your baby not taking ARV prophylaxis?	The HCW said they should not take The medicine made the baby sick The medicine was out of stock I was not told that the baby is supposed to take medicine I decided not to give the baby ARV prophylaxis Other, specify No response	1 2 3 4 5 88 98

EARLY INFANT DIAGNOSIS TESTING				
	E09	E10	E11	E12

Period	Was a blood sample taken from your baby for a DNA PCR (DBS) test? Yes -----1 →Go to E11 No-----2 Don't know----3 → Next time period/END	Why was a blood sample not taken? Baby was not eligible ----- 1 Test kits were out of stock------ 2 Waiting time was too long ------ 3 I refused ----- 4 I didn't take him/her for the appointment----5 My HIV status was negative at that time----6 Other, specify -------88 **ALL TO NEXT TIME PERIOD/END**	Have you been given the results of this test? Yes----------1 No----------2 Next time period / END Don't know-----3 Next time period / END	What was the result of the test? Positive--------1 →E13 Negative -------2 Next time period / END Indeterminate---3 Next time period / END Results not given--4 Next time period / END
At birth				
0-6 wks				
7 wks-8 mo				
9-10 mo				

HIV-positive infants			
E13	Was the repeat test done to confirm that your baby is HIV positive	Yes	1→ **E15**
		No	2
		I don't remember	98→ **E16**
E14	Why was the repeat test not done?	Test kits were out of stock	1
		Waiting time was too long	2
		I refused	3
		Provider didn't see the need to repeat the test	4 Any → **E19**
		Other, specify	88
		No response	98

E15	What was the result of the confirmatory test?	Positive Negative Indeterminate Results not given	1 → **E19** 2 3 4
E16	Was the second test done to confirm that your baby is HIV positive done?	Yes No	→ **E18**
E17	Why was the second repeat test not done?	Test kits were out of stock Waiting time was too long I refused Provider didn't see the need to repeat the test Other, specify No response	1 2 3 Any → **E19** 4 88 98
E18	What was the result of the confirmatory test?	Positive Negative Indeterminate Results not given	1 2 3 4
E19	Was your baby started on ART?	Yes No No response	1 → **E21** 2 98 **END**

E20	Why was your baby not started on ART?	I fear the medicine will harm my baby	1
		If I give my baby medicine someone might find out my HIV+ status	2
		Father/family of the baby refused	3
		My baby died	4
		I needed more time to think	5
		I opted for alternative treatments (e.g., religion / traditional medicines)	6 **ALL TO END**
		I was not told to give my baby ARVs	7
		The ARVs for babies were out of stock	8
		There was no provider available who could give my baby the medication	9
		Other, specify	
		No response	88 98
E21	Is your baby still on ART?	Yes	1 **END**
		No	2
		No response	98 **END**
E22	Why has your baby stopped ART?	The medicine was making my baby sick	1
		My baby died	2
		Father/family of the baby found out and insisted the baby stop	3
		I opted for alternative treatments (e.g., religion / traditional medicines)	4
		The clinic ran out of the medication	5
		Other, specify	88
		No response	98
END. Thank you so much for your time today. We appreciate learning about your experience and hope to use what you have shared to improve services for mothers and their babies.			

10.8 APPENDIX H: KEY INFORMANT INTERVIEW GUIDE

KEY INFORMANT INTERVIEW GUIDE

This interview is to be conducted with key informants including health providers working in ANC and PMTCT as well as regional and district-level RCH and PMTCT coordinators. Sub items are intended as probes to expand and clarify answers.

Geographic and Facility Information
REGION NAME: _____
DISTRICT NAME: _____
FACILITY NAME: _____ HFR CODE: _____
INTERVIEWER NAME: _____ DATE: _____
FIELD SUPERVISOR NAME: _____

SECTION 1. KEY INFORMANT'S BACKGROUND

First, I want to ask you a few questions about your background.

NUM	QUESTIONS	ANSWERS
101	What is your job title?	
102	How long have you been working at this facility/in this position?	_____YEARS _____MONTHS
103	What are your responsibilities regarding PMTC and ANC services?	

SECTION 2. HIV TESTING FOR PBFW

Now I want to ask some questions about the HTS testing that is done in PMTCT & ANC.

