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AN ASSESSMENT OF THE PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) PROGRAMME CHALLENGES AT HARARE HOSPITAL, ZIMBABWE

BY

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Abstract

Despite various efforts in place to lower vertical transmission of HIV, the goal of eliminating vertical transmission in Zimbabwe remains far off. There has been notable decline in vertical HIV transmission rates from 33% in 1999 to 7.5% in 2018. Despite the decline, strategic interventions are needed to further reduce the transmission rates to levels below 5% as recommended by World Health Organisation. The main objective of the study was to assess challenges faced by the PMTCT programme at Harare Hospital. A mixed method approach comprising quantitative review of records in the Early Infant Diagnosis database between January and December 2018 as well as qualitative interviews with key informants was used. The study was also based on a tool adapted from the HIV exposed infants register. The database gave insight to the risk factors of mother to child transmission while qualitative interviews highlighted the challenges faced by the programme. A total of 250 exposed infants records were reviewed. One infant (0.4%) was infected at one week, 92 (37%) were infected at 8 weeks of age while 97 (39%) were infected at 9 months. Of the 100 women who transmitted HIV, 5 women (5%) were never on ART and 32 women (32%) were initiated before pregnancy. Twelve (12%) transmitted the virus after late initiation during the pregnancy. Only 7 (7%) transmitted the HIV virus after they were initiated early in the pregnancy. Of those who transmitted, 30 women (30%) were initiated post-delivery. Receiving an HIV test during ANC reduced transmission by 6% from 48 619 in 2014 to 45814 in 2018. All six health workers interviewed revealed that they were short-staffed and were overwhelmed with work. Two out of six participants also highlighted that stock outs for reagents and consumables for viral load and early infant diagnosis (EID) testing affected service delivery and hence programme performance. The study showed that transmission rates are declining, however more resources and staff are needed for uninterrupted HIV testing.

Key words: Harare Hospital; Pregnant and Lactating Women; Prevention of Mother to Child Transmission; Transmission Rates; Vertical Transmission

Declaration

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

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List of Abbreviations

ANC	Antenatal Care
ART	Anti-Retroviral Therapy
CDC	Centre for Disease Control
CHAI	Clinton Health Access
CLI	Clinic Lab Interface
EID	Early Infant Diagnosis
EPI	Expanded Programme for Immunisation
HEI	HIV Exposed Infant
HIV	Human Immunodeficiency Virus
LIMS	Laboratory Information Management System
NMRL	National Microbiology Reference Laboratory
PMTCT	Prevention of Mother to Child Transmission
POC	Point of Care
UNICEF	United Nations International Childrens' Emergency Fund
VL	Viral Load
WHO	World Health Organisation

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CHAPTER 1 INTRODUCTION

1.1 Introduction

This chapter gives a background of the Prevention of Mother to Child Transmission Programme (PMTCT) in Zimbabwe. Specifically highlighting the strides it has made in reducing vertical transmission of HIV. It will also highlight how the country is still lagging behind in meeting the global target of eliminating mother to child transmission of HIV. The chapter then concludes justifying the need of an assessment of the programme challenges and how they can be mitigated so that Zimbabwe eliminates vertical transmission of HIV.

1.2 Background

Despite the various efforts in place to lower vertical transmission of HIV, transmission rates in Zimbabwe remain short of the goal of eliminating vertical transmission. It is therefore imperative to identify the remaining barriers within the PMTCT programme. It is important to note that out of the estimated 2.3 million children under the age of 15 who are living with HIV, 90% of them are in sub-Saharan Africa and that mother to child transmission accounts for about 90% of these infections (WHO, 2006; WHO, 2007). Without interventions, about a third of HIV positive mothers will pass the virus to their babies.

Estimates indicate that the majority of transmission cases (60%) occur during labour, with comparatively less chances of transmission (20%) during pregnancy and breastfeeding. About 33% of infected infants die under the age of one if there is no treatment intervention and 50% die before their second birthday (Newell, Cortina-Borja, Rollins, Gaillard, Dabis, 2004). Early HIV diagnosis is therefore pivotal for early treatment initiation.

For Zimbabwe to reduce HIV incidence levels in children, certain interventions pertaining prevention of vertical transmission must be put in place. These include improving access to HIV testing within PMTCT services, ARVs for women and HIV exposed infants, family planning services amongst women living with HIV and also expanding PMTCT services in ANC sites (UNICEF, 2010).

Despite efforts by the PMTCT programme in Zimbabwe, transmission is still occurring. As a recourse to this problem, UNICEF (2010) emphasizes the need to ensure access to family planning services amongst women living with HIV and access to skilled delivery by rural and poor women. The same organization also reiterates the need to improve decentralization of PMTCT services and improved access to HIV testing within PMTCT services. It also emphasizes on improved access to ARVs for women and HIV exposed infants.

Since 2010 remarkable progress in reducing mother to child transmission of HIV has been made, with most African countries reducing the rates by more than 50%. Notable rates are as follows: Botswana (85%), Rwanda (83%), Malawi (76%), Namibia (71%), Zimbabwe (69%) and Uganda (65%) (UNAIDS, 2018). Despite 86% of pregnant women currently having access to ARVs worldwide, this remains short of the goal of eliminating vertical transmission. According to UNAIDS (2018), about 940 000 children aged 0–14 years were accessing treatment in 2018, a number double that of 2010 but far short of the 1.6 million target set for 2018.

The WHO and UNAIDS have called for elimination of mother to child transmission of HIV in a bid to reduce under 5 mortality rate. It was recommended that a four-pronged

approach based on antenatal voluntary counseling and testing as well as integration of ART services with maternal and child health programmes be employed (WHO, 2000). By the end of 2018 only 63% of HIV exposed infants had received a virologic test at 6 weeks of age, which is far below the national target of 85% by 2023 (MoHCC, 2019)

When the PMTCT programme started in Zimbabwe around 1999 the transmission rate was at 33%. In 2001 it declined to 28% and a further decline to 7.5% in 2018 (Zimbabwe PMTCT report, 2018). Despite the decline in positivity is encouraging there is need to bring in strategic interventions so as to further lower the transmission rate to levels below 5% which is the cut-off for breastfeeding nations who need to be validated for elimination of mother to child transmission. Therefore, there is a need to assess the challenges faced by our PMTCT programme and see if it is able to lower transmission rate and eliminate vertical transmission in Zimbabwe within the stipulated time frame.

Challenges were assessed with regards to HIV testing in ANC, retention of pregnant women on ART and constant viral load monitoring as these are the main prongs of a PMTCT programme. The country should have robust systems to ensure that these three main prongs of PMTCT are adhered to i.e infrastructure, human resources, conducive policies etc. There is also need to assess performance of the programme indicators i.e viral load and EID testing coverage, availability of tests and HIV drugs and quality of care and highlight challenges causing low performance of the indicators.

Success of the PMTCT programme is mainly measured by the reduction of transmission rates to the HIV exposed infants (HEI). This is seen through the Early infant Diagnosis programme of testing HEI early in life so that if infected they can be initiated on ART

thus reducing morbidity and mortality due to HIV. WHO has recommended that EID be done at 6 weeks using Nucleic Acid Testing (NAT) because of the limitations of antibody testing due to the high levels of maternal antibodies in the infant's circulation (WHO, 2011). NAT detects HIV DNA from the infant's blood thus reducing false positive results which can arise from antibody testing. According to the Joint Review Programme (2018), only 63% of HIV exposed infants had received a virologic test at 6 weeks of age by end of 2018, this is far below the national target of 85% by 2023. There is therefore need to assess challenges facing Early Infant Diagnosis testing. (WHO) recommends a target of 95% for virologic testing of all HEI at four to six weeks of age or at earliest opportunity thereafter (WHO, 2017).

The Ministry of Health and Child Care in Zimbabwe has decentralized Early Infant Diagnosis and Viral load testing in a bid to improve accessibility and coverage of the tests. It is however important to assess if this was effective in supporting the PMTCT programme to lower vertical transmission. Early Infant Diagnosis (EID) of HIV in Zimbabwe started in 2009 at the National Microbiology Reference Laboratory (NMRL), which is in Harare. It was then decentralized to Mutare and Bulawayo (Mpilo hospital) in 2015 to improve efficiency of the testing system. The three testing lab share Zimbabwe provinces as follows: NMRL serves Mashonaland east, west, south and Midlands provinces. Mutare lab serves Manicaland and Masvingo. Lastly Mpilo lab serves Bulawayo, Matebeleland north and south provinces (MoHCC, 2010). In addition to conventional testing, the country also adopted Point of Care (POC) testing which further brought testing closer to the patients with an improved turnaround time. There are 57 Point of Care devices countrywide and some of them are using a hub and spoke model hence

covering closer remote sites. The POC programme was however partner supported and recently handed over to the Ministry of Health to takeover leadership and governance of the programme.

There has also been an evolution in the treatment of HIV positive pregnant women and Zimbabwe has also adopted the latest treatment guidelines in a bid to lower transmission rates and improve adherence. WHO recommended the use of Single dose Nevirapine on the onset of labour as well as the infant soon after birth (WHO, 2004). In 2013, Zimbabwe adopted Option B plus which was recommended by WHO which entails that all pregnant and lactating mothers should receive lifelong ART regardless of disease clinical stage or CD4 count (WHO, 2013). Following the adoption of the Option B+ policy, there was a notable increase in the number of pregnant women on antiretroviral therapy (ART) across countries. This in turn has led to lower rates of vertical HIV transmission (WHO, 2018). The Option B plus later became the 'treat all campaign' which also entails initiating HIV positive pregnant women on lifelong ART regardless of clinical stage or CD4 count.

The WHO guideline also recommended immediate initiation of HIV positive infants and it was adopted as well. By December 2014, 1560 health facilities were offering lifelong ART to HIV positive mothers and infants. In 2015, option B+ had coverage of about 85% and this significantly reduced our transmission rates (OPHID, 2017). Despite all these efforts, the transmission rates are still high if elimination is to be achieved.

Other intervention elements which were recommended by WHO and CDC known as the PMTCT cascade include utilization of ANC services by all pregnant women, adherence to ART during pregnancy, following safe infant feeding practices, early infant diagnosis

and adhering to maternal or infant ART after birth. This study aims to assess the gaps in the implementation of these interventions and how they can be improved so as to eliminate vertical transmission.

1.3 Statement of the Problem

The Global PMTCT initiative of 2009 aimed to reduce new HIV infections in children by 90% and AIDS related maternal deaths by 50%. It was launched in 2009 so as to reduce infections and maternal deaths by 2015. By the end of 2015, there was a 48% average reduction in new paediatric HIV infections with only 31% of HIV positive babies accessing ART. South Africa made the greatest progress by reducing new paediatric HIV infections by 76%, Zimbabwe in between with a 57-65% reduction, and Nigeria led the least performers with a 15-21% reduction (UNAIDS, 2015). The plan however demonstrated an improved PMTCT programme as there was a significant reduction in HIV transmission. Transmission rate was at 4.7% in 2015 from 11.4% in 2009 when it started (UNAIDS, 2016).

Zimbabwe is one of the priority countries in Sub-Saharan Africa that was targeted by the global plan. It still falls short of achieving the goal of eliminating vertical transmission despite the various efforts put in place to lower transmission rates. According to UNAIDS, (2018), there were about 160 000 new infections of HIV in children and adolescents in 2018 yet the target was below 40 000. This calls for a comprehensive review of our PMTCT programme and assess where they are falling short.

In 2017, Zimbabwe launched a validation plan to eliminate mother to child transmission of HIV and Syphillis by 2022. One of the impact indicators that is tracked by WHO before

validating is the mother to child transmission rate of a particular country. This has to be below 5% for a breastfeeding nation like Zimbabwe and below 3% for non-breastfeeding nations (Zimbabwe PMTCT, 2017). Transmission rate since inception of the PMTCT programme has declined but not yet reached the level required for it to have achieved the elimination target. In 2018 the MTCT rate went up to 7.7% from 5.6% in 2017 (Early Infant Diagnosis report, 2018), this was very worrying as the ministry is expecting to see a further decline. There is therefore need to assess the challenges faced by the programme and see how they can be mitigated to eliminate mother to child transmission. There is also need to explore risk factors associated with vertical transmission and address them so that the intended goal of elimination of vertical transmission is achieved.

1.4 Purpose of the Study

1.4.1 Broad Objective

To assess challenges faced by the Prevention of Mother to Child Transmission programme at Harare hospital.

1.4.2 Specific Objectives

1. To review infant positivity trends over the past 5 years and the associated risk factors.
2. To assess the effectiveness of systems around the PMTCT programme in reducing infant positivity and lowering viral loads for pregnant and lactating women
3. To explore barriers in implementing the PMTCT programme.

1.5 Research Questions

1. What challenges are there in the implementation of PMTCT programme at Harare Hospital?

2. Are there effective systems to lower the transmission rate and eliminate vertical transmission by 2022?

3. What are the barriers in implementing the PMTCT programme?

1.6 Justification

The tremendous progress that has been made in reducing vertical transmission over the last decade remains far short of the absolute goal of 100% zero transmission, hence the need for an evaluation of challenges facing the programme high HIV burden countries.

Zimbabwe is working towards validation for elimination of mother to child transmission by 2022 however it still falls short of meeting the set indicators if elimination is to be achieved. A number of interventions and strategies have been put in place including adopting the 'treat all' model for pregnant and lactating women, decentralization of ART services, decentralization of EID testing and adopting the point-of-care model of testing infants.

Despite all these being in place, Zimbabwe is still lagging behind in terms of eliminating vertical transmission of HIV. This points to the fact that there are challenges hindering the strategies from being effective and attain the intended goal. It is therefore very imperative to assess the challenges faced by the PMTCT programme and see how they can be mitigated so as to achieve the global goal of eliminating mother to child transmission.

Despite integration of EID testing and Expanded Programme for Immunisation (EPI), EID testing coverage is still at 63% while EPI coverage is over 90%. In 2019, only 75% of infants born to HIV positive mothers received prophylaxis against a set target of 100% (WHO, 2018). This shows that there are challenges within the PMTCT programme which are thwarting coverage rates. HIV-infected infants and younger children have an exceptionally high mortality without treatment, approximately 30% by the first year and 50% by their second year of life (Newell, Coovadia, Cortina-Borja, Rollins, Gaillard, Dabis, 2004). This calls for a need to explore PMTCT challenges and mitigate them so as to improve effectiveness of the PMTCT programme thus saving lives. An assessment of the risk factors associated with vertical transmission is key as it helps in coming up with strategies that could lower transmission rates.

1.7 Delimitations of the Study

The study was only conducted at Harare Hospital hence results obtained cannot be generalized for the whole country. Harare hospital is however one of the biggest central hospitals in the country which serves patients from various provinces. Harare metropolitan area, specifically Harare Hospital, is at the centre of the mitigation programmes, therefore a suitable site to evaluate the effectiveness of the eMTCT/PMTCT programmes.

The study did not get opinions of PMTCT clients i.e pregnant and lactating women who access PMTCT services. Information was sourced from health workers who work with PMTCT clients in different sections of the hospital. Most women are not comfortable with discussing HIV issues and this might lead to biased information. The Researcher therefore resorted to factual secondary data and also key hospital informants as sources of data.

1.8 Chapter Summary

Zimbabwe is working towards eliminating mother to child transmission of HIV by 2022 and a number of strategies have been put in place to ensure we achieve that goal. There was however need to assess challenges hindering progress of the programme and ensure they are mitigated. Specific and strategic interventions to mitigate PMTCT challenges are informed by research in specific areas. This study assessed the challenges faced by our PMTCT programme in reducing vertical transmission of HIV. It will also identify programmatic gaps that need to be bridged so that the programme can be more effective. There is need to ensure that there are adequate resources for the programme to be consistently implemented in a sustainable manner. Risk factors associated with vertical transmission also need to be explored and find ways of mitigating them so as to reduce vertical transmission and save lives of HIV exposed infants.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Despite the interventions in place to reduce HIV transmission from mother to child in developing countries, the problem persists. A number of studies have been conducted to assess the most critical factors associated with vertical transmission and address them. This chapter looks at the factors driving mother to child transmission of HIV. Studies on barriers affecting uptake of PMTCT services were also reviewed. Infant and mother related factors were reviewed to inform the methodology for this study.

2.2 Theoretical Framework

The effectiveness of the PMTCT programme was assessed using a conceptual framework which shows the processes that happen from ANC attendance until delivery of the baby. There was a need to interrogate each of the processes and identify challenges within each process and how they can be mitigated to improve the PMTCT programme, that need strengthening within the programme.

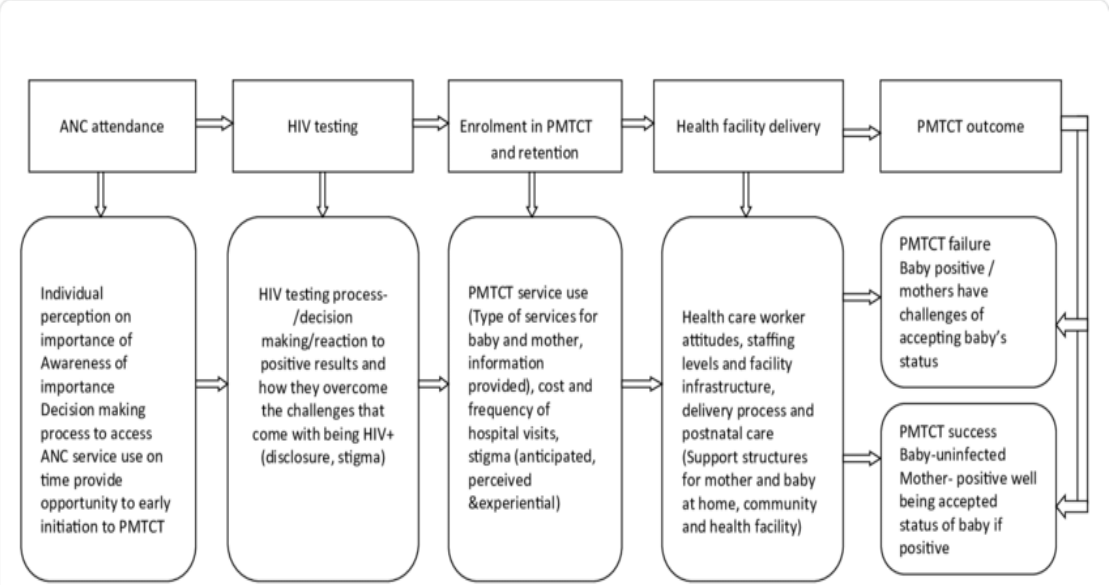

Figure 1: Theoretical Framework of the PMTCT Cascade

2.3 Vertical Transmission Rates of HIV

Vertical transmission rates of HIV vary according to the stage of pregnancy. It is therefore imperative to understand them for recourse on the transmission cascade. According to WHO/UNAIDS (2016), HIV can be transmitted from mother to child during pregnancy (prepartum), during labour and delivery (intrapartum) and during breastfeeding (postpartum) and this contributes to about 90% of HIV infections in children. The intrapartum transmission occurs in more than 50% of the cases due to the exposure of maternal blood to the child during labor and passage through birth canal (Kourtis, 2006). Postpartum transmission has an average rate of 14-29%, it is however the main route of transmission in developing countries because they are breastfeeding nations. About 25-48% of these infections are attributed to breastfeeding in developing countries. There is therefore need to assess effectiveness of interventions at each of the stages of transmission (DeCock, Fowler & Mercier.2000). .

The reduction of vertical transmission has become a major public health concern as it has proved to improve child survival and health. Studies have also showed that without treatment, 30% of HIV exposed infants would have died by the first year of life and 50% by the time they reach 2 years (Newel et al., 2004). According to WHO (2007), without any interventions, transmission rates will be around 15-45%. The rates can however be reduced if appropriate interventions are put in place. Interventions to mitigate vertical transmission have been primarily antiretroviral treatment for the mother and baby. They also include measures to prevent HIV acquisition in the pregnant woman and appropriate breastfeeding practices.

Nationally, MTCT rate at 6 weeks postnatally is 2%, while post 6-week transmission rate is estimated at 5% giving a total national MTCT rate of 7% (i.e. at 18 months of age) (WHO, 2018). This is below the set target of below 5% for breastfeeding nations like Zimbabwe.

Specific interventions have been put in place to lower transmission at stage, with most strategies targeting the post-partum period (Newell, 2001). These however pose challenges in breastfeeding nations like Zimbabwe where alternatives are out of reach of many. Strategies to reduce transmission in the prepartum phase include primary prevention of HIV in women of child bearing age. This includes practicing protected sex, avoiding unwanted pregnancy and abstaining from sexual activity. In the intrapartum stage, best strategies are those that reduce exchange of blood between mother and infant. This includes caesarian section as a delivery method, lowering maternal viral load by the time of labour and delivery (Ioannidis, Abrams, Ammann, Bulterys, Goedert, Gray & Shapiro, 2001). Without any interventions, high maternal viral load levels increase the

risk of vertical transmission by 20-25% (Dabis, Ekpini, 2002). Transmission in the post-partum period can be reduced by exclusive breastfeeding, using alternative safe infant feeding methods as well as maintaining a low viral load level for the mother (De Cock, Fowler, Mercier, De Vincenzi, Saba, Hoff & Shaffer, 2000). Studies have shown that undetectable viral copies in the mother's blood will reduce her chances of transmitting to the infant (Ioannidis et al., 2001).

2.4 Global PMTCT Strategies: A review

Sustainable Development Goals (SDGs) emphasise the prevention of mother to child transmission as it provides better health for mothers and their children. According to WHO (2015), all pregnant and lactating mothers should take ART regardless of clinical stage of disease or CD4 count. This intervention was an important factor in the success of global plans of reducing mother to child transmission as many countries reported a reduction in transmission by over 60%. WHO (2010) and UNICEF (2012) articulate four main components critical for reducing vertical transmission namely, primary prevention of HIV infection among women of childbearing age, preventing unintended pregnancies among women living with HIV, preventing HIV transmission from a woman living with HIV to her infant and providing appropriate treatment, care and support to mothers living with HIV and their children and families (WHO, 2010)

Women constitute about 49% of people living with HIV globally (Kirtley and Chien. 2013). In Sub-Saharan Africa the figure rises to 59% and it remains the major cause of death among women of reproductive age. Preventing infection in women will go a long way in fighting the pandemic. Women of child bearing age need to understand ways of

protecting themselves and avoiding HIV infection. This will also have an impact on the incidence rates of HIV in infants.

There is also need to avoid unintended pregnancies among young girls as they are usually the source of HIV infections in young girls. A number of prevention strategies such as health education, skills-building and improving accessibility to contraceptives have been employed by countries across the world in a bid to curb this problem (Oringanje, Meremikwu, Eko, Esu, Meremikwu & Ehiri 2016). Unintended pregnancies expose young girls to stigma and discrimination from the society hence they will not be able to access PMTCT services. Failure to access PMTCT services consistently will result in vertical transmission or even maternal death.

Structural and social barriers like gender inequality that prevent women from accessing PMTCT services need to be addressed if Sub-Saharan Africa is to eliminate vertical transmission of HIV (Hampanda, 2012). Although PMTCT utilisation has significantly increased over the years, it is still far from the universal targets. Utilisation has increased from 3% in 2003 to 53% in 2010 (Msellati, 2009). Global efforts have been focusing on scaling up medical servicing and neglecting social barriers to accessing services. The percentage of women who access PMTCT remain low because the context in which they make decisions is not well understood. Common barriers to PMTCT adherence include fear of knowing one's HIV status, stigma and discrimination from community and family as well as fear of disclosing (Kebaabetswe, 2007).

2.5 Risk Factors Associated with Vertical Transmission of HIV

A number of studies have been done worldwide to assess the risk factors associated with vertical transmission so that targeted interventions can be instituted. In January 2012, a matched case-control study was conducted in Kenya to assess the factors associated with mother to child transmission. After an assessment of 45 cases and controls, it was seen that the major factors contributing to vertical transmission were poor PMTCT service uptake including late infant enrollment (OR=7.1), poor infant prophylaxis adherence (OR=8.3). Maternal factors identified in this study included lack of awareness of HIV status (OR= 5.6), failure to access antiretroviral prophylaxis (O.R 22.2) and poor adherence to ART (O.R 8.1) (Okoko, Owuor, Kulzer, Owino, Ogolla, Wandera & Abuogi, 2017).

A study was conducted in Sao Paulo state, Brazil to assess how breastfeeding, genetic and other risk factors were associated with vertical transmission of HIV. Interviews on children born to HIV positive mothers were done. According to the study, factors associated with vertical transmission included advanced HIV disease for the mother (O.R=4.5), ever breastfed (O.R=2.2), child's negative rhesus group (O.R= 2.5) and third trimester amnioscentesis (O.R= 4.1). No association was found between mode of delivery and vertical transmission as well as infection with sexually transmitted infections (STI) during pregnancy. It was concluded that vertical transmission could be reduced by avoiding amnioscentesis and breastfeeding. It was also noted that rhesus blood group and race were markers for genetic susceptibility to infection (Tess, Rodrigues, Newell, Dunn & Lago, 1998).

In 2008 a study was also conducted at Chitungwiza hospital, Zimbabwe to assess factors associated with HIV infection among children born to mothers on the prevention of mother to child transmission programme (PMTCT). It was 1:1 matched case-control study, an interviewer-administered questionnaire was used to collect data on demographic characteristics, risk factors associated with HIV infection and immunization status. 120 questionnaires were administered in total. Independent risk factors associated with HIV infection among children included maternal CD4 count of less than 200 during pregnancy [aOR = 7.1, 95%CI =(2.6-17)], mixed feeding [aOR = 29, 95%CI = (4.2-208)], being hospitalized since birth [aOR = 2.9, 95%CI= (1.2-4.8)] whilst being exclusively breast fed for less than 6 months [aOR = 0.1, (95%CI=(0.03-0.4)] was protective. Exclusive breastfeeding for the first 6 months of life was recommended and caesation of breastfeeding after 6 months if affordable and safe was also recommended (Ngwende, Gombe, Midzi, Tshimanga, Shambira, & Chadambuka, 2013).

Mode of delivery is also another risk factor that is believed to be associated with vertical transmission of HIV. A prospective study of children born to HIV positive mothers diagnosed at or before delivery was done in Switzerland. Elective caesarian section with intact membranes and without previous labour was associated with lower transmission rates (6%) compared to other delivery modes. Transmission rate was reduced from 17% to 7% after zidovudine prophylaxis, there was no transmission in those with combined use of zidovudine and elective caesarian section. Elective caesarian section alone with no zidovudine prophylaxis resulted in a 8% transmission rate, for zidovudine alone it was 17% and for no intervention it was 20%. It was, therefore, concluded that elective caesarian section and zidovudine prophylaxis had an additive effect in reducing mother to

child transmission of HIV (Kind, Rudin, Siegrist, Wyler, Biedermann, Lauper & Swiss, 1998).

Studies have also shown that without any interventions, high maternal viral loads increase the risk of vertical transmission by 20-25%. Unsuppressed viral loads are usually caused by poor adherence to ART (Phillips, Staszewski, Weber, Kirk, Francioli, Miller, 2001). A prospective cohort study was done in Malawi to assess the relationship between duration on ART and viral load levels at delivery for HIV positive pregnant women. Women who were on ART for ≤12 weeks were seen to have poor adherence to ART compared to those who were on ART for 13-35 weeks. It was also seen that women who were on ART for 13-20 weeks had a lower risk of elevated viral copies at delivery [RR = 0.52; 95%CI=(0.36–0.74)] as compared to those who were on ART for ≤ 12 weeks. The study concluded that longer duration on ART was associated with suppressed viral load levels at delivery (Phillips, Staszewski, Weber, Kirk, Francioli & Miller, 2001) .

There is need to recommend strategic interventions so as to continue reducing vertical transmission rates of HIV. One of the interventions that has been recommended is antenatal clinic (ANC) couple testing and counselling. A study conducted by Farquhar et al, (2004) to determine the effect of partner involvement and couple counselling was done in Nairobi, Kenya in 2004. It was seen that women who came with their partners for ANC counselling and testing were 3-fold more likely to return for nevirapine and report nevirapine administration at delivery compared to those who did not bring partners. It was

also seen that HIV positive women receiving couple counselling were 5 times more likely to avoid breastfeeding compared to those who were counselled individually.

It was then concluded that partner involvement and couple counselling increased uptake of nevirapine as well as formula feeding for exposed infants. It was therefore recommended as a useful strategy in prevention of vertical transmission of HIV (Farquhar, Kiarie, Richardson, Kabura, John, Nduati & John-Stewart, 2004).

Reviewed literature was used in making conclusions of the findings of this study. It helps the researcher in coming up with effective recommendations that can improve the PMTCT programme and see it able to eliminate vertical transmission by 2022. Assumptions made by other researchers are also very key in coming up with good sample sizes and study power that will make the study more reliable and valid.

2.6 Health Programme quality indicators: A review

The indicators of evaluating health programmes are availability, coverage and impact of the interventions (WHO, 2011). The combined effect of scaling-up availability, coverage, and impact of all intervention areas together should demonstrate a synergized impact on the HIV epidemic. The indicators are defined as follows:

Availability defined in terms of reach-ability (physical access), affordability (economic access) and acceptability (socio-cultural access) of services that meet a minimum standard of quality5. To make services available, affordable and acceptable is an essential pre-condition for "universal access" (WHO, 2011).

Coverage defined as the proportion of the population who receive an intervention among those who need it. Coverage is influenced by supply (provision of services) and demand by people in need of services.

Outcome/Impact defined in terms of behavioural change, reduced new infection rates or survival improvements; it is the result of coverage of services, modulated by the efficiency and effectiveness of the interventions and changes in other relevant factors. Impact goals have been set in the context of the MDGs and the UNGASS declaration on HIV/AIDS. While the impact goals reflect the ultimate purpose of interventions, impact indicators alone will not sufficiently monitor programs to inform the scaling up of access. Therefore, systematic monitoring of progress towards universal access needs to include availability and coverage as well (WHO, 2011).

The study assessed all these indicators with regards to the PMTCT programme.

Intervention Areas	**Availability**	**Quality**	**Coverage**	**Impact**
Testing and Health Sector Counselling	Physical Availability of Interventions		Proportion of Population Needing Intervention who Receive it	Impact related to the Key Intervention Areas
Prevention in the Health Setting				
Sexual Transmission and IDU				
Care, HIV/TB/STI				
ART				
Health Systems				
Women and Children- PMTCT, paediatric care				

Figure 2: Health programme quality indicators

CHAPTER THREE METHODOLOGY

3.1 Introduction

This chapter outlines the study design and data collection techniques used by the researcher. It also highlights the study population and sampling techniques used. Validity and reliability of the collected data is also discussed. The researcher outlines the ethical issues that were considered in conducting the study.

3.2 Study Design

The study used a mixed method study design comprising quantitative retrospective review of PMTCT records and qualitative review of the organizational structure of relevant PMTCT programmes through key informant interviews. The study reviewed data for infants tested between January and December 2018. It was based on a tool adapted from the HIV exposed register. The qualitative data tool was adapted from the WHO facility assessment tool (WHO, 2013). Data for 2018 early infant diagnosis for HIV at Harare Hospital was reviewed to assess positivity trends and the associated risk factors driving mother to child transmission at the institution. Qualitative data was used to establish challenges faced by the PMTCT programme within all the different sections of the institution. It was also used to assess effectiveness of systems around the PMTCT programme at the institution. Risk factors for both mother and infant were also analysed.

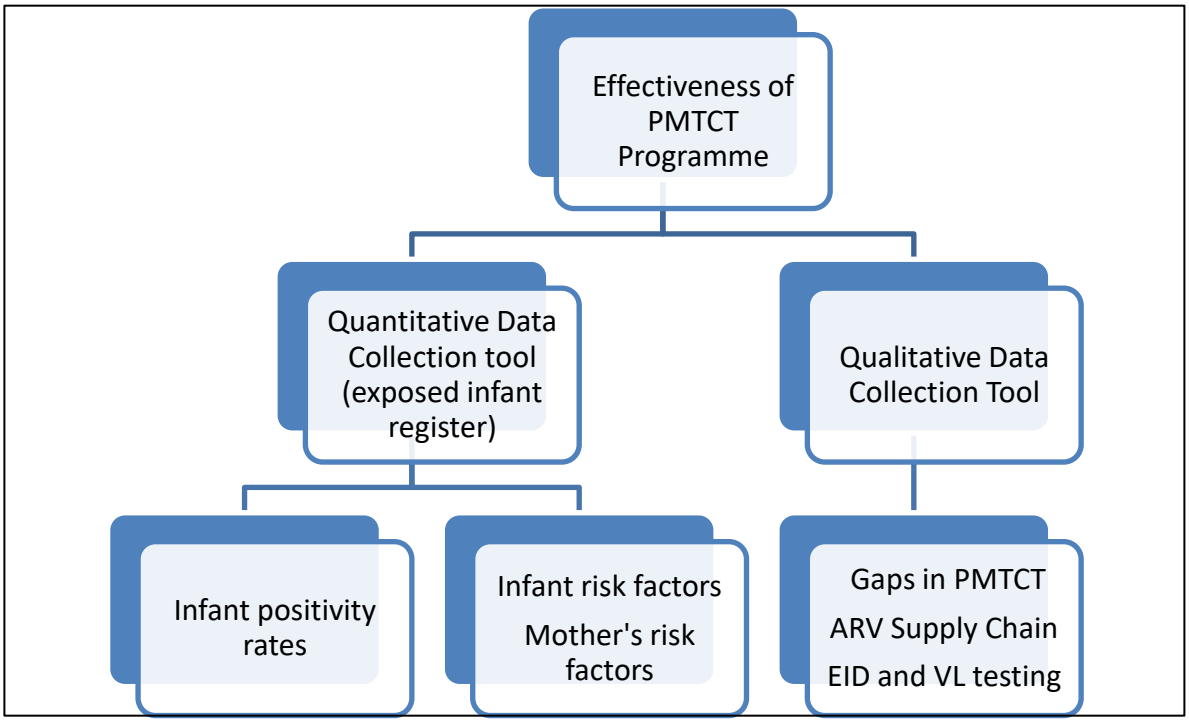

Figure 3: Study Design Flow Diagram

3.3 Study Setting

The study was conducted at Harare Central Hospital, which is situated in Southerton district of the capital city. It is one of the largest referral hospitals in Zimbabwe, treating over 1200 in-patients and about 900 out-patients daily. The Hospital is at the centre of all PMTCT programmes hence it was suitable to assess programme effectiveness at this hospital. The Hospital serves patients from the northern half of Zimbabwe and occasionally accepts patients from outside the country. In addition, the Hospital serves the residents in Greater Harare and the adjoining areas. The Hospital has been the main teaching hospital for the Faculty of Medicine of the University of Zimbabwe since 1966 and has produced a number of doctors and nurses. Harare Hospital houses the National Microbiology Reference Laboratory (NMRL) which is the apex lab in Zimbabwe which

is responsible for viral load testing as well as early infant diagnosis testing. The laboratory is also responsible for rolling out new technologies as well as decentralize testing to lower level laboratories. It was therefore strategic to choose a hospital which is in good proximity of the reference laboratory.

3.4 Study population and sampling

Study population constituted all HIV exposed (census) infants, the exposed infants register was used as the sampling frame as this is where all HIV exposed babies are recorded.

Key informants in the PMTCT programme were also interviewed to get qualitative data on performance of the PMTCT programme. Matrons and sisters-in-charge from maternity and ANC wards constituted the key informants of this study as they are involved in PMTCT activities on a day to day basis. Pharmacists also constituted the key informants as they are responsible for dispensing ARV drugs. Lab managers of the National Microbiology Reference Laboratory situated at the institution were also part of the key informants.

3.5 Sample Size and Sampling Procedure

All records of HIV exposed infants in the register were reviewed.

A total of 250 HIV exposed infant records were reviewed.

Data was stratified according to age and analysed so as to identify risk factors associated with transmission in different age groups.

Four key informants from the hospital were conveniently selected for interviews i.e 2 matrons and 2 sisters-in-charge of the maternity and the ANC department respectively.

The Opportunistic Infections hosptial (O.I) pharmacist and the NMRL chief laboratory scientist were also conveniently selected as key informants.

Interviewer administered questionnaires were used to collect data from the key informants.

3.6 Data Collection Instruments

Both primary and secondary data collection tools were used for data collection. For primary data, questionnaires were used to interview key informants. The qualitative data tool was adapted from the WHO facility assessment tool, while secondary data tool was designed from the exposed infants register. Secondary data is the data that have been already collected by and readily available from other sources such as databases and medical records. Such data are cheaper and more quickly obtainable than the primary data and also may be available when primary data cannot be obtained at all. This study used the EID 2018 database and HIV exposed infants register for secondary data collection.

3.6.1 Validity and Reliability of Data Collection Tools

Validity speaks to truthfulness of findings of a research whereas validity refers to stability of findings (Altheide & Johnson, 1994). Validity is defined as the extent to which an instrument measures what it is meant to measure. . It measures consistency, precision, repeatability, and trustworthiness of a research (Chakrabartty, 2013). These two increase transparency and also limit researcher bias in the study. Without assessing reliability and

validity of the research, it will be difficult to describe for the effects of measurement errors on theoretical relationships that are being measured (Orza, 2002). Validity and reliability can be increased by using various data collection methods and triangulating. For this study validity and reliability can be assured since the EID database is constantly cleaned and monitored. There are data verification exercises that a regularly conducted within the ministry to ensure that data collected is accurate. The database is the data source for the PMTCT programme which is regularly updated and cleaned to ensure accurate and reliable data. There is limited access to the EID database making it a reliable source of data which is not tempered with.

3.7 Pretesting of Data Collection Instruments

Pretesting is done to ensure the data collection tools are answering the research questions and also if they are easy to use for both the researcher and the participant. It helps in aligning the data collection tool to the research questions. For this study, the EID database was checked to see if the risk factors under study are being adequately tracked. Adequate tracking of the risk factors helped in answering the research questions.

The key informant questionnaire was pretested on key informants from another site that was not participating in the study. It was noted that the instruments were able to answer the research questions of the study hence could be used.

3.8 Data Collection Procedure

Continuous data was collected from the EID database to see the major contributory factors to infant positivity and hence where the PMTCT programme needs strengthening.

Variables under investigation were infant age, mother's age, mother's viral load and ART status. The researcher wanted to assess characteristics of the women who were transmitting HIV to their infants. Key informants were interviewed to assess challenges faced by the programme and how they think those can be mitigated. They were also used to assess effectiveness of systems around the PMTCT programme at the institution. The questionnaire had sections addressing different objectives of the study. Piloting of the tool was done using matrons from another hospital which was not under study. The tool was able to answer research questions of the study.

3.9 Analysis and Organisation of Data

Quantitative data including mother's age, infant's age, mother's ART status and mother's viral load status were analysed using Microsoft Excel. The second objective of this study was to assess the effectiveness of systems around the PMTCT programme. The researcher wanted to assess if there are robust systems that can bring about a successful programme hence qualitative data on HIV testing in ANC, Viral Load and EID testing and supply chain management of HIV drugs and reagents stock status and challenges within the PMTCT programme were analysed manually by assessing responses from key informants.

Bar graphs were used to present continuous data including infant age, mother's age, mother's viral load and ART status.

3.10 Ethical Considerations

Ethics approval: Permission to conduct the study was obtained from the National Microbiology Reference Laboratory (NMRL) as well as the Africa University Research Ethics Committee.

Data Confidentiality: Patient confidentiality was ensured at all times during the study. Patient names were not used during the study, subjects were rather identified by codes. Access to produced data was restricted through passwords. Any hard documents such as completed questionnaires were kept under lock and key. Access to research data was limited to only those involved in the study. Full report of the research was shared with the PMTCT programme as well as Africa University.

Specific community and patient benefits: The results of this study did not have immediate benefit to the subjects. Results of the study were used to come up with specific interventions to improve the PMTCT programme so that elimination of vertical transmission can be achieved by 2022. It will also help Zimbabwe to be validated for elimination of mother to child transmission by the World Health Organisation (WHO).

Feedback and dissemination of results: Results of the study were shared with the PMTCT programme as well as Africa University.

3.11 Summary

The chosen study design and sample size helped in coming up with a reliable and valid study whose findings can be generalized and used to help reduce vertical transmission of

HIV. The study setting was also very appropriate as it is an institution that is central to PMTCT activities within Harare and even beyond as it is a referral centre. Both qualitative and quantitative data collection methods were employed to collect information that was appropriate to answer research questions and fulfill all the objectives of the study. Patients' rights of confidentiality were observed by the researcher at all times during the study. The research was conducted in an ethically sound environment, the researcher observed all laws of ethics. The chosen data collection tools were effective in collecting relevant data for the study.

CHAPTER 4 RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results the study. Data were obtained from the EID database at NMRL as well as exposed infants register. Qualitative data were obtained from key informant interviews with matrons and sisters in charge of different entry points as well as O.I pharmacist and NMRL chief laboratory scientist. Continuous data were presented first using bar graphs. Qualitative data then followed in a descriptive manner. Findings of the study were also discussed in this chapter, with reference to reviewed literature. The researcher was also citing possible reasons to the trends revealed by the study.

4.2 Infant HIV Positivity rates in Harare District

Figure Four depicts a general decline of EID positivity for Harare province. In 2014 positivity rate was at 2.5% and by 2018 it had gone down to 2.1%. The decline was however not consistent as there was an increase in positivity from 2.1% in 2015 to 2.4% in 2016. There was also a 0.3% increase between 2017 and 2018

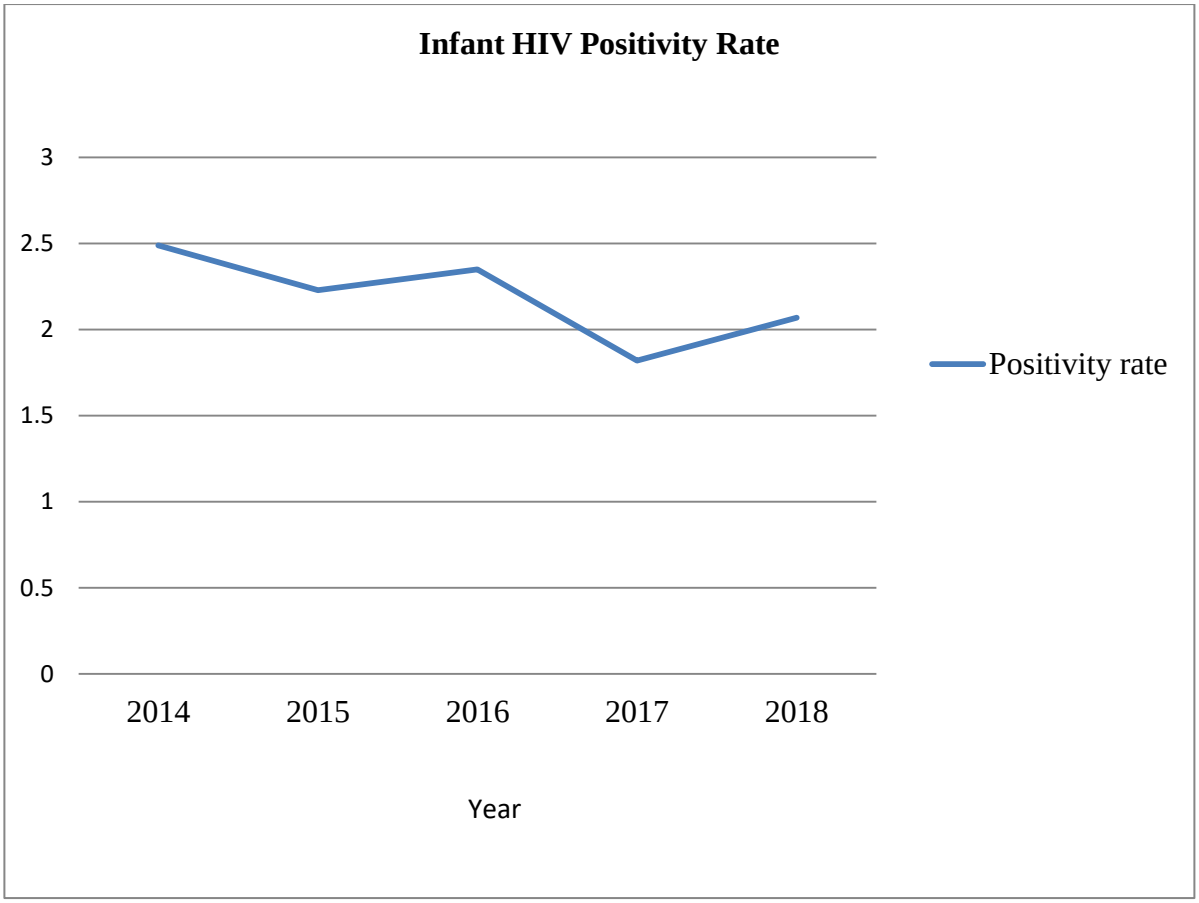

Figure 4: Infant HIV Positivity trends between 2014 and 2018

The general decline in positivity from 2014 up to 2018 can be attributed to a number of factors such as adoption of the new more efficacious treatment regimens which were recommended by WHO. The evolution of HIV treatment has seen more women accessing drugs easily and also it improved adherence rates as pill burden was also declining. By December 2014, Zimbabwe had 1560 health facilities offering lifelong ART to pregnant mothers. According to OPHID, (2017,) in 2015, option B+ had coverage of about 85% and this significantly reduced our transmission rates. Following the adoption of the Option B+ policy, there was a notable increase in the number of pregnant women on antiretroviral therapy (ART) across countries. This in turn has led to lower rates of vertical HIV transmission (WHO, 2018).

The decline in positivity could also be attributed to the encouragement of caesarian section to HIV positive mothers so as to minimize intrapartum infection. Most doctors especially in the private sector are now encouraging their clients to opt for caesarian section especially if they are HIV positive. Caesarian section significantly reduces exchange of blood between mother and infant thus reducing risk of HIV transmission. Caesarian section has been proven to significantly reduce the risk of HIV transmission. According to Kind, *et al* (1998), elective caesarian section with intact membranes and without previous labour was associated with lower transmission rates (6%) compared to other delivery modes. Intermediate transmission rates were observed with spontaneous delivery or non-elective caesarian section (18%) and high transmission rates (27%) were associated with obstetric interventions. Most women in Zimbabwe are now opting for elective caesarian section and this has greatly contributed to the decline in infant positivity over the years. Caeasarian section is however more costly than normal delivery and might be out of reach of some HIV positive mothers. In this case other methods of reducing transmission need to be considered.

Zimbabwe also introduced the 'Accompany your spouse' campaign, this campaign encouraged couple HIV testing and counseling at ANC. The initiative seeks to reduce infant mortality by a greater margin and also to address challenges that have been attributed to low male involvement in the prevention of mother-to-child transmission programme. It is a strategy that was also proven to be effective in reducing transmission rates as couples support each other even in taking ARVs and ensuring the baby is not infected. If a woman is diagnosed alone, there might be fear to disclose her status to the husband and this leads to defaulting treatment hence increasing risk of transmission.

According to Dunlap, Foderingham, Bussell, Wester, Audet & Aliyu (2014), PMTCT in Africa is optimized when interventions engage and empower community members, including male partners. They will assist in supporting program implementation and confront the social, cultural and economic barriers that facilitate continued vertical transmission of HIV.

Women who came with their partners for ANC counselling and testing were 3-fold more likely to return for nevirapine and report nevirapine administration at delivery compared to those who did not bring partners (Farquhar et al., 2004). Nevirapine use was reported by 88% of HIV-infected women who were couple counseled, 67% whose partners came but were not couple counseled, and 45% whose partners did not present for (voluntary counselling and testing) VCT. It was also seen that HIV positive women receiving couple counselling were 5 times more likely to avoid breastfeeding compared to those who were counselled individually. It was concluded that partner involvement and couple counselling increased uptake of nevirapine as well as formula feeding for exposed infants. Zimbabwe however recommends exclusive breast feeding as compared to avoiding breast milk as this is an expensive option which will not be afforded by many.

4.2 Infant Positivity Trends and Associated Risk Factors

4.2.1 Vertical Transmission of HIV by Infant Age Group

Transmission rate increased with age. Week one had the least transmission of one infant (0.4%) whereas week 8 and 9 had the highest HIV transmission rates (37%). Peak transmission is happening at 9 months (97 infants) and at greater than 9 months there was

a slight decline. It is important to understand transmission rates at each stage so that strategic interventions can be put in place.

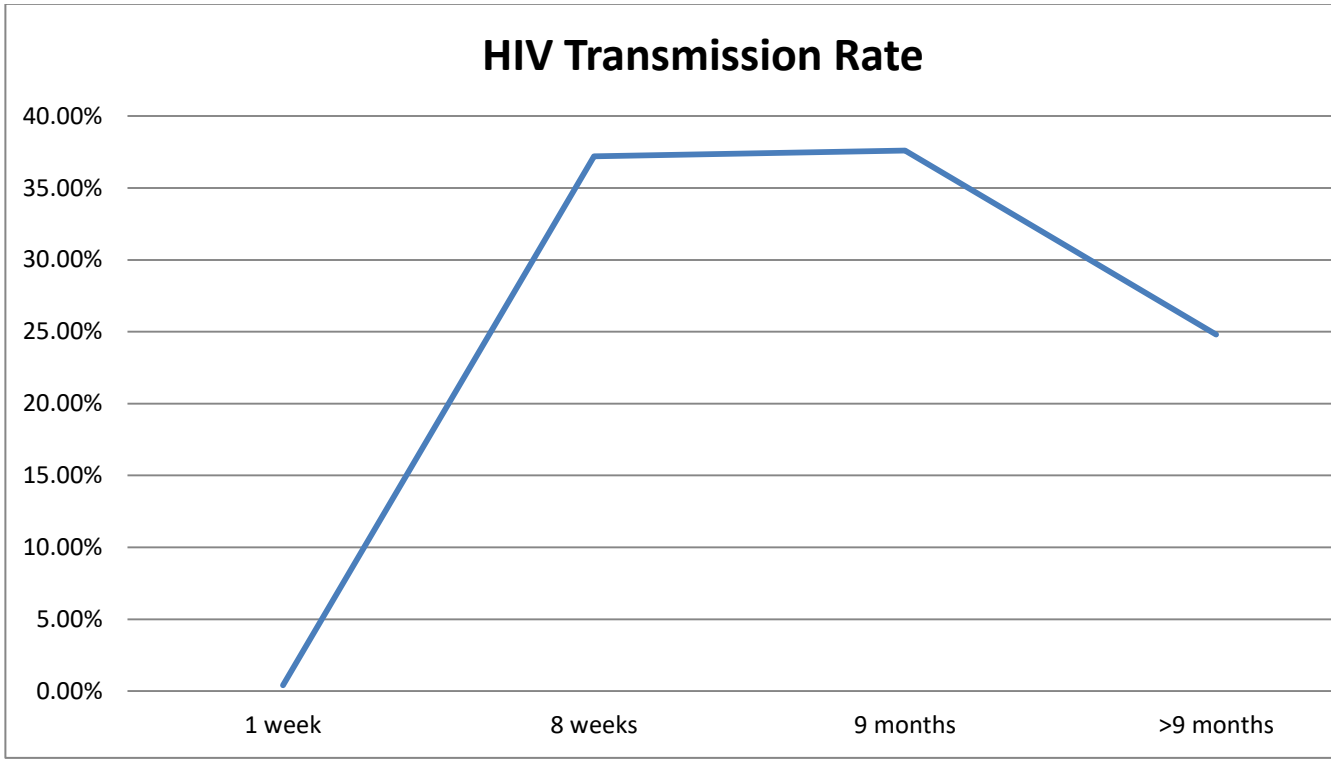

Figure 5: HIV transmission rate by infant age

The notable increase in transmission rate by infant age group is commensurate with the fact that vertical transmission in developing countries mainly occur during the breastfeeding period. According to UNAIDS (2017), Postpartum transmission has an average rate of 14-29%, it is however the main route of transmission in developing countries because they are breastfeeding nations. A study done by DeCock et al., (2000) also revealed that about 25-48% of HIV paediatric infections are attributed to breastfeeding in developing countries. Some countries with good economic environments discourage breastfeeding for HIV positive mothers and this has greatly reduced their

transmission rates. Zimbabwe however cannot afford to introduce such interventions as most people are not able to afford infant formula to replace breast milk.

The economic challenges being faced by Zimbabwe has made it impossible for most women especially in rural areas to exclusively breastfeed for the recommended 6 months. If the mother does not feed adequately, there will be no enough breastmilk to feed the baby hence they will be forced to supplement with solid food like porridge or sadza. Mixed feeding for infants has been proven to be greatly associated with the risk of HIV transmission from mother to child. A study done by Ngwende et al., (2013) at Chitungwiza hospital in Zimbabwe revealed that mixed feeding was geatly associated with vertical transmission of HIV [aOR=29, 95%CI=(4.2-208), p=]. Exclusive breastfeeding for the first 6 months of life was recommended and caesation of breastfeeding after 6 months if affordable and safe was also recommended.

Infant prophylaxis to HIV exposed infants is also very key if transmission is to be reduced. In 2019, only 75% of infants born to HIV positive mothers received prophylaxis against a set target of 100% (WHO, 2018). Failure to provide infant prophylaxis to all exposed infants will result in HIV transmission in the post-partum stage. A study conducted in Kenya by Okoko et al., (2018) revealed that failure to access antiretroviral prophylaxis had an odds ratio of 22.2. This means infants who were not given prophylaxis were 22.2 times more likely to contract HIV from their mother.

4.2.2 Vertical Transmission of HIV by maternal age group

Transmission rate increased with maternal age. Nine (9%) of mothers were between 15 and 19 years while 28% of mothers were older than 44 years.

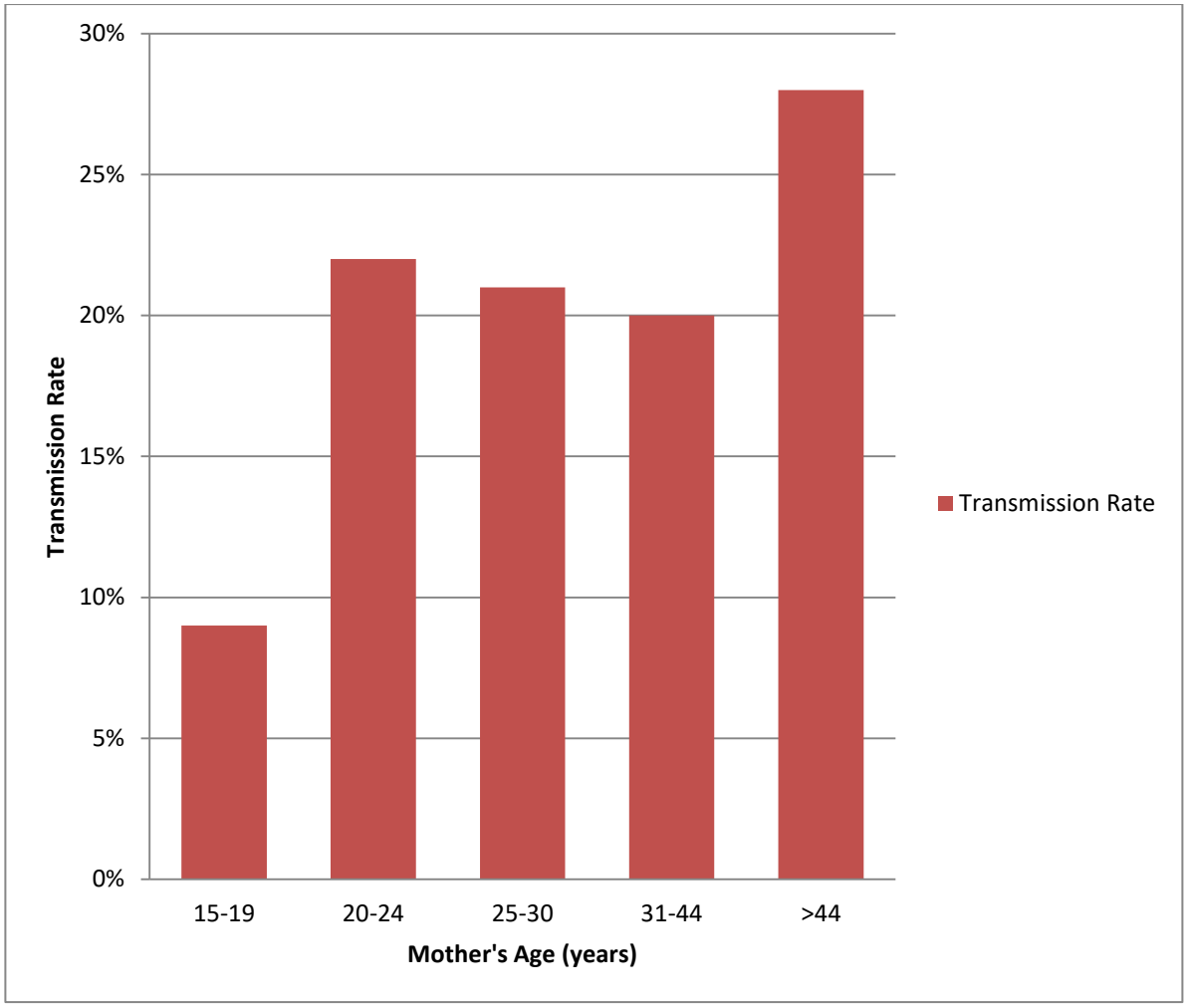

Figure 6: Transmission rate by maternal age

The increase in transmission rate with maternal age could be attributed to adherence issues within women of different age groups. Younger women tend to be more adherent to treatment as compared to older women due to increased responsibilities. As responsibilities increase with age, one's ability to take care of their health might decline.

Younger women are more active and able to walk or source money to go for ART refills, on the other hand older women might not be able to do that. Most of them also have a dual disease burden of both communicable and non-communicable diseases which hinders their ability to work or walk to health facilities. There is however need to dig deeper into the older age groups and understand the issues that are leading to their high transmission rates.

Social barriers that prevent women from accessing PMTCT services also need to be looked at. PMTCT programmes globally have focused on improving the medical factors, ensuring care and treatment is accessible to all. There is however need to look at the social issues that affect women hence leading to them transmitting the virus to their infants. Social issues like gender inequality, domestic violence have prevented women from disclosing their status hence not taking their medications properly. This has caused a lot of adherence issues among women, especially older and married women. Social issues like extended families and cultural practices like *kusungira* have affected a lot of women and prevented them from accessing PMTCT services properly.

According to Hampanda (2012), structural and social barriers like gender inequality that prevent women from accessing PMTCT services need to be addressed if Sub-Saharan Africa is to eliminate vertical transmission of HIV. Kebaabetswe (2007), has highlighted that the common barriers to PMTCT adherence include fear of knowing one's HIV status, stigma and discrimination from community and family as well as fear of disclosing. As long as these fears exist in women, efforts in reducing vertical transmission will be futile as they will not access PMTCT services.

4.2.3 HIV transmission rate by maternal ART status

Mother's ART status was also one of the risk factors. Women initiated on ART before and during the pregnancy had the highest HIV transmission rates compared to other groups. 5% of the women who transmitted were never on ART and the majority, (32%) were initiated before the pregnancy. Those who were however initiated early in the pregnancy had only 7% transmission rate while those initiated later in the pregnancy had a rate of 12%. Of those who transmitted, 30% were initiated post delivery.

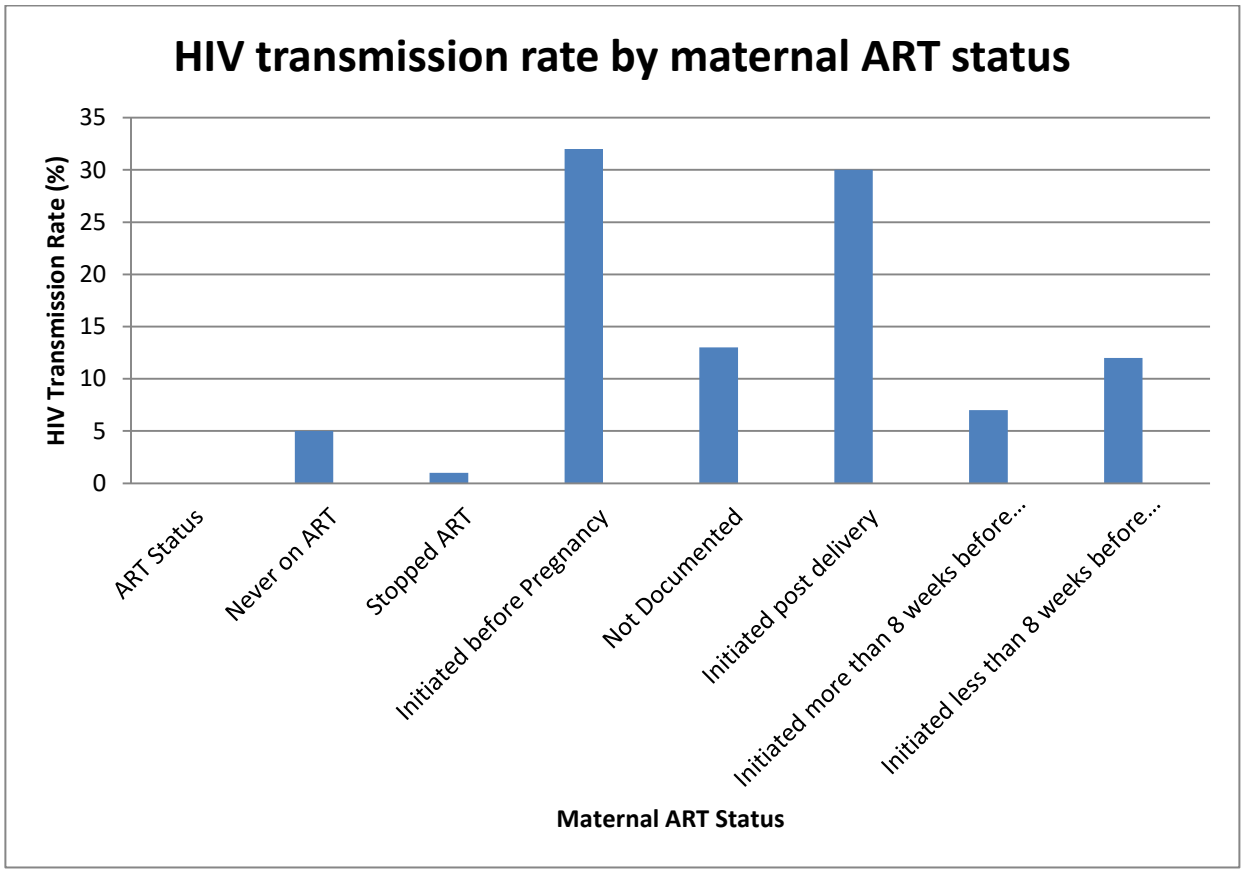

Figure 7: HIV transmission rate by maternal ART Status

Mother's ART status was seen to be a risk factor to vertical transmission hence the researcher looked at the different ART status of the mothers who transmitted HIV to their infants. Studies have also shown that without any interventions, high maternal viral loads

increase the risk of vertical transmission by 20-25%. Unsuppressed viral loads are usually caused by poor adherence to ART (Phillips, Staszewski, Weber, Kirk, Francioli & Miller, 2001). 5% of the women who transmitted were never on ART. According to WHO (2015), without intervention, there is 15-45% chances of transmission. This shows that a greater proportion of HIV positive women in Zimbabwe are on ART. According to UNAIDS (2016), Since 1995, an estimated 1.6 million new HIV infections among children have been averted due to the provision of antiretroviral medicines to women living with HIV during pregnancy or breastfeeding. It is recommended that all pregnant and lactating women be initiated on treatment so as to avoid transmission.

An unexpected outcome was that 32% of the women who transmitted were initiated before the pregnancy. This speaks a lot to adherence issues among women of child bearing age. Normally we would expect a woman who was initiated before pregnancy to be virally suppressed and not transmit the virus. If the women are however not adhering to treatment they might be having treatment failure and chances of infecting the baby will be high. A study conducted in Malawi proved that women with poor adherence had a higher risk of increased viral load levels at delivery hence greater chances of HIV transmission to the infant. Again this takes us back to the issue of social barriers that are preventing women from accessing PMTCT services consistently.

It was also noted that 30% of women who transmitted were initiated on ART post delivery. This is caused by women who book their pregnancies late and will not have a chance of an early HIV test during the pregnancy. Women who are diagnosed during labour and delivery are likely to transmit HIV to their infant (Chagomerana et al., 2018). A study conducted by Guzha, Magwali, Mateveke, Chirehwa, Nyandoro, & Munjanja (2018),

94.1% of women booked their pregnancies between 20 and 28 weeks and less than half of them (42.4%) were screened for HIV in the antenatal period. There is need for awareness campaigns and health education on the benefits of early booking, early HIV testing and subsequent early initiation on ART. If people understand benefits of an intervention then compliance will be easy. The Health Belief Model could be used to instill behavior change among pregnant women.

4.2.4 HIV Transmission by maternal viral load level

Women with unsuppressed viral load were transmitting more than those who had suppressed viral load levels. Of the women who transmitted the virus to their infants, 41% did not have a viral load done throughout the pregnancy. Those who did not have documentation on VL also transmitted quite significantly (36%). An unexpected outcome was of those women who were virally suppressed but still managed to infect the infant.

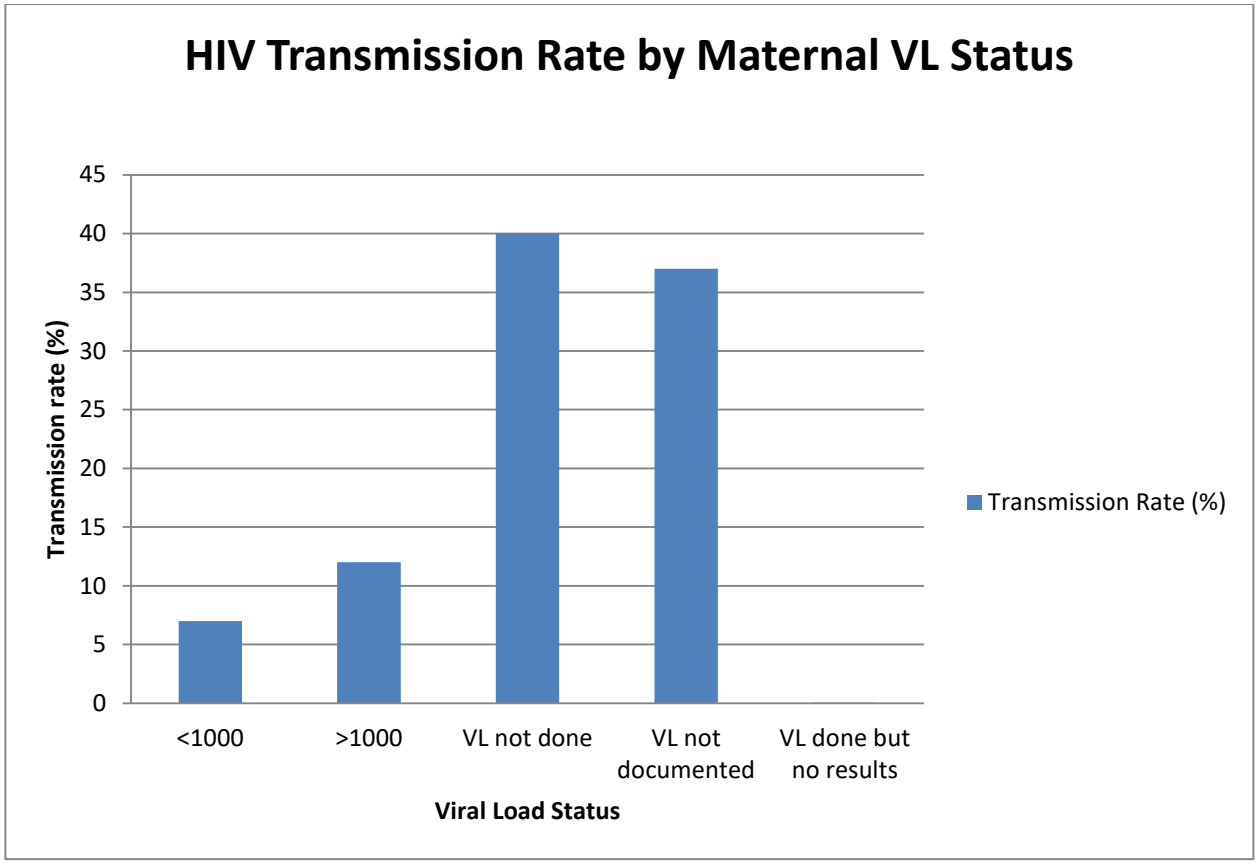

Figure 8: Transmission Rate by maternal viral load status

Majority (41%) of the women who transmitted did not have a viral load done during their pregnancy, this means they are not aware of their viral load and are likely to be failing on ART. It is important for healthcare workers to ensure that every pregnant woman knows their viral load. Sometimes VL tests are not done because of the long turnaround times which are discouraging to the health workers. The viral load system could also adopt the SMS frontline system which is used by EID. This allows a result to be sent via SMS as soon as it is ready then the hardcopy will follow later. Most of the SMS frontline phones are however no longer functional hence there is need to replace the phones and resuscitate that system which went a long way in reducing turnaround times.

Reagent stockouts also contribute largely to lack of viral load results, there is need to ensure continuous supply of viral load reagents and consumables. Viral load testing could also adopt the point of care testing used by EID as it brings testing closer to the client. Currently there are a few point of care devices conducting viral load testing, however they are still far short of meeting the viral load demand in the country. Ministry of Health should consider procuring more point of care devices for viral load testing.

The 12% who had a VL of greater than a 1000 point to the need of ensuring viral suppression during pregnancy and lactating period. WHO states that the risk of transmitting is directly proportional to the viral load level of the mother. According to Chagomerana, Miller, Tang, Hoffman, Mthiko, Phulusa & Hosseinipour (2018), effective antiretroviral therapy during pregnancy minimizes the risk of vertical HIV transmission.

It was unexpectedly noted that 7 % of the women who transmitted were virally suppressed. There is a belief that virally suppressed women do not transmit, but the big question is were their viral load undetectable? There has been overwhelming evidence over the years to conclude that undetectable viral load levels resulted to untransmutable virus, this is popularly known as the U=U campaign. U=U means that people living with HIV who achieve and maintain an undetectable viral load by taking and adhering to antiretroviral therapy (ART) as prescribed cannot transmit the virus to others. If the 7% were only virally suppressed but with detectable levels of HIV then transmission is possible. According to CDC (2020), viral suppression is defined as having HIV RNA copies of less than 200 copies/ml whereas undetectable viral load level is having viral RNA copies that are not detectable by the machine (usually below 20 copies/ml). This

shows that viral suppression is not enough to prevent transmission, rather the patient should have undetectable levels of HIV if transmission is to be prevented.

4.3 Effectiveness of the PMTCT Programme

4.3.1 HIV Testing at ANC

There was a decline in women getting tested for HIV at ANC from 2014 to 2018. This was also similar for women visiting ANC over the years.

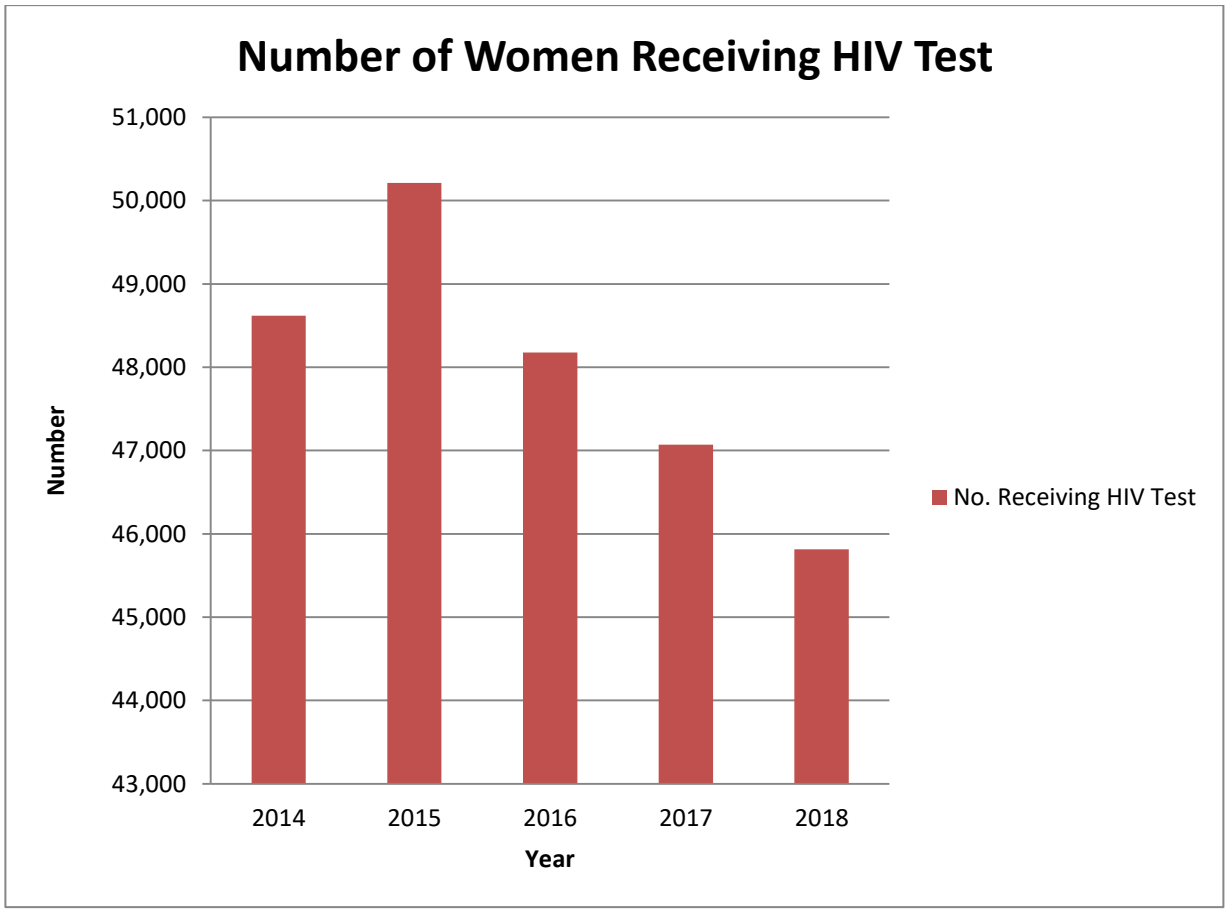

Figure 9: Uptake of HIV testing at ANC

A decline in women receiving HIV tests from ANC was noted from 2014 to 2018 and this could be attributed to a number of factors such as harsh economic environments discourage people from visiting health facilities. As long as the pregnancy is progressing well without complications, most women will book their pregnancies late and will not have HIV tests done. Most women especially in the rural areas do not afford bus fare to visit health institutions and sometimes clinics are too far. This will result in pregnancies progressing at home without any antenatal checks or HIV testing being done.

As highlighted by Hampanda (2012), structural and social barriers like gender inequality that prevents women from accessing PMTCT services. There is need to look into social factors that affect women's attendance at ANC. Gender based violence largely contributes to poor uptake of PMTCT services. Some women are afraid to disclose their status to spouses hence cannot freely access PMTCT services like HIV testing in ANC. Policy and legal barriers may also prevent implementation of services, for example, for key populations, challenges related to stigma may prevent other populations from successfully accessing existing testing services.

Health care facilities should also be designed in a manner that reduces stigma and discrimination within the society. Facilities should not expose clients to public judgement by making it obvious they are getting attended to for HIV matters. If clients feel they are being exposed or discriminated they will not access the services. Differentiated Service Delivery models need to be adopted. These are strategies that are used to target different groups of people and motivate them to come for HIV testing. There is need to realize that

clients have different needs hence we cannot use the same strategies for them as some strategies might not be comfortable for them. DSD strategies like moonlight testing, youth friendly corner e. t. c have gone a long way in improving HIV testing coverage as it attracts different groups of people to access the services.

Health worker attitudes need to be monitored as they contribute to reduced number of patients visiting health facilities and accessing services. Health worker attitudes can also contribute to the decline of people visiting health facilities. A study that was conducted in Nigeria revealed that a significant number of health professionals showed discriminatory attitudes and engaged in unethical behaviour towards patients with HIV/AIDS (Reis et al., 2005). A number of many other studies have shown that pregnant women have reservations towards visiting and giving birth at hospitals because of the negative attitudes they get from nurses. These include being shouted at, rude language, being ignored or sent back and asked to come back some other day. Clients need to feel comfortable and loved by the people attending to them, failure to which they will not visit the facility or access the service. Health workers need to be ethically trained to accept all clients that visit the institution and treat them with respect. There is need for ministry of health to look closely into its human resources and ensure quality care is being provided

Some health workers blame this bad behavior to frustrations at work due to low wages and poor working environment. Freezing of posts and introduction of flexi hours to health workers resulted in an increased work load for those who will be on duty on any particular day. This is a major cause of frustration, coupled with other personal stress that the person may be going through.

4.3.2 Viral Load and Early Infant Diagnosis Testing

The overall turnaround of VL results was two months however some went beyond that such that patients were reviewed without their VL results. Generally there was a long turnaround time for viral load results.

EID testing is also provided by the NMRL using high throughput conventional machines. Complimentary testing is also being provided by Point of Care (POC) machines at maternity, ANC and paediatric wards. The Point-of-care programme had just been recently handed over to the ministry of health and there was a stockout of cartridges hence they had reverted back to sending samples to the national reference laboratory for testing. This also compromised their result turnaround time. EID testing coverage at the site was at 96%. Turnaround time for EID results was one day as they were mainly using the POC platform.

The laboratory was adequately staffed for viral load and early infant diagnosis testing hence there were no human resources challenges. The chief laboratory scientist however highlighted that they sometimes experienced stockouts for reagents and consumables needed especially for viral load testing. EID and Viral load testing is mainly supported by the Global Fund and sometimes there are no funds to procure reagents for the whole year. This then results in interruption of testing services resulting in testing backlogs and long turn around time of results.

Equipment for viral load and EID testing was covered by service contracts hence there were no delays due to equipment breakdowns as the engineers will be immediately contacted and also respond in a good time.

The laboratory has a functional laboratory information management system (LIMS), however it is not linked to the hospital hence results could not be automatically sent through that system. The hospital relies on hard copies to be delivered to their stations, this posed a challenged as some of the results could be sent to a wrong facility thus delaying patient care. For EID results, there is an opportunity to send results via SMS using the SMS frontline phones at institutions. This contributed to the good turnaround time of EID results as compared to viral load ones. The chief lab scientist however highlighted that the SMS frontline phones were outdated and most of them were no longer functional hence most sites relied on the hard copy results.

The impressive EID testing coverage (96%) at Harare hospital was attributed to the dual approach of conventional and POC testing that is happening at the sites. Healthcare workers are motivated by the EID POC testing system which gives them results within an hour and clinical intervention can be done without delay. