



PMTCT ANNUAL PROGRAM REPORT

2016



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Your Efforts are truly appreciated

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EXECUTIVE SUMMARY

Introduction

Year 2016, marked the third year of implementation of LLAPLA (Option B+) in Tanzania. Over the course of implementation of LLAPLA there were robust (PMTCT report 2015) and anecdotal evidence that, despite high acceptance of HIV testing; testing rates were still low in some regions. Women dropped out of care immediately after treatment initiation, and that younger women were most at risk of poor PMTCT care adherence.

This report seeks to build on evidence already published 2015 program report, and complement with ancillary data to robustly answer who, when and why women drop out or are not adherent to PMTC care.

Methods

The cornerstone of information in this report are statistical data reported routinely, and ancillary PMTCT cascade data was collected to complement program understanding of various issues related to program performance and behaviour of beneficiaries respectively. Descriptive, trend and analytical analyses were carried out to assess program performance, performance over time and factors affecting patient adherence to PMTCT care.

Results; Program performance

Number of RCH sites increased from 5891 in 2015 to 6120 in 2016. Out of all 6120 Reproductive and Child Health sites nationwide, 94% had at least one Health Care Worker provider trained for PMTCT. Although proportionally 98% in 2015 and 94% in 2016 had at least one trained HCW, there is an actual increase in number of PMTCT sites from 5746 to 5806, and an increase on LLAPLA active sites from 4737 (80%) in 2015 to 5163 (89%) in 2016.

Comparison of selected programme indicators using non-parametric test of trend from 2015 to 2016 shows significant improvement in all indicators ($P < 0.01$). The indicators studied included ANC attendance, ANC 4 Visits, Known Positive, ANC HIV testing, Couple testing, HIV ANC testing positivity rates, ANC HIV program positivity, health facility delivery and skilled birth attendance. ANC HIV positivity declined from 4.9% in 2014 to 3.62% in 2016. Moreover, the positivity rate among women testing at ANC for the first time declined from 3.2% to 2.15% across the three years of the program implementation. This indicates an overall decline in HIV incidence in the country.

Results; LLAPLA assessment and response

LARS follows a critical lens of assessment, and this it generally aims at identifying challenges than success. LARS implementation in 2016 was mainly driven from national level, and supported from central funding. This was because of lack of LARS allocated resources at district and regional levels. All 25 regions received at least one LARS visit in year 2016. A total of 111 out of 186 (60%) districts and a total of 472 health facilities were visited.

The following were key issues identified; LARS visits are not being conducted because resources are not allocated at local authority levels to effect regional and district driven visits. Commodity security at health facility levels is yet to be achieved, this has led to

inadequate program performance. Quality of HIV testing is reasonably satisfactory. However, documentation of events is a major challenge across all service points.

Results; Program Effectiveness

HEID Lab data shows a declining trend of positivity rates from 12% in 2011 to 4.9% in 2016. Suggesting the effect of PMTCT program on HIV transmission. The positivity rate at two months of age was 2.4% in 2016.

Results; PMTCT cascade analysis

In this cascade analysis, there are several findings that have programmatic implications; Serious data quality issues, that was evident by our inability to link data (50%) from various sources. A significant proportion (29%) of pregnant women living with HIV are younger than 24 years, 20% makes first visit in the Antenatal Care in the first trimester; 80% makes late visits, representing missed opportunity for PMTCT interventions. Younger women had higher hazards of dropping out of care, and that women initiated on treatment because of pregnancy had almost two times higher hazards of dropping out.

Conclusion and recommendations

There was a significant improvement in program performance in year 2016 as compared to preceding years. There was an increase in testing rates and effective program coverage. Despite these remarkable success, there still remained challenges; there were delayed care seeking and high rates of drop out from care especially among young mothers. This pose an increasing risk of vertical HIV transmission as children's exposure to HIV occurs while their mothers are off PMTCT care.

Based on findings in year 2016 the following recommendations are made

1. Data quality improvement efforts should continue to be enforced (LARS and DQA specific visits should increase in frequency and reach)
2. Interventions to improve young mother's access and retention in RMNCHA care should be implemented at scale
3. There is a need to intervene before pregnancy (Programs that target primary prevention and planned parenthood), as mothers are often young and late at seeking care, increasing the risk of poor maternal and child outcomes.

There is an urgent need to scale up and enforce continuous quality improvement of care in RMNCHA clinics. This will improve client experience and satisfaction with care provided.

INTRODUCTION

PMTCT services have been implemented since 2000. In 2012, Tanzania adapted the global plan for elimination of HIV infection among children born to HIV-infected mothers and keeping their mothers alive (eMTCT 2012 – 2015). The goal of the national eMTCT Plan was to reduce vertical transmission rate from 26% in 2010 to 4% by the end of 2015. In 2013, the Ministry rolled out lifelong ART treatment to prevent vertical HIV and to improve mother's survival (LLAPLA) also known as Option B+. By end of 2014 Tanzania achieved national rollout, and since then the services have been consistently implemented.

In the course of rollout and implementation of the newer PMTCT strategy, there were robust (PMTCT report 2015) and anecdotal evidence that, despite high acceptance of HIV testing; testing rates were still low in some regions. Women dropped out of care immediately after treatment initiation, and that younger women were most at risk of poor PMTCT care adherence.

This report seeks to build on evidence already published 2015 program report, and complement with ancillary data to robustly answer who, when and why women drop out or are not adherent to PMTC care.

OBJECTIVES

The objective of this report is to document, and share National PMTCT program performance in year 2016.

Specifically, the national program seeks to

1. Assess program performance in 2016 using routinely collected program data, and routinely conducted field supportive supervisions/ data quality assessments (DQA)
2. Assess program effectiveness through estimating transmission rate of HIV from mother to child by triangulating various sources of data (routine and laboratory data)
3. Characterizing pregnant women who receives PMTCT care in Tanzania
4. Analyzedrop off from PMTCT cascade, using routinely collected patient data
5. Analyze health systems factors using LLAPLA surveillance data

METHODS

Program performance; Mixed methods was used, where data collected and reported through DHIS was triangulated and validated by data from LLAPLA assessment and response system (LARS).

Data was extracted from DHIS, cleaned by outlier analysis and normalized around the median. Weighted estimates were calculated for each indicator. Non-parametric test of trend was used to ascertain if there was a change in performance between 2014 – 2016. Data from LARS is used to contextualize and explain the observed estimates.

Program Effectiveness; HIV Transmission/Positivity rate; Data from HIV DNA-PCR laboratories was abstracted and used to estimate the rates of HIV positivity among HIV exposed infants.

Characterization of PMTCT clients and analysis of dropout from PMTCT care cascade; PMTCT cascade analysis data was collected retrospectively from health care facilities providing PMTCT Option B+, in 10 regions for clients identified HIV positive (including known HIV positive) from January to December in 2015. Data were verified using data quality metrics, abstracted and linked across different registers. HIV testing data were verified and abstracted from MTUHA book 6, to determine proportion of pregnant women tested for HIV and the number of women tested HIV positive, ART treatment initiation and longitudinal follow-up to ascertain outcomes were obtained from the ART register, and CTC2 cards.

Health system analysis; LARS data was collected as part of supportive supervision driven from national level, data was extracted from DHIS, cleaned and analyzed descriptively.

All analyses were done in STATA[®] 13, graphs were drawn in excel or exported directly from STATA.

RESULTS

Program performance

Site coverage

- Total RCH sites; 6120
- Total PMTCT sites; trained 5806 (94% of RCH sites)
- Total PMTCT providing at least HIV counseling and testing; 5806 (94% of RCH sites)
- Total PMTCT sites with active ART/LLAPLA service; 5163/5806 (89% of RCH sites)

Number of RCH sites increased from 5891 in 2015 to 6120 in 2016. Out of all 6120 Reproductive and Child Health sites nationwide, 94% had at least one Health Care Worker provider trained for PMTCT. Although proportionally 98% in 2015 and 94% in 2016 had at least one trained HCW, there is an actual increase in number of PMTCT sites from 5746 to 5806, and an increase on LLAPLA active sites from 4737 (80%) in 2015 to 5163 (89%) in 2016.

LLAPLA Assessment and Response (LARS)

LARS is a systematic data driven identification of poor performing PMTCT sites, follow-up and institution of remedial measures to optimize PMTCT care. LARS targeting borrows from routinely collected data, where health facilities with performance <90% in HIV testing, <90% in ART initiation, and yield ≥ 3 HIV positive pregnant women per quarter are selected. Details of how LARS functions is described elsewhere (LARS Manuals).

LARS implementation in 2016 was mainly driven from national level, and supported from central funding. This was because of lack of LARS allocated resources at district and regional levels.

All 25 regions in Mainland Tanzania received at least one LARS visit in year 2016. A total of 111 out of 186 (60%) districts and a total of 472 health facilities were visited.

Table 1: Levels of Health facilities received LARS visits in 2016

Level of health facility	Frequency	Percent
Health Center	145	30.72
Dispensary	251	53.18
Hospital	76	16.1
Total	472	100

Majority of visited health facilities were dispensaries (53.2%). The targeted health facilities scored on average 88% for proportion of pregnant women tested for HIV, and 80% for HIV positive pregnant women initiated on ART. HEID testing at 4 – 8 weeks of infant age among registered infants was 83%.

Commodities

Stock outs sometime in the last quarter of HIV test kits (23%), and ARVs(27.5%) was the main reason that explained the poor performance in the targeted health facilities. The root

causes for these stock outs was that health facilities received quantities lower than what was ordered from MSD (66%). DBS was the least reported stock out commodity (18%). Although there was no follow through visits conducted with MSD, staff responsible for ordering and managing commodities at health facilities indicated that stock was not enough at MSD (39%) leading to inadequate delivery of the requested quantities.

Quality of HIV testing

Out of 436 health facilities that responded to the LARS lab questionnaire, 93% (407) had log books for quality assurance of rapid HIV testing. For every positive HIV test there must be a documented confirmatory test; however, only 80% (328/411) of health facilities met this criterion. 33% (129/394) health facilities had had more than 2 documented indeterminate results per 100 tests conducted. However further analysis revealed that 84% of the recorded indeterminate results were due to recording errors.

Summary of Findings

LARS data points to three main findings;

1. LARS visits are not being conducted because resources are not allocated at local authority levels to effect regional and district driven visits.
2. Commodity security at health facility levels is yet to be achieved, this has led to inadequate program performance.
3. Quality of HIV testing is reasonably satisfactory. However, documentation of events is a major challenge across all service points.

Recommendations

1. There should be a strong advocacy and push at national, regional and district levels to allocate resources to enable LARS visits driven from district and regional levels. LARS was instituted to systematically assess, document and improve health services across all levels
2. There should be a close follow-up and follow through on commodities between health facilities, district authorities, MSD and logistics personnel at national level to eliminate stockout of essential PMTCT commodities.
3. All visits should continue to enforce culture of proper and timely documentation of all events, ie tests, prescriptions etc.

Performance indicators

PMTCT PROGRAM INDICATORS	2014	2015	2016	p-value
Early ANC booking; (Pregnant women attending ANC before 12 weeks gestation/total ANC booking)	14.20%	13.40%	14.85%	0.56
ANC 4 Visits; (Pregnant women attending at least 4 ANC visits/total ANC booking)	33.10%	38.70%	42.01%	<0.01
Known Positive; (Pregnant women with known HIV positive status at ANC booking/Total HIV infected pregnant women at ANC)	35.10%	37.60%	39.80%	<0.01
ANC HIV testing; (Pregnant women Tested for HIV and given results/total ANC booking)	83.50%	86.10%	91.49%	<0.01
Couple testing; (Pregnant women tested for HIV with their partners at ANC/total ANC booking)	43.60%	53.90%	57.60%	<0.01
HIV ANC testing positivity rates; (Total HIV positive tests at first ANC visit/ pregnant women tested for HIV)	3.20%	2.40%	2.15%	<0.01

ANC HIV program positivity; (Total HIV positive HIV pregnant women (known and tested)/total ANC booking)	4.90%	3.80%	3.62%	<0.01
Health Facility Delivery; (Total health facility deliveries/total ANC booking)	60.60%	63.00%	64.91%	<0.01
Skilled Birth attendance; (Total deliveries assisted by a trained nurse or above/total ANC booking)	54.30%	59.30%	60.60%	<0.01

Table 2: Comparison of data between 2014 - 2016 on PMTCT programme indicators including ANC visits, PMTCT testing, PMTCT positivity, and delivery, Tanzania, PMTCT programme data

Comparison of selected programme indicators from 2015 to 2016 shows significant improvement in all indicators (Table 1). The indicators studied included ANC attendance, ANC 4 Visits, Known Positive, ANC HIV testing, Couple testing, HIV ANC testing positivity rates, ANC HIV program positivity, health facility delivery and skilled birth attendance.

Concurrent with the findings of ANC Sentinel Surveillance surveys (7.0% in 2008; 5.6% in 2011), ANC HIV positivity declined from 4.9% in 2014 to 3.62% in 2016. Moreover, the positivity rate among women testing at ANC for the first time declined from 3.2% to 2.15% across the three years of the program implementation. This indicates an overall decline in HIV incidence in the country.

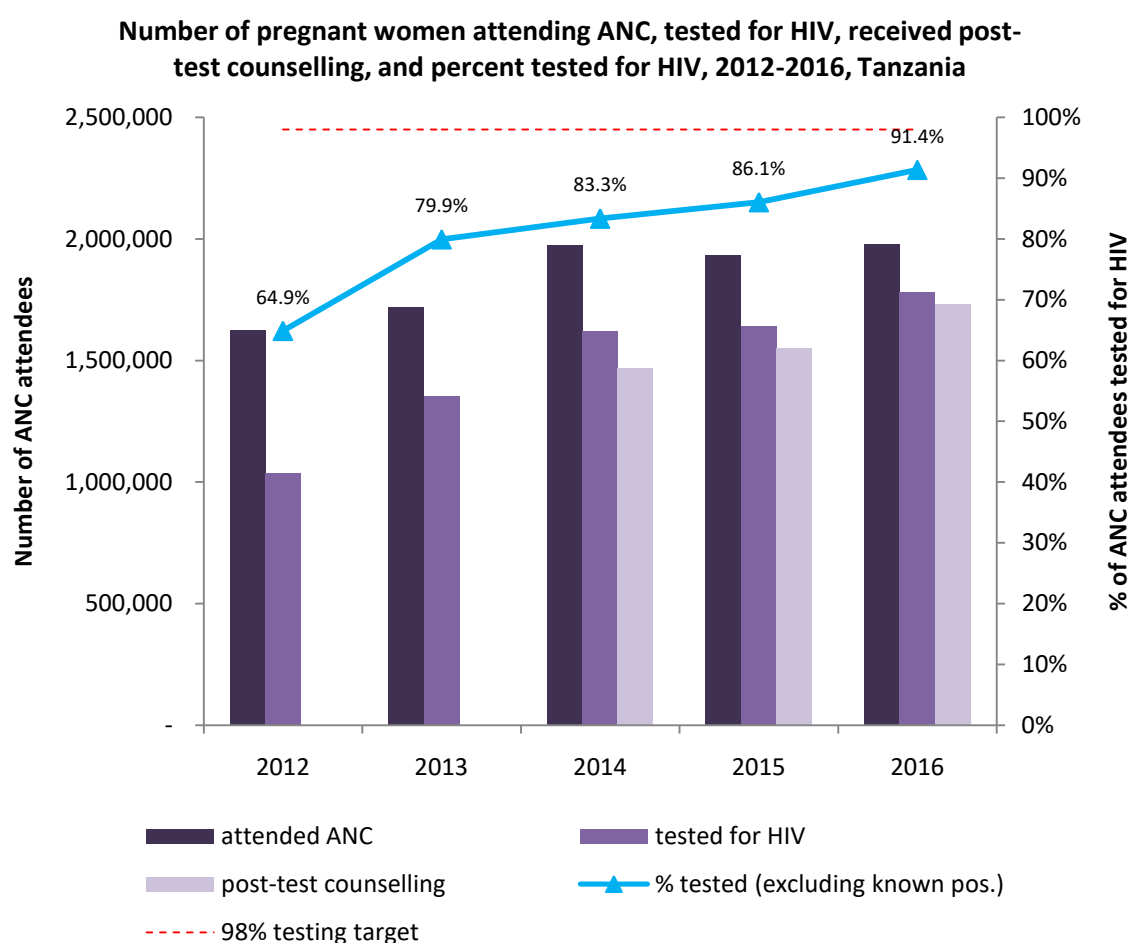


Figure 1: Number of pregnant women attending ANC, tested for HIV, received post-test counselling, and percent tested for HIV, 2012-2016, Tanzania

Figure 1; shows coverage of HIV testing at ANC from 2012 to 2016. The number of women attending ANC has increased over the five years, while the proportion of women testing for HIV has been increasing every year, it failed to reach a national target of 98%, aside from a dip in 2012 due to a national test-kit shortage. Post-test counselling data was not available in 2012 and 2013; the available data from 2014-2016 indicated a gap between the number of women tested and the number who received post-test counselling was declining; 90%, 94% and 97% of pregnant women tested for HIV at ANC in 2014, 2015 and 2016 respectively received post-test counselling and results. However, it is expected that every woman tested for HIV also receive post-testing counselling as the test and post-test counselling are performed in the same visit. This inconsistency of data can be partially due to poor documentation.

HIV counseling and testing among pregnant women, by region; 2016

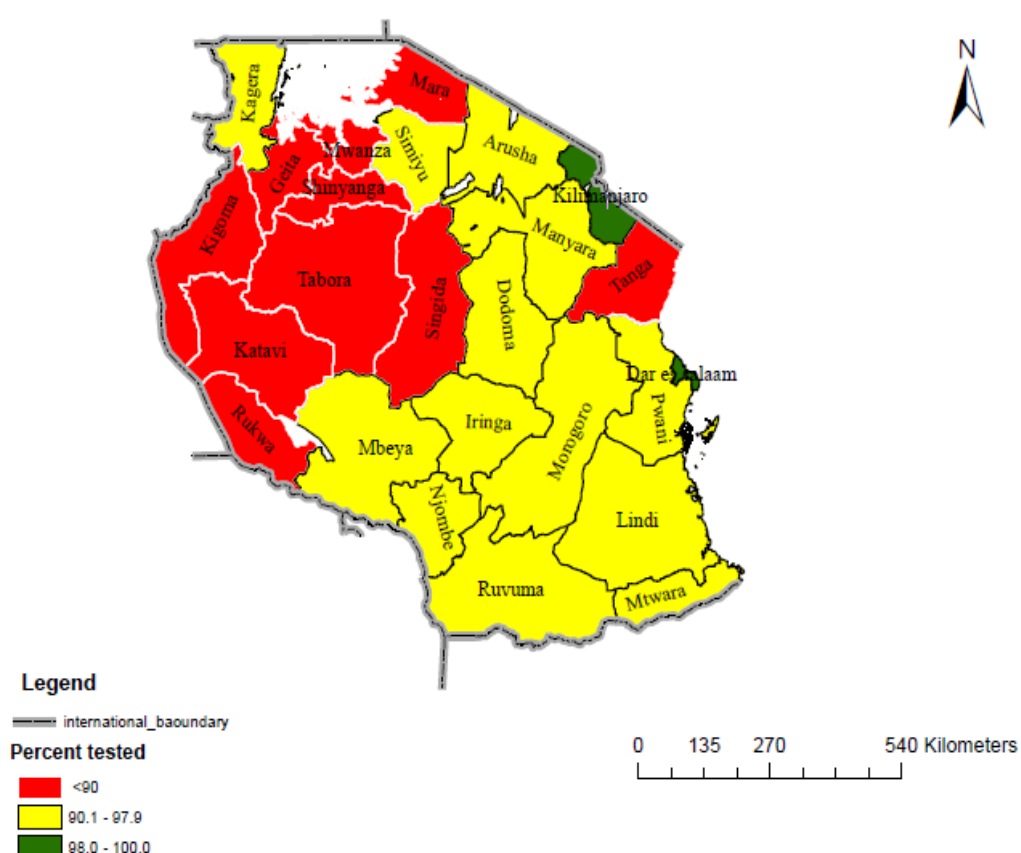


Figure 2: shows the geographic distribution of testing coverage among eligible pregnant women attending ANC Services in Health Care Facilities of Tanzania (excluding women who knew their HIV-infected status).

The map shows low HIV testing rates of HIV among eligible pregnant women (below 90%) around the Lake and Western zones. Kilimanjaro and Dar es Salaam are the only regions to have met the national target of 98% testing. The Central, Southern and Southern Highlands zones were on track (tested above 90%), however they never reached a 98% set target. Tanga region is performing poorly as compared to all regions in the east and north eastern zonal regions.

Number of pregnant women attending ANC (excluding women who know their status), tested for HIV, and percent tested for HIV, by region, 2016, Tanzania

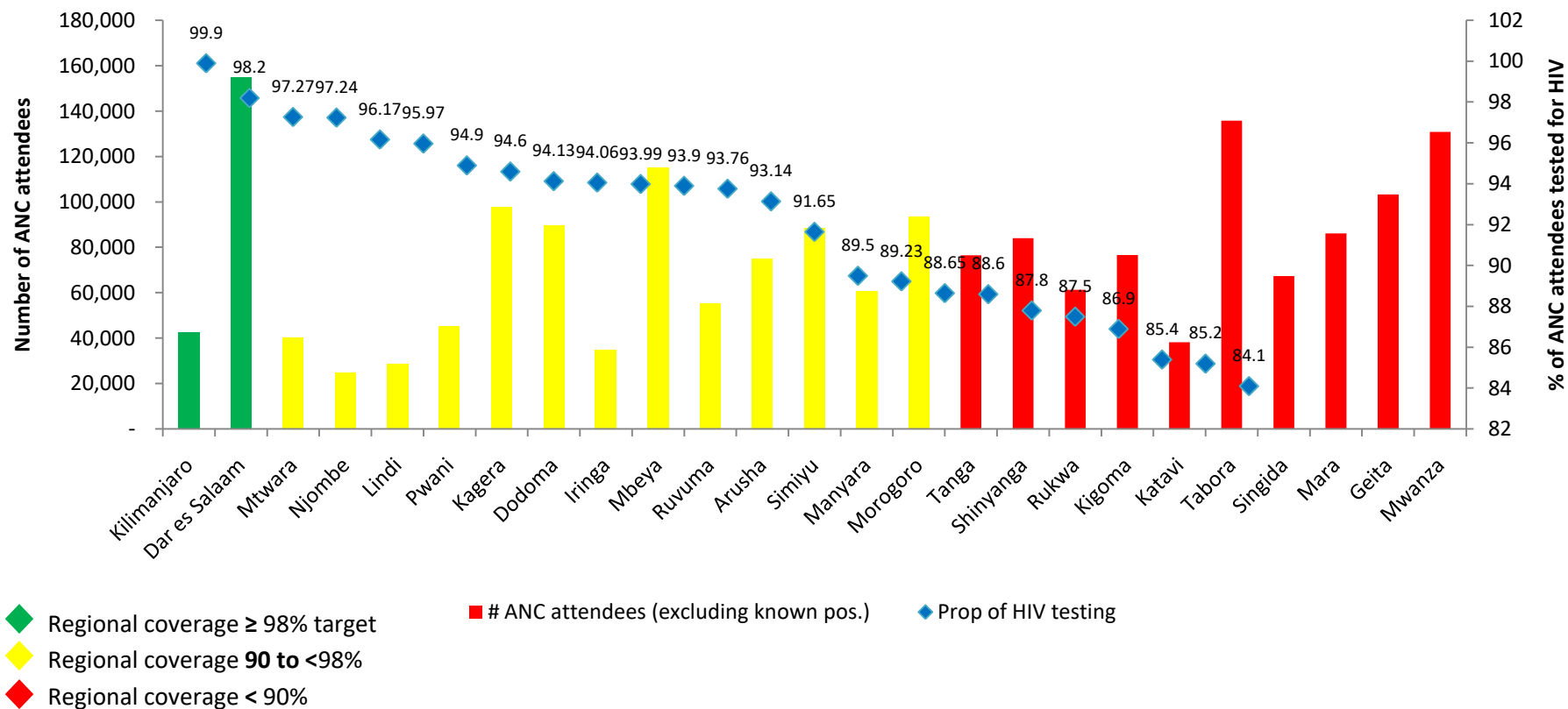


Figure 3 Number of pregnant women attending ANC (excluding women who know their status), tested for HIV, and percent tested for HIV, by region, 2016, Tanzania

Figure 3; Complements the map above and show ANC testing coverage across all regions for the year 2016. It was only Kilimanjaro (99.9%) and Dar es salaam (98.2%) regions that reached the national target of 98%. Thirteen regions tested >90% or above, and the remaining ten regions were below 90% coverage. Although Geita and Mwanza are among the ten regions performed below 90 percent, the two regions made a progress this year compared to 2015, where Geita managed to test 85 percent and Mwanza tested 84 percent of the targeted women as compared to 52 and 66 percent recorded in 2015 for Geita and Mwanza respectively.

Second HIV testing to pregnant women found to be HIV negative in their first HIV test, was rarely done in most of the health facilities visited during reporting period.

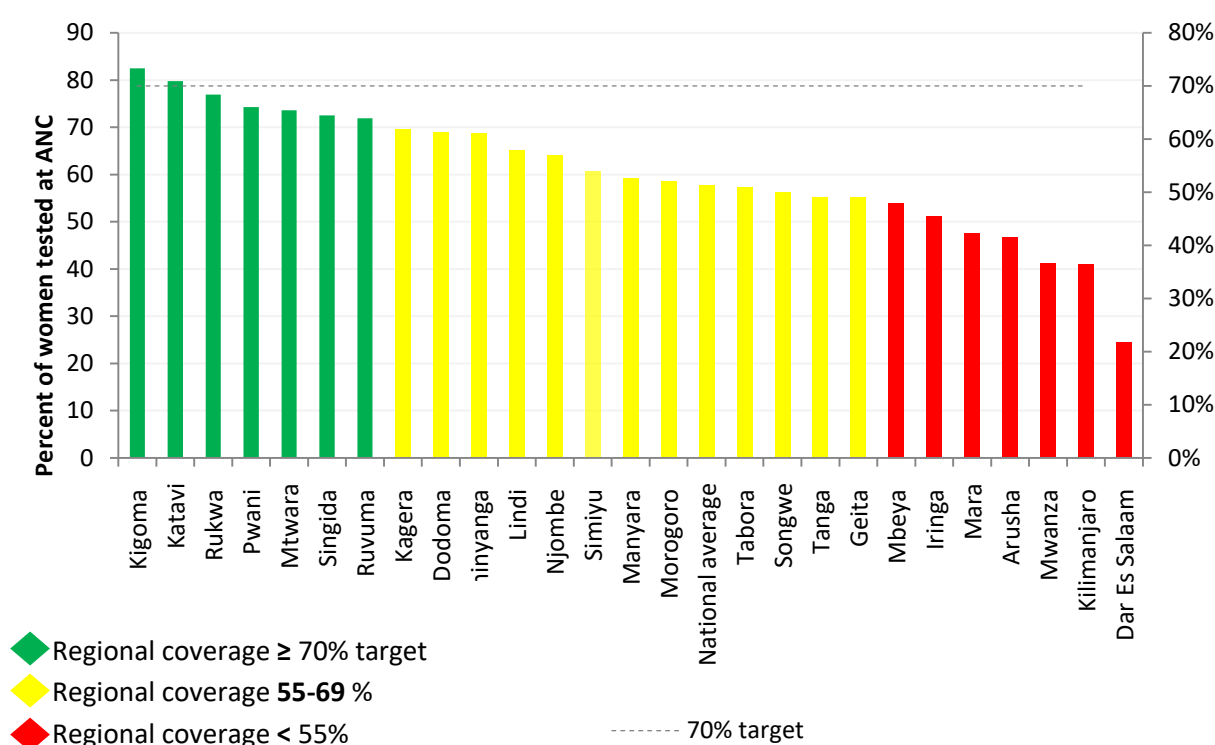


Figure 4: Percent of couples tested at ANC, by region, Tanzania, 2016

The proportion of women tested for HIV together with their male partners (couple HIV testing) is shown in Figure 4. Couple HIV testing is an important intervention because partners are counselled, tested and receive their results together; implicitly ensures disclosure and support for couples together under the guidance of health care professional. While overall national performance for couples testing (57.2%) is below the national target of 70 percent, seven regions (Kigoma, Katavi, Rukwa, Pwani, Mtwara, Singida and Ruvuma) met the target. Seven regions (Dar es Salaam, Kilimanjaro, Mwanza, Arusha, Mara, Iringa and Mbeya) scored red (<55 percent). Most of these regions have large urban populations. This could be explained by the fact that all these regions are highly urbanized; Men in urban areas are more likely engaged in formal employment making it difficult to attend ANC with their partners. Countrywide, couple testing has increased from 43.6, 53.9 and 57.2 percent in 2014, 2015 and 2016 respectively.

Table 3: Cluster adjusted and weighted comparison of women initiated or received ARVs for PMTCT 2014 – 2016

Indicator	2014	2015	2016	P-Value
Pregnant and breastfeeding initiated on ART (newly initiated on ART/newly tested positive)	81.00%	109.90%	119.80%	<0.01
Women receiving ART for PMTCT (estimated already on ART + newly initiated on ART/known positive + newly tested positive)	88.10%	106.10%	112.00%	<0.01

PMTCT Option B+/LLAPLastipulate that all HIV-infected pregnant women should be initiated on ART regardless of their CD4 count and clinical staging. Option B+ was rolled out nationally throughout 2013 and 2014. compares the proportion of HIV-infected pregnant women attending ANC who were initiated on ART and received ART from 2014 to 2016. The proportion of HIV-infected pregnant women initiated on ART increased from 81% in 2014 to 119% in 2016, and this increase was statistically significant ($p < 0.01$). Coverage for ART initiation was over 100% in 2015 and 2016 due to data issues: Numerator (Number of pregnant and breastfeeding women receiving ARVs) for this indicators are reported quarterly through ART reports, while the denominator (Number of HIV positive pregnant women)is reported monthly though ANC reports. These two data sources are not linked, and thus discrepancies are highly likely. Overall coverage of HIV-infected women who received ART (those already on treatment plus those newly initiated) increasedfrom 2014 to 2016.

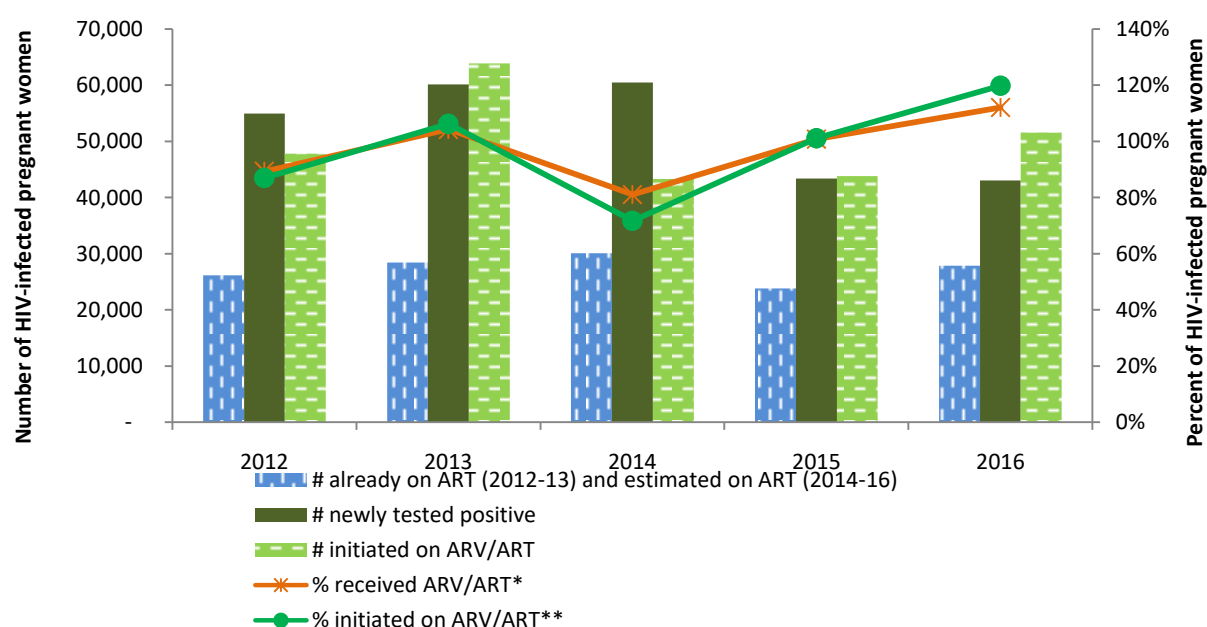


Figure 5: Number of HIV-infected pregnant women already on ART, number newly tested positive, number initiated on ART, percent received ARV/ART and percent newly initiated on ART, 2012-2016, Tanzania

Table 4: Coverage of PMTCT, Tanzania, 2012-2016 (PMTCT programme data, and spectrum estimated number needing PMTCT)

Year	Receiving PMTCT	Estimated Needing PMTCT	Estimated Coverage
2012	73,955	77,000	96%
2013	92,316	80,000	115%
2014	73,407	85,000	86%
2015	67,684	89,000	76%
2016	79,458	92,000	86%

Tanzania implemented Option A up to 2013 before changing to ART coverage under Option B+/LLAPLA by end of 2014. Higher estimates in 2013 are likely due to double reporting when clinics transitioned practices as rollout of B+/LLAPLA took hold replacing Option A. Low estimated coverage in 2015 could be attributed to poor reporting.

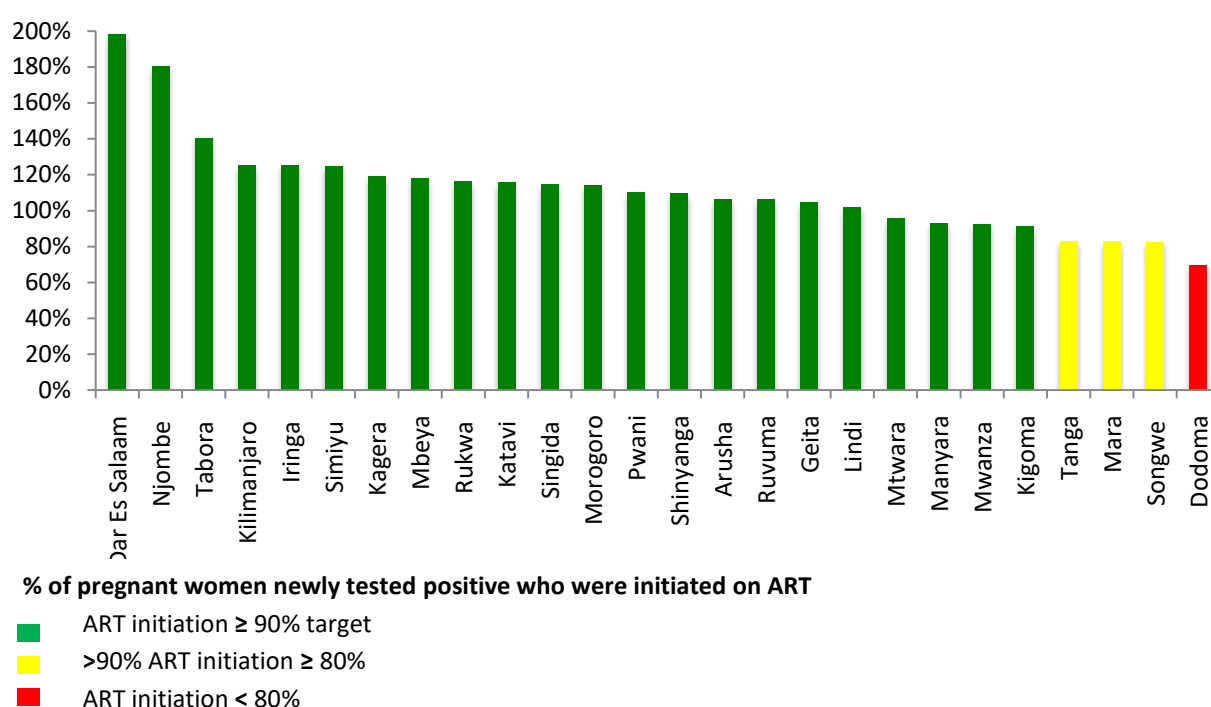


Figure 6: Percent of pregnant women newly tested positive who were initiated on ART, by region, 2016, Tanzania

Figure 6; Shows the proportion of pregnant women newly tested positive at ANC who were initiated on lifelong treatment at regional level in 2016. Twenty-two regions met the target of 90% ART initiation or greater. Although Tanga, Mara and Songwe did not reach the target, the three regions initiated ART to more than 80 percent of the targeted women. While most of the regions are covering most of women on ART, Dodoma region did not perform well; it covered only 70 percent of the women eligible for ART. Due to different unlinked sources of denominator and numerators, performance in some regions exceed the 100% mark.

Table 5: Cluster adjusted and weighted comparison of infant tested for HIV and testing HIV positive between 2014 and 2016

Indicator	2014	2015	2016	p value
Proportion of Infant tested for HIV (1 st DBS, all ages)	43.49%	70.97%	69.23%	< 0.01
Proportion of Infants tested at 2 Months (DBS)	32.67%	55.46%	56.08%	< 0.01
Proportion of Infants tested Positive	9.29%	4.97%	4.19%	< 0.01
Proportion of Infants received NVP (at birth or 1 st RCH visit)	39.58%	71.02%	68.22%	< 0.01
Proportion of Infants initiated on CTX	51.35%	73.32%	66.80%	< 0.01
Proportion of Infants initiated on CTX at 2 Months	39.90%	61.10%	57.56%	< 0.01

Table 5 compares key indicators for HIV-exposed infants between 2014 and 2016 across all indicators, which include infant testing, HIV transmission, and Nevirapine and Cotrimoxazole provision to HEI. Data shows a significant ($p < 0.01$) improvement in proportion of infants tested positive from 9.29% in 2014 to 4.19 percent in 2016. It also indicates a slightly improvement (56.08%) in the proportion of infants tested at 2 months.

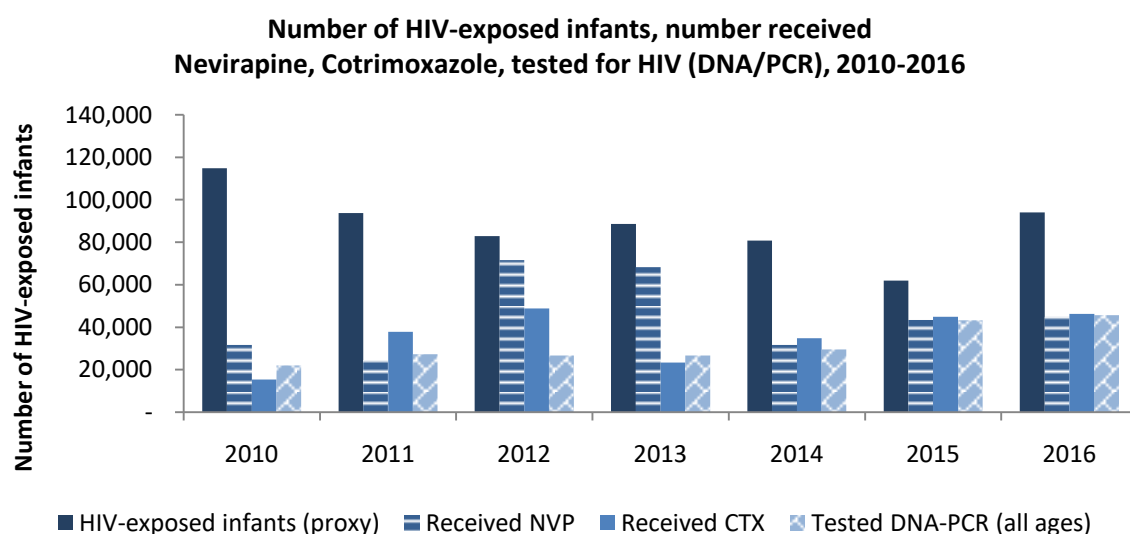


Figure 7: Number of HIV-exposed infants*, number received Nevirapine, Cotrimoxazole, tested for HIV (DNA/PCR) 2010-2016

*HIV-exposed infants estimated by using number of HIV-infected pregnant women for 2011-2016; estimated number of HIV-infected pregnant women in the population is projected from HIV prevalence (ANC Sentinel Surveillance) and Census projections

Figure 7 shows the cascade of HEI services from 2010-2016. The trend shows an overall increase in the number and proportion of HEI who were tested by DNA-PCR (at all ages), and received Nevirapine and Cotrimoxazole prophylaxes. These data shows that once children are registered they essentially receive all the desired care. These data is highly suggestive that, children are lost before are registered. (The largest drop off occurs after delivery).

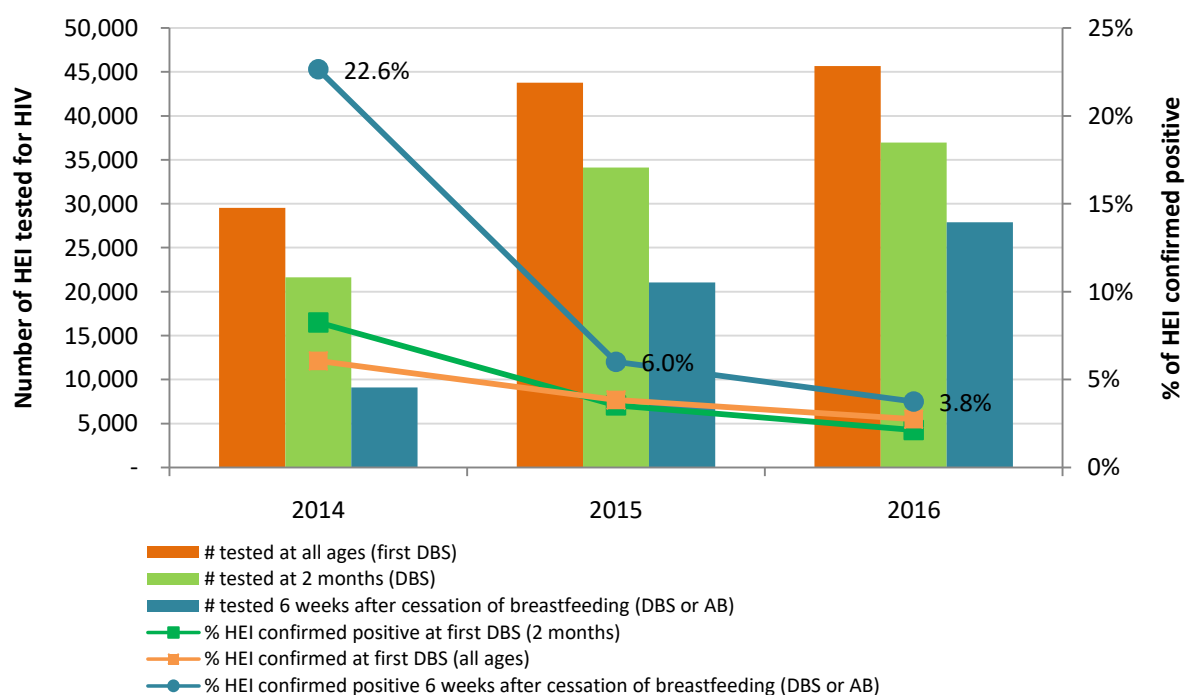


Figure 8: Number of HIV-exposed infants tested for HIV, and percent confirmed positive, Tanzania, 2014-2016, PMTCT Programme Data

Guidelines stipulate that infants born to HIV-infected women should test for HIV within the first two months of life. Figure 8 shows the number of HEI who tested for HIV via DNA/PCR within the first two months after birth, at all ages, and tested for HIV six weeks after the cessation of breast feeding by Antibody or DNA/PCR, and the respective positivity for each testing modality. Data on testing within the first two months and after cessation of breastfeeding was not available for 2013. The number of infants testing by DNA-PCR increased over the years, as well as the number testing within two months and six weeks after breastfeeding. The positivity rate for all modalities decreased over the 2-3 years, all converging between 4.0% and 4.6%. In order to move towards zero vertical transmission from mother to child, the national target for HEI positivity after cessation of breastfeeding is currently 4%. These data is suggestive that Tanzania is on track to meet this target in 2016 and continues to progress towards elimination of mother-to-child transmission.

Summary of findings

Based on the analysis of the routinely reported program indicators;

1. There was a significant improvement in testing coverage, especially in the lake regions, despite very few regions reaching the national target of 98%
2. There is an absolute improvement in program coverage (Percent receiving ARVs for PMTCT), but because of challenging data quality, the magnitude of improvement is not conclusive
3. Child indicators stagnated at estimates similar to last year's and a modest increase in HEID testing age.

Recommendations

1. Efforts should be invested in testing coverage; all steps along the cascade and therefore program effectiveness are determined this first critical step. All challenges related to HIV test kits availability should be addressed
2. Data quality should be improved, verification across data sources should be carried out at health facility levels before data use or reporting
3. Deliberate efforts should be invested for child care. Cotrimoxazole should be procured and distributed.

Program Effectiveness; HIV Transmission/Positivity rates

Data was abstracted from 4 HIV DNA-PCR laboratories. Data from January to December 2016 were included in the analysis.

Data were cleaned, and analysed using STATA13[®]. We present median estimates to avoid skewed mean estimated, caused by extreme true values.

HIV Exposed Infant's Early HIV test (DNA-PCR) uptake:

The figure below shows distribution of HEI testing by age category.

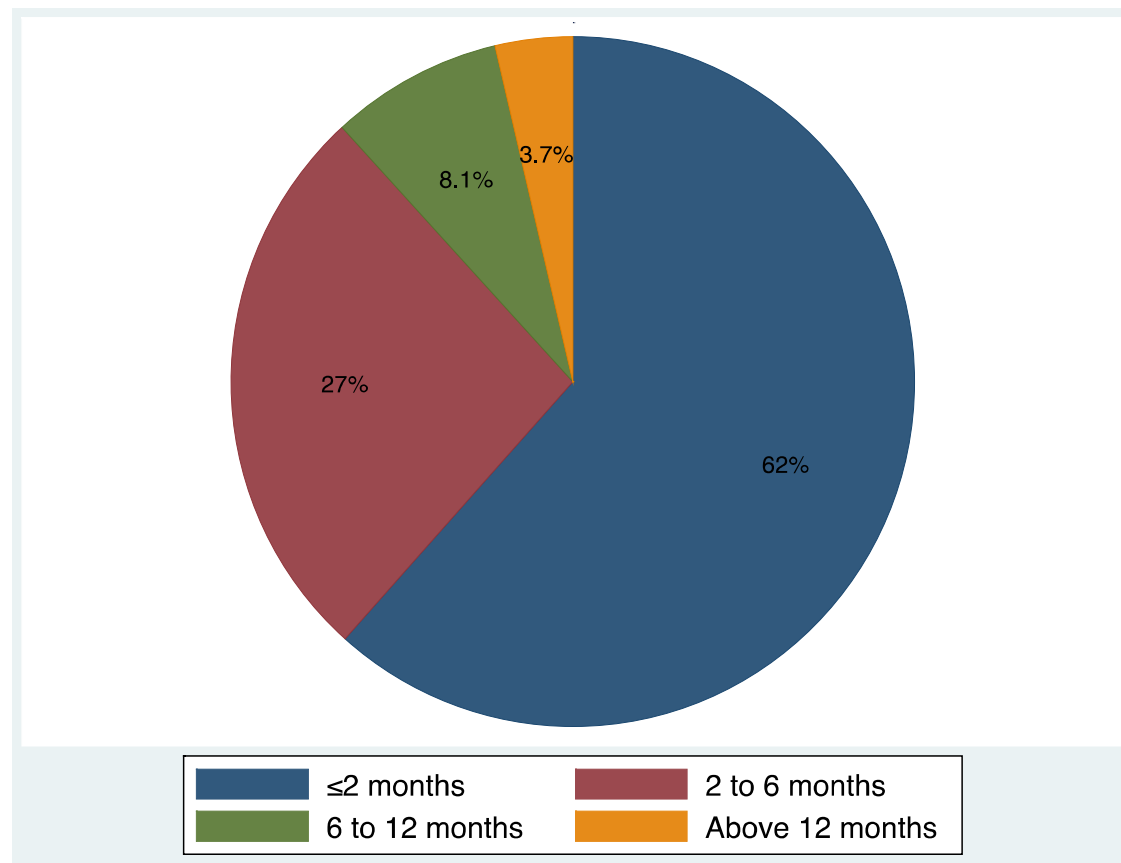


Figure 9: Distribution of age among infants tested for HIV in HIV early infant diagnosis services; LAB data

Figure 9: Distribution of age among infants tested for HIV in HIV early infant diagnosis services; LAB data shows that among those tested, largest proportion were in the age ≤ 2 months of age. Those aged above 6 months are probably receiving confirmatory tests after cessation of HIV exposure, this group makes the smallest proportion (11.8%). This smaller proportion of confirmatory testing using DNA-PCR is expected; the national HEID testing protocol recommends final testing using antibody test, unless there is an indication for DNA-PCR.

The median age was 7 weeks.

HIV Exposed Infant positivity rate

DNA-PCR HIV Positivity rate trend 2011 - 2016

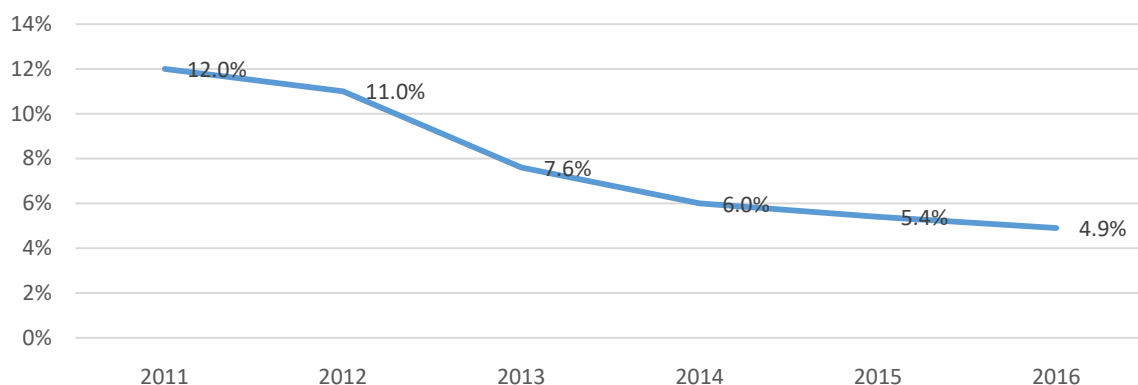


Figure 10: HIV positivity trend 2011 – 2016, among infants tested for HIV: HEID Lab data

Figure 10: HIV positivity trend 2011 – 2015, among infants tested for HIV: HEID Lab data above shows trend of positivity rates based on PCR lab data. Positivity declined from 12% in 2011 to 4.9% in 2016. Suggesting the effect of PMTCT program on HIV transmission. The positivity rate at two months of age was 2.4% in 2016. The positivity data is biased towards those tested in earlier infancy, thus no solid conclusion could be drawn on the final HIV transmission rates and thus the PMTCT effectiveness.

HEID Sample turnaround time by zonal laboratory

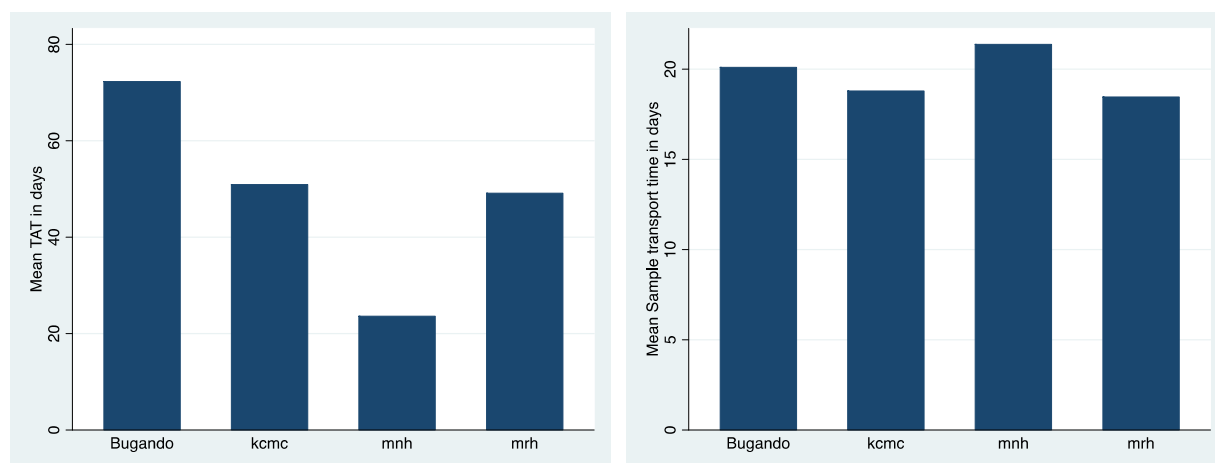


Figure 11: DBS sample turnaround time (TAT) and sample transport time by testing laboratory – HEID lab data 2016

Overall turn around time since sample collection to when results were sent back to testing sites was 59 days (SD 35 days), while sample transport time from date of collection to when sample was received in the lab was 19 days (SD 20 days), and average time the samples spent in the lab before results were sent back was 40 days (SD 28 days).

Figure 11 above: Shows that the mean turnaround time of HEID DBS samples by referral laboratories (Bugando, Mbeya - mrh, KCMC, and Muhimbili - mnh) was 72 days for Bugando, 50 days for KCMC, and 49 days for Mbeya Referral labs, while Muhimbili lab had the shortest time (22 days). Like in 2015, the lake zone still has the longest turnaround time.

Examination of the sample transport time from date of collection to when samples were received in the laboratories indicates that the transport time are very similar in all labs (mean ~20 days). Samples spent longest time within labs before results were obtained as compared to time spent during transport; In Bugando lab samples on average spent 2 months (52 days) before results are out, while in the average time in KCMC and Meya labs was one month (~31 days). Muhimbili had the shortest in within lab sample time of two days. (Figure 13)

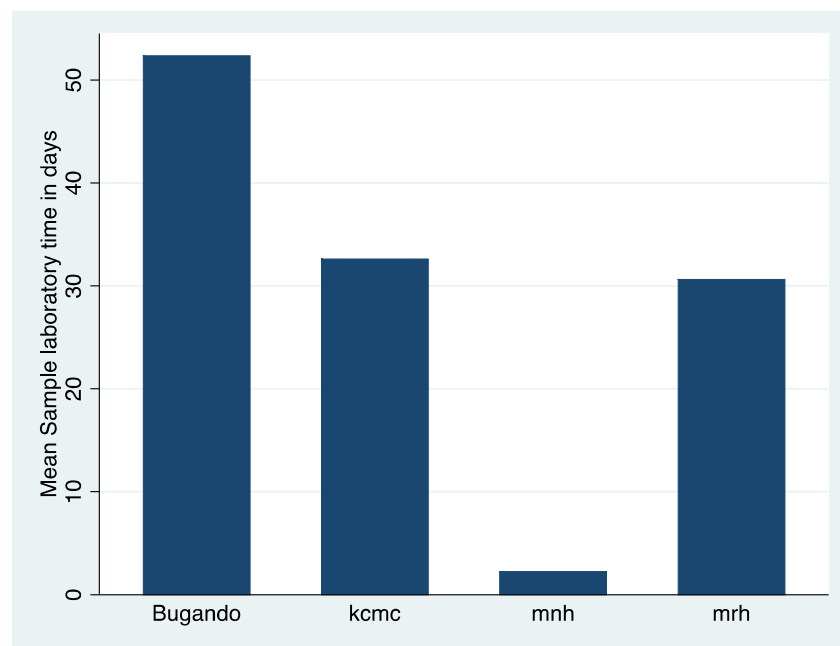


Figure 12: Within Laboratory time spent by DBS samples before being tested, Tanzania 2016

Summary of Findings

These findings confirm that sample turnaround time is still unacceptably higher. On average two months from sample collection to when results are ready is twice as high as compared to the recommended time of four weeks. There has been persistent complains from health care providers that results take unacceptably longer time to be delivered to health facilities. These data strongly shows that within labs is a point that samples spend the longest time. It is critical that within lab efficiencies need to be improved to reduce turnaround time.

Recommendations

These findings pinpoint lab as to be the single largest contributor to the overall turnaround time

1. Solution to improve within lab efficiencies should be sought in all labs
2. Where appropriate, point of care DBS need to be adapted, especially in the regions served by the Bugando Lab to reduce sample load

PMTCT cascade analysis

Table 6: Characteristics of pregnant women receiving PMTCT care in 2015 – 2016 in sampled health facilities

VARIABLE	NUMBER	PERCENT
AGE (N=4,659)		
16 - 24	1,353	29.04
25 – 34	2,541	54.54
35 - 44	756	16.23
45 AND ABOVE	9	0.19
Gestation age at ANC booking (N=4,594)		
FIRST TRIMESTER	952	20.72
SECOND TRIMESTER	3,391	73.81
THIRD TRIMESTER	251	5.46
Treatment eligibility at ANC booking (N=2,098)		
CD4	175	8.34
Clinical stage	198	9.44
Pregnancy	1,661	79.17
Breastfeeding	64	3.05
ART status at ANC booking (N=2,187)		
Starting ART	1,418	64.84
Already on ART	769	35.16
CD4 Testing (N=4,738)		
No	3,786	79.91
Yes	952	20.09
Birth outcomes (N=1,958)		
Live births	1,894	96.73
Still births	37	1.89
Abortions	27	1.38
2 Months DBS Collected (N=1,212)		
No	34	2.81
Yes	1,178	97.19
DBS1 Positivity (N=964)		
Negative	943	97.82
Positive	21	2.18
Received Confirmatory HEID test (N=710)		
No	305	42.96
Yes	405	57.04

Table 6: shows characteristics of pregnant women living with HIV who received PMTCT care in year 2015 and 2016. Those aged 16 – 24 represent almost a third (29%) of all pregnant women making first antenatal care visit. A fifth (20.72%) of HIV positive pregnant women, makes the first visit within the first trimester. The remaining 80% does so after first trimester.

What is interesting in these findings, is that, a significant proportion (29%) of HIV infected pregnant women are younger, aged 16 – 24 years. This group represent newer HIV infections with higher maternal viral load, thus poses heightened risk of vertical HIV transmission. While on the other hand majority of women (64.8%) are diagnosed to be living with HIV and start ART treatment for the first time during their current pregnancy. While 35.2% had had started ART treatment by the time they were pregnant. This large proportion starting treatment for the first time suggests that, these women had already missed the benefit of ART treatment before conception.

Table 7: Maternal Status of ART treatment by gestation age at Antenatal Care Booking, 2015 - 2016

GESTATION AGE	ART TREATMENT STATUS AT ANC BOOKING	
	Start ART	Already on ART
First trimester	262(60%)	176(40%)
Second trimester	1042(68%)	500(32%)
Third trimester	87(66%)	44(34%)

The table above shows proportion of pregnant women by ART status and gestation age at ANC booking. The proportion starting treatment for the first time is high among those in the second or third trimester. This implies that these women start receiving PMTCT intervention late in their pregnancies, reducing the opportunity for longer maternal treatment in the current pregnancy.

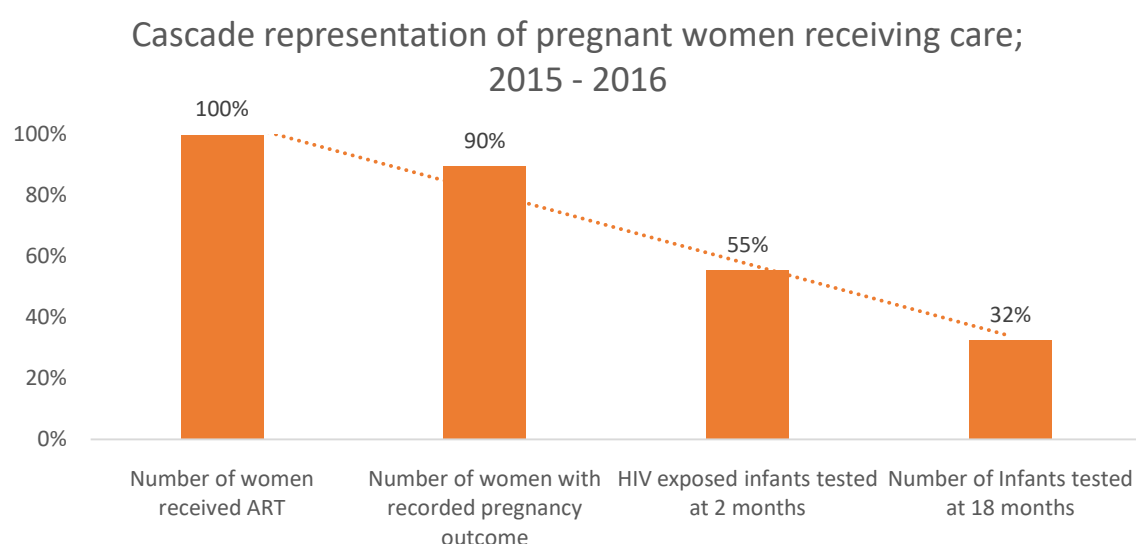


Figure 13: PMTCT cascade, from ART initiation though to confirmation of HIV among exposed infants at age of 18 months, 2015 - 2016

The graph above depicts the PMTCT cascade, initial cascade step of enrolment of HIV positive pregnant women is excluded in the graph because of data challenges. We could not locate longitudinal data of almost 50% of HIV positive pregnant women identified in the Antenatal care register, thus in this graph we only included those whom we could link between the antenatal care register, and CTC 2 files. The graph show a cascading drop from

one step of PMTCT care along the care continuum where HIV confirmation for HIV exposed children is as low as 32% by the age of 18 months (~24th month of follow-up). This graph highlights the retention challenge that need to be addressed.

Table 8: Maternal retention in care for all women, origin of follow-up set at date of pregnancy

Interval (Months)		Observations	Lost to follow-up	Proportion retained	STD Error	Lower	Upper
0	1	1870	35	0.98	0.00	0.97	0.99
1	2	1820	35	0.96	0.00	0.95	0.97
2	3	1759	23	0.95	0.01	0.94	0.96
5	6	1650	26	0.91	0.01	0.89	0.92
11	12	1449	27	0.83	0.01	0.81	0.85
23	24	417	3	0.69	0.01	0.67	0.72

Table above shows the proportion of mother retained in care since ANC booking; 95%, 91%, and 83% of women were still in care at 3, 6 and 12 months since starting ANC care. At 24 months, only 69% were still in care.

Table 9: Mother-Baby retention in care for all women, origin of follow-up set at date of infant birth

Interval (Months)		Observations	Lost to follow-up	Proportion retained	STD Error	Lower	Upper
0	1	1183	3	1.00	0.00	0.99	1.00
1	2	1178	17	0.98	0.00	0.97	0.99
2	3	1151	13	0.97	0.00	0.96	0.98
5	6	1078	7	0.94	0.01	0.92	0.95
11	12	892	11	0.87	0.01	0.85	0.89
23	24	49	2	0.67	0.03	0.60	0.73

Table above shows the proportion of Mother-Baby pairs retained in care after delivery of the baby; 97%, 94%, and 87% of mother-baby pairs were still in care at 3, 6 and 12 months since birth of the baby. At 24 months, only 67% were still in care.

Compared to retention in care among women above, mother-baby pairs appear to have better retention than mothers alone. This is suggestive that, women tend to drop out of care more before delivery.

Table 10: Maternal retention in care by aged groups

16 - 24

Interval (Months)		Observations	Lost to follow-up	Proportion retained	STD Error	Lower	Upper
0	1	493	13	0.97	0.01	0.95	0.98
1	2	476	15	0.94	0.01	0.92	0.96
2	3	454	7	0.93	0.01	0.90	0.95
5	6	419	8	0.88	0.02	0.84	0.90
11	12	360	9	0.80	0.02	0.76	0.83
23	24	91	0	0.62	0.03	0.57	0.67

25 - 34

Interval (Months)		Observations	Lost to follow-up	Proportion retained	STD Error	Lower	Upper
0	1	1024	25	0.98	0.00	0.96	0.98
1	2	988	17	0.96	0.01	0.94	0.97
2	3	953	15	0.94	0.01	0.93	0.96
5	6	892	15	0.90	0.01	0.88	0.92
11	12	780	13	0.82	0.01	0.80	0.85
23	24	244	3	0.70	0.02	0.67	0.74

35 - 44

Interval (Months)		Observations	Lost to follow-up	Proportion retained	STD Error	Lower	Upper
0	1	349	3	0.99	0.00	0.97	1.00
1	2	345	4	0.98	0.01	0.96	0.99
2	3	340	1	0.98	0.01	0.95	0.99
5	6	327	3	0.95	0.01	0.92	0.97
11	12	298	5	0.87	0.02	0.83	0.90
23	24	79	0	0.72	0.03	0.66	0.78

The table 10: shows retention in care among pregnant women since date of ANC booking disaggregated by age category. Retention at all time points get higher as the age category increases. In general, those in the age category 16 – 24 appears to have worse retention of their older counterparts.

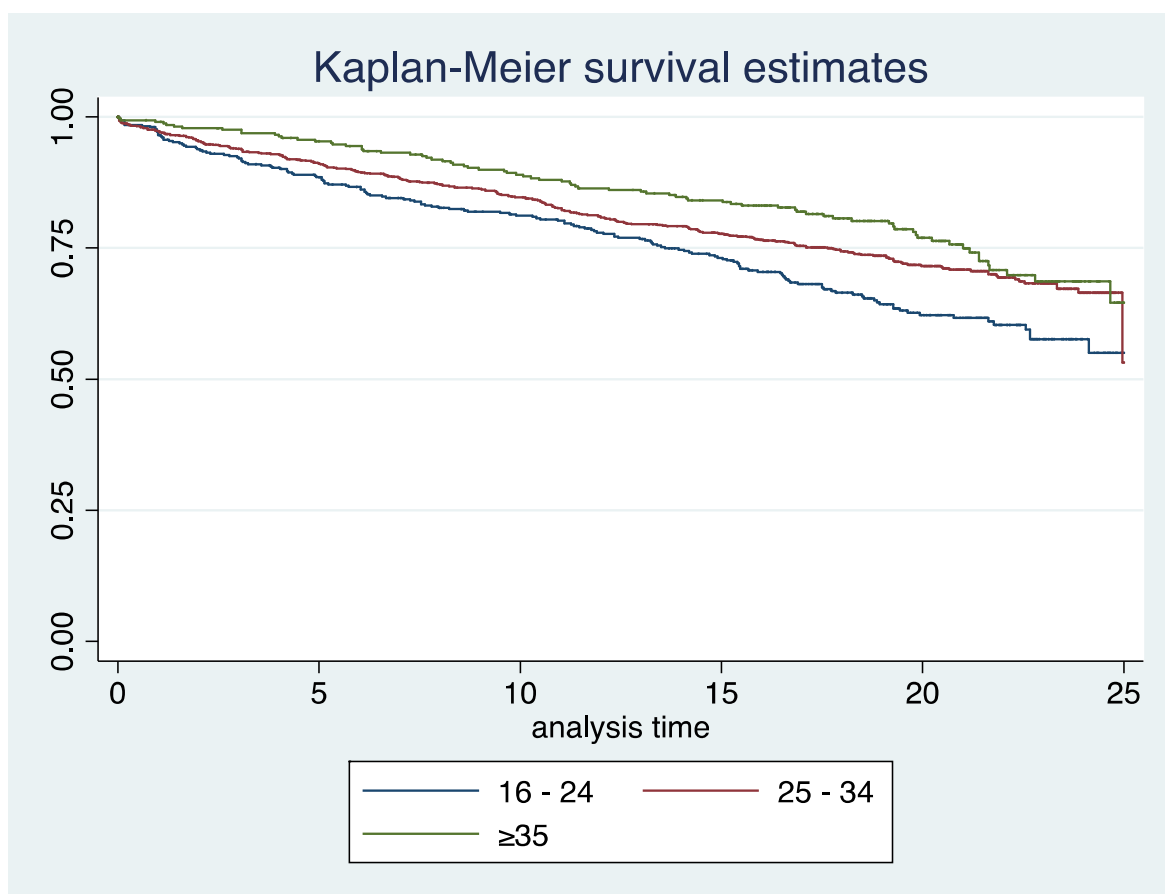


Figure 14: Kaplan-Meier survival estimates (Measuring retention in care) of pregnant mothers by age groups, 2015 – 2016 Tanzania.

The graph above shows survival probabilities by age groups of women since ANC booking. Those in the age group 16 – 24 had the worst retention. Retention appears to increase with age of the mother.

Determining independent predictors of dropping out of care among women receiving PMTCT care

We determined independent predictors of dropping out of care, by running cox-proportional hazard model, controlling for duration to ART treatment from since date of HIV diagnosis, maternal age, and treatment eligibility.

Table 11: Multivariate logistic regression, determining independent predictors of retention in PMTCT care, follow-up time starts at pregnancy diagnosis

Variable		Hazard Ratio	STD Error	Z score	p-value	Lower	Upper
Time to ART initiation (Base ≤3 months)	*> 3 months	0.59	0.09	-3.40	0.001	0.43	0.80
Maternal age category (Base 16 – 24 years)	*25 - 34	0.78	0.08	-2.37	0.018	0.63	0.96
	*35 - 44	0.72	0.11	-2.21	0.027	0.54	0.96
Treatment eligibility (Base CD4)	Clinical stage	0.72	0.22	-1.07	0.28	0.39	1.31
	*Pregnancy	1.65	0.36	2.32	0.02	1.08	2.52
	Breastfeeding	0.83	0.33	-0.47	0.64	0.38	1.79

* Statistically significant findings

After controlling for each other, some delay in treatment initiation, advanced maternal age and other eligibility criteria for treatment were found to decrease hazards of dropping out of care. Pregnancy was associated with 1.6 times hazards of dropping out when compared to CD4 testing.

Summary of findings

In this cascade analysis, there are several findings that have programmatic implications;

1. Serious data quality issues, that was evident by our inability to link data (50%) from various sources
2. A significant proportion (29%) of pregnant women living with HIV are younger than 24 years; this group represents new HIV infections, that is also associated with high maternal viral load. Thus in this group there is higher risk of onwards vertical HIV infections to their babies.
3. Only 20% makes first visit in the Antenatal Care in the first trimester; 80% makes late visits, representing missed opportunity for PMTCT interventions.
4. Nearly two thirds (64%) start treatment for the first time during current pregnancy; this indicates that treatment for general population is not yet universal, there is a need to ensure that these women have access to HIV testing and start treatment long before they become pregnant.
5. When compared to other age groups, younger women had higher hazards of dropping out of care, and that women initiated on treatment because of pregnancy had almost two times higher hazards of dropping out. And those initiated treatment three months after diagnosis were less likely to drop out of care. These findings strongly point to the following issues;
 - a. Pregnant women are not well prepared to start treatment, this is further enforce by the fact that, those who have shorter treatment preparation and thus started treatment immediately after diagnosis were also likely to drop out of care.
 - b. Health care delivery does not address the needs of younger mothers; Younger women are at higher risk of dropping out of care as compared to older women. Probably these women are naïve to PMTCT care, while older women might have had several opportunities for PMTCT care.

Recommendations

These findings call for serious considerations in the following areas

1. Improvement in data quality; there is a need to develop and implement standard procedures that make sure that data are recorded timely, linked, and are regularly checked for consistency
2. Quality of care should be improved to address the needs of younger mothers, making sure that they remain in care
3. Treatment preparation and adherence support need to be improved; quality time and care before and after treatment initiation need to be provided to understand individual patient needs to improve chances of treatment adherence and retention in care

4. HIV counselling and testing in general population, especially targeting younger women need to be scaled-up to increase access to treatment for those living with HIV but are yet to know their status. Women that are identified for the first time during antenatal care.

Overall findings and conclusion

There was a significant improvement in program performance in year 2016 as compared to preceding years. There was an increase in testing rates and effective program coverage. However, there was no significant improvement in HIV exposed child indicators.

Despite these remarkable success, there still remained challenges; against background of high coverage, there were delayed care seeking and high rates of drop out from care especially among young mothers. This poses increasing risk of vertical HIV transmission as children's exposure to HIV occurs while their mothers are off PMTCT care.

There are still supply side challenges that need to be addressed, many poor performing health facilities were caused by supply side issues (Reported stock out of HIV test kits and ARVs)

Overall recommendations

Based on findings in year 2016 the following recommendations are made

4. Data quality improvement efforts should continue to be enforced (LARS and DQA specific visits should increase in frequency and reach)
5. Interventions to improve young mother's access and retention in RMNCHA care should be implemented at scale
6. There is a need to intervene before pregnancy (Programs that target primary prevention and planned parenthood), as mothers are often young and late at seeking care, increasing the risk of poor maternal and child outcomes.
7. There is an urgent need to scale up and enforce continuous quality improvement of care in RMNCHA clinics. Task sharing, delegation and use of community workers should strongly be considered to free time of already stretched qualified health care workers to implement complicated and sophisticated care tasks, this will improve client experience and satisfaction with care provided.