NUM	QUESTIONS
201	**[FACILITY STAFF]** Does the ANC unit in this facility offer HIV testing services for pregnant women? If not, where do you refer clients to get tested? Is testing optional, or are the mothers told they must be tested before they can get services? *Explore:* • Distance to testing services, if outside of ANC clinic • Length of time to get results **[REGIONAL/DISTRICT STAFF]** Can you tell me how the regional/district management team supports HIV testing, specifically for maternal re-testing of PBFW? *Explore:* • *How they supervise facilities to ensure all women are tested* • *How they ensure availability of Job aids, guidelines, and SOPs to facilities*
202	Can you tell me about how HIV testing services are provided to PBFW at this facility/in this district/region, and how the results are documented? *Explore:* • Probe respondent to mention all time points at which PBFW should be tested for HIV, both during pregnancy and after delivery. • Are providers trained to offer maternal re-testing? • Does the facility have an SOP and job aids for re-testing? • Are women are informed when they should get re-tested when receiving ANC services? • Does the facility have a system in place to identify women who are due for re-testing? • How does the facility document the results of re-testing, including during post-natal services?

203	In your experience, are all PBFW tested for HIV as per the national guidelines? If not, what are the challenges to implementing maternal retesting?
	
	• Probe for facility-level factors:
	  • *Staffing shortages, lack of training/understanding of the national guidelines*
	  • *Lack of SOPs/job aids/etc. for staff to easily follow the required procedures or lack of procedures for tracking and tracing women who are due for testing*
	  • *Issues with availability and stockout of test kits*
	  • *Challenges with correctly documenting maternal retesting in the national tools*
	  • *Facility infrastructure and set-up might (e.g., not enough private spaces)*
	• Probe for factors linked to the women themselves:
	  • *Lack of understanding of the importance of maternal retesting*
	  • *Influence of spouse/partners*
	  • *Fear of stigma*
	  • *Women move around throughout pregnancy and BF*
	  • *Women declining to be re-tested*

204	What do you think this facility/all facilities could do to ensure all pregnant/breastfeeding women are retested and the tests and results are completely documented? Are there any activities or strategies the facility has implemented that have been successful? *Explore:* • Promoting maternal retesting to women attending ANC through health talks • Availability of job aids, SOPs, and training to ANC staff • Better involvement male partners • Improve facility set up to offer conducive environment for re-testing • Ways to improve documentation
205	**[REGIONAL/DISTRICT STAFF]** How do you think the R/CHMT can assist facilities to ensure they offer HIV testing to PBFW as per the national maternal re-testing algorithm? *Explore:* • How to use supportive supervision to optimize maternal re-testing in facilities • How to optimally use mentors and on-the-job training

SECTION 3. PMTCT SERVICES

Now I want to ask some questions about how PMTCT services are provided to HIV+ PBFW.

NUM	QUESTIONS

301	**[FACILITY STAFF]** Can you tell me what happens when a pregnant or breastfeeding woman is newly identified as HIV+ at ANC? How is she started on treatment and how are her services documented?
	
	Explore:
	• Facility strategies for same day initiation
	• Documentation of pregnancy and pregnancy outcomes in CTC2 card and CTC2 DB and movement of CTC2 cards between CTC data room and RCH
	• How and when mother is documented in MC cohort register
	• Knowledge of guidance for providing care and treatment services for pregnant and BF women
	  • *Pregnant women considered "unstable clients" and ineligible for MMD*
	  • *Changes to HVL guidance once a woman on ART becomes pregnant*

302	**[FACILITY STAFF]** Can you tell me what happens when a woman who is on ART is found to be pregnant? Are there any changes to her care and treatment? How is her pregnancy documented? *Explore:* • Documentation of pregnancy and pregnancy outcomes in CTC2 card and CTC2 DB and movement of CTC2 cards between CTC data room and RCH • Transfer of clients from CTC to PMTCT • How and when mother is documented in MC cohort register • Knowledge of changes to care and treatment services for pregnant and BF women • *Pregnant women considered "unstable clients" and ineligible for MMD* • *Changes to HVL guidance once a woman on ART becomes pregnant*

303	What challenges does these facility / do facilities in this district/region face in providing PMTCT services to PBFW?
	
	• Probe for facility-level factors:
	  • *Staffing shortages, lack of training/understanding of the national guidelines*
	  • *Lack of SOPs/job aids/etc. for staff to easily follow the required procedures or lack of procedures for tracking and tracing women who are due for testing*
	  • *Issues with availability and stockout of test kits*
	  • *Challenges with correctly documenting PMTCT services in the national tools or movement of files between CTC and RCH*
	  • *Facility infrastructure and set-up might (e.g., not enough private spaces)*
	• Probe for factors linked to the women themselves:
	  • *Women prefer to attend ANC and ART services in different clinics*
	  • *Influence of spouse/partners*
	  • *Fear of stigma*
	  • *Women move around throughout pregnancy and BF*
	  • *Frequent interruptions in treatment*

304	What activities or strategies has this facility / facilities in this district/region implemented that have been successful at improving service provision for PBFW? Are there any additional tools or resources that you think would help you improve these services?

SECTION 4. HIV-EXPOSED INFANTS

Now I want to ask some questions about how the facility / facilities in this district/region identifies, documents, and provides services to HIV-exposed infants.

NUM	QUESTIONS
401	**[FACILITY STAFF]** Can you tell me about how HIV-exposed infants are identified in this facility? *Explore:* • How PMTCT staff track HIV-positive women at delivery • Communication, if any, between the maternity ward and the PMTCT unit • Communication, if any, between different facilities if an HIV+ mother delivers at a different facility from where she receives ANC or CTC services

402	**[FACILITY STAFF]** Can you tell me about when and how HEI are registered? *Explore:* • Probe for differences between high-risk and low-risk infants • Whether facility has adopted new early HEI registration guidance (i.e., all HEI are registered during first vaccination) • Probe for use of the HEI card and how it is kept with the mother's CTC2 file, MC cohort register, entry of data into CTC2
403	**[FACILITY STAFF]** What services are provided to HEI and how are these services documented? Let's start at birth and go step-by-step until when the infant has a final outcome. • Birth: probe for difference between high-risk and low-risk infants • <2 months (6–8 weeks) DBS • 9-month DBS • DBS 3 months after cessation of breastfeeding • 18-month final confirmation test

404	What are the challenges in providing services to HEI?
	
	• Probe for facility-level factors:
	  • *Staffing shortages, lack of training/understanding of the national guidelines*
	  • *Lack of SOPs/job aids/etc. for staff to easily follow the required procedures or lack of procedures for tracking and tracing women who are due for testing*
	  • *Issues with availability and stockout of items needed for DNA-PCR testing or in getting results back from the lab / stockout of ARVs needed for HEI*
	  • *Challenges with correctly documenting HEI services in the national tools*
	  • *Challenges due to delivery being done in a different location from PMTCT (i.e., challenges with identifying HEI)*
	  • *Lack of resource to trace pregnant women and their babies*
	• Probe for factors linked to the women themselves:
	  • *Lack of understanding of the importance of bringing the baby as advised*
	  • *Influence of spouse/partners*
	  • *Fear of stigma*
	  • *Women move around throughout pregnancy and BF and are difficult to trace*

405	I also want to ask you about babies of mothers who become HIV positive during breast feeding. What are the challenges of identifying and documenting these infants? *Explore:* • *Challenges with DBS testing and availability of results* • *Challenges with reaching mothers when results become available* • *Women move around throughout pregnancy and BF and are difficult to trace* • *Does poor documentation or challenges with the national tools contribute?*

406	Finally, what activities or strategies has this facility / facilities in this district/region implemented that have been successful at improving service provision for HEI? Are there any additional tools or resources that you think would help you improve these services?

SECTION 5. DATA USE AND DATA ANALYSIS TOOLS

Finally, I want to ask you a few questions about how the facility uses and analyzes program data to inform decision-making and whether there are any tools that are used at the facility to support this.

NUM	QUESTIONS
501	How does the staff here / C/RHMT use routinely collected program data for ANC and PMTCT? *Explore:* • Routine data review meetings • Use of routine monthly reports • Are data used for decision making?
402	Do staffs here / C/RHMT do any regular activities to review the quality of the data being collected at ANC and PMTCT? Have there been data quality activities done by people outside of the facility / C/RHMT that have helped improved data quality? • Probe for things like routine data checks or file reviews, triangulation between data sources, having someone reviewing routine reports (different from the person who compiled them) • Probe for data quality activities implemented or supported by IPs
403	Are there any applications or computer programs that are used at the facility to help analyze and/or visualize data to make it easier to use? • Probe for CTC2, CTC-Analytics (including PMTCT cascade queries), CQI indicators
	END. Thank you for talking with us today. The information you provided will be valuable in improving HIV prevention, care, and treatment services for PBFW and their babies.

10.9 APPENDIX I: FACILITY ASSESSMENT TOOL

Geographic and Facility Information
REGION NAME: _____
DISTRICT NAME: _____
FACILITY NAME: _____ HFR CODE: _____
INTERVIEWER NAME: _____ DATE: _____
FIELD SUPERVISOR NAME: _____

SECTION 1: FACILITY INFORMATION

No	Question	Response
FACILITY CHARACTERISTICS		
101	Location of facility	Urban .....1 Rural 2
102	Type of facility	REFERRAL HOSPITAL .....1 REGIONAL HOSPITAL .....2 DISTRICT/DDH HOSPITAL .....3 HEALTH CENTRE .....4 DISPENSARY.....6 OTHER (SPECIFY) 88
103	Managing Authority	GOVERNMENT/PUBLIC .....1 NGO/NOT-FOR-PROFIT .....2 PRIVATE-FOR-PROFIT .....3 MISSION/FAITH-BASED .....4 OTHER (SPECIFY) 88
104	Services offered (circle all that apply)	In-patient .....1 Outpatient .....2 CTC .....3 PMTCT .....4 RCH .....5 Maternity ward (labor and delivery).....6 Community outreach services for RCH 7
105	Sex of the respondent	Male.....1 Female.....2

106	Role of respondent	Health Facility incharge .....1 RCH incharge.....2 CTCT/PMTCT in charge.....3 RCH provider.....4 PMTCT/CTC provider.....5 Vaccination officer/provider.....6 Labour & Delivery incharge.....7 Labour and delivery provider.....8 Other(specify).....
107	Financial support for HIV/AIDS intervention	PEPFAR .....1 NON-PEPFAR SUPPORT .....2 skips to 201
108	IF receiving PEPFAR support, for how long has this facility been receiving PEPFAR support?	Less than 1 year.....1 1-3 years .....2 3-5 years.....3 More than 5 years.....4 5- 10 years.....5 10-15 years.....6 15-20 years.....7 I don't know.....98

SECTION 2: PMTCT/ANC ORGANIZATION AND SERVICES

201	What are the PMTCT/ANC's hours of operation?	Monday-Friday (8.00am-12.00) Monday -Friday (8.00am-15.30 pm) Monday -Friday from 8.00am to extended hours Weekends Public Holidays Other (specify	1 2 3 4 5 98
202	How many days per week are PMTCT/ANC services offered in this facility?		
203	How are "new" and follow-up ANC visits organized?	All visits together Provided on same days but at different hours Offered on separate days of the week	1 2 3
204	How are ANC visits for HIV positive and HIV negative women organized?	All visits together Provided on same days but at different hours Offered on separate days of the week	1 2 3
205	How many providers are usually assigned to provide PMTCT/ANC services on any given day?	No of providers	_____
206	On a normal PMTCT/ANC clinic day, how many women are seen?	Number of first visits Number of follow-up visits	_____ _____

207	How many examination rooms are there for PMTCT/ANC services?	Number of rooms	_____
208	On average, how much time does a woman who is HIV-negative spend at the clinic for a routine ANC visit (in minutes)?	For the first visits For the follow-up ANC visit	____ _____
209	On average, how much time does a woman who is HIV-positive spend at the clinic for a routine ANC/PTMCT visit (in minutes)?		
210	Does the PMTC/ANC clinic offer HTS testing service in the PMTCT/ANC building?	Yes No	1→ Go to 212 2
211	Where are HTS services provided in the facility for PBFW?	Laboratory VCT OPD CTC Other	1 2 3 4 98
212	Does the PMTCT/ANC clinic offer DBS sample collection in the PMTCT/ANC building?	Yes No	1→ Go to 214 2
213	Where does DBS sample collection happen in the facility?	Laboratory VCT OPD CTC Other	1 2 3 4 98
214	Does your PMTCT/ANC clinic provide outreach PMTCT/ANC services?	Yes No	1 2→ Go to 217
215	Do you collect DBS samples during outreach services?	Yes No	1 2
216	Do you provide HTS services during outreach?	Yes No	1 2
217	On average, how many women deliver at this facility per day?	Number _____	

SECTION 3: ENABLING ENVIROMENTAL FOR ANC AND PMTCT SERVICES DOCUMENTATION

301	**Are the following tools for recording and reporting ANC and PMTCT services available in the facility?**			
		Yes, most recent version	**Yes, old version**	**No**
301a	ANC register	1	2	3
301b	ANC register tally form	1	2	3
301c	ANC register reporting form	1	2	3

301d	Child register (MTUHA 7) register	1	2	3
301e	Child register (MTUHA 7) tally form	1	2	3
301f	Child register (MTUHA 7) reporting form	1	2	3
301g	Labour and Delivery register (MTUHA 12) register	1	2	3
301h	Labour and Delivery register (MTUHA 12) tally form	1	2	3
301i	Labour and Delivery register (MTUHA 12) reporting form	1	2	3
301j	Post-natal register (MTUHA 13) register	1	2	3
301k	Post-natal register (MTUHA 13) tally form	1	2	3
301l	Post-natal register (MTUHA 13) reporting form	1	2	3
301 m	Mother-child cohort register	1	2	3
301p	Mother-child cohort reporting forms	1	2	3
301q	HEI cards	1	2	3
301r	RCH 4 cards	1	2	3
301s	RCH1 cards	1	2	3
301u	CTC1 card	1	2	3
301v	CTC2 card	1	2	3
301w	Facility HEID register	1	2	3
301x	HTS register	1	2	3
	Are the following in place/available to ensure pregnant/breastfeeding women remain in care and are receiving all required services as per national guidelines?			
		Yes	**No**	
302	Dedicated phone to remind them when they miss PMTC/ANC appointment	1	2	
303	Dedicated person (e.g., peer mother) to track women missing their PMTC/ANC appointment	1	2	
304	Fliers/visuals to remind women what services they are supposed to get at every PMTC/ANC visit	1	1	
305	Fliers/visuals to show maternal re-testing schedule	1	2	
306	Fliers/visuals/brochures showing DBS collection schedule for HEI	1	2	
307	DBS sample collection Job Aids for providers	1	2	

308	When is the ANC register usually filled out for a patient?	During the visit.....1 Immediately after the visit before seeing the next patient.....2 After all patients have been seen for the day .....3 Depends on how busy the clinic is.....4 Other (specify) 88
309	When is the MC cohort register usually filled out for a patient who is HIV+?	During the visit.....1 Immediately after the visit before seeing the next patient.....2 After all patients have been seen for the day .....3 Depends on how busy the clinic is.....4 Other (specify) 88
310	When is the CTC2 card usually filled out for a patient who is HIV+?	During the visit.....1 Immediately after the visit before seeing the next patient.....2 After all patients have been seen for the day .....3 Depends on how busy the clinic is.....4 Other (specify) 88
311	Does the facility have a standard procedure for moving CTC2 cards from PMTCT to the data entry room and back to PMTCT?	Yes.....1 No.....2 Not sure .....3 Facility does not have CTC2 database 4
312	How many data clerks are responsible for data entry in the CTC2 database?	
313	Is there a dedicated person or persons responsible for compiling routine ANC and MC cohort reports before they are submitted?	Yes.....1 No.....2 Not sure 3
314	Is there a dedicated person or persons responsible for reviewing routine ANC and MC cohort reports before they are submitted for entry in DHIS2?	Yes.....1 No.....2 Not sure 3
END	Thank you very much for your time today. The information you provided will help us make recommendations to improve services for PBFW and their babies.	

10.10 APPENDIX J: DATA TRIANGULATION OF ANC MONTHLY REPORTS

Table 37 presents the triangulation of the aggregated values for the two most recent ANC monthly reports from all assessment facilities, by region.

Table 37: Data triangulation of ANC monthly reports for two most recent reporting months, by region, Tanzania PMTCT Cascade Assessment, 2023

	Regional totals			Simple difference			Absolute	
Indicator	**DHIS2**	**ANC Report**	**ANC register**	**DHIS2 vs ANC register**	**DHIS2 vs ANC report**	**ANC report vs register**	**DHIS2 vs ANC register**	**DH vs A rep**
DAR ES SALAAM								
Total number of pregnant women attending first ANC visit	4492	4485	4500	-8	7	-15	46	
Total number of pregnant women attending antenatal care visit	27209	26945	25300	1909	264	1645	2131	2
Number of pregnant women who are known HIV positive before ANC visit	187	188	188	-1	-1	0	1	
Number of pregnant women who tested HIV positive during first test	51	52	82	-31	-1	-30	31	
Number of pregnant women who are below 25 years old, tested HIV positive (1st test)	10	10	10	0	0	0	0	
Number of pregnant women whose partner tested HIV positive during 1st HIV test at antenatal clinic	11	11	11	0	0	0	4	
Number of pregnant women and their partners who received discordant results after HIV testing in antenatal clinic	17	17	16	1	0	1	3	
Number of pregnant women who tested HIV positive during a second test	2	2	2	0	0	0	2	
Number of pregnant women who received infant feeding practices counselling	177	389	420	-243	-212	-31	257	2
Number of pregnant women who received IPT2	10012	10034	9953	59	-22	81	405	2
Number of pregnant women who received IPT4	3683	3708	2613	1070	-25	1095	1152	4
DODOMA								
Total number of pregnant women attending first ANC visit	669	669	645	24	0	24	26	
Total number of pregnant women attending antenatal care visit	3161	3148	2415	746	13	733	748	1
Number of pregnant women who are known HIV positive before ANC visit	9	9	9	0	0	0	0	
Number of pregnant women who tested HIV positive during first test	2	2	2	0	0	0	0	

	Regional totals			Simple difference			Absolute	
Indicator	**DHIS2**	**ANC Report**	**ANC register**	**DHIS2 vs ANC register**	**DHIS2 vs ANC report**	**ANC report vs register**	**DHIS2 vs ANC register**	**DH vs A rep**
Number of pregnant women who are below 25 years old, tested HIV positive (1st test)	0	1	1	-1	-1	0	1	
Number of pregnant women whose partner tested HIV positive during 1st HIV test at antenatal clinic	1	0	0	1	1	0	1	
Number of pregnant women and their partners who received discordant results after HIV testing in antenatal clinic	0	0	0	0	0	0	0	
Number of pregnant women who tested HIV positive during a second test	0	0	0	0	0	0	0	
Number of pregnant women who received infant feeding practices counselling	11	11	10	1	0	1	1	
Number of pregnant women who received IPT2	672	678	635	37	-6	43	53	1
Number of pregnant women who received IPT4	597	603	573	24	-6	30	26	1
MBEYA								
Total number of pregnant women attending first ANC visit	1870	1859	1872	-2	11	-13	26	1
Total number of pregnant women attending antenatal care visit	6970	6912	6686	284	58	226	464	5
Number of pregnant women who are known HIV positive before ANC visit	116	115	117	-1	1	-2	3	
Number of pregnant women who tested HIV positive during first test	39	40	39	0	-1	1	0	
Number of pregnant women who are below 25 years old, tested HIV positive (1st test)	14	14	12	2	0	2	4	
Number of pregnant women whose partner tested HIV positive during 1st HIV test at antenatal clinic	8	5	8	0	3	-3	0	
Number of pregnant women and their partners who received discordant results after HIV testing in antenatal clinic	6	6	6	0	0	0	2	
Number of pregnant women who tested HIV positive during a second test	1	1	2	-1	0	-1	1	
Number of pregnant women who received infant feeding practices counselling	213	406	285	-72	-193	121	126	1
Number of pregnant women who received IPT2	1660	1607	1565	95	53	42	197	1
Number of pregnant women who received IPT4	924	950	884	40	-26	66	128	3
MWANZA								
Total number of pregnant women attending first ANC visit	4102	3981	3950	152	121	31	154	1

	Regional totals			Simple difference			Absolute	
Indicator	**DHIS2**	**ANC Report**	**ANC register**	**DHIS2 vs ANC register**	**DHIS2 vs ANC report**	**ANC report vs register**	**DHIS2 vs ANC register**	**DH vs A rep**
Total number of pregnant women attending antenatal care visit	15775	16760	15580	195	-985	1180	3339	23
Number of pregnant women who are known HIV positive before ANC visit	159	158	156	3	1	2	9	
Number of pregnant women who tested HIV positive during first test	63	63	68	-5	0	-5	11	
Number of pregnant women who are below 25 years old, tested HIV positive (1st test)	14	15	18	-4	-1	-3	10	
Number of pregnant women whose partner tested HIV positive during 1st HIV test at antenatal clinic	8	8	8	0	0	0	6	
Number of pregnant women and their partners who received discordant results after HIV testing in antenatal clinic	9	11	19	-10	-2	-8	14	
Number of pregnant women who tested HIV positive during a second test	1	1	0	1	0	1	1	
Number of pregnant women who received infant feeding practices counselling	263	332	200	63	-69	132	79	2
Number of pregnant women who received IPT2	3293	3162	2966	327	131	196	429	1
Number of pregnant women who received IPT4	2340	2179	2165	175	161	14	423	1

**Green color indicates (±5% difference), Yellow (>5-15% difference) and pale red (>15% difference).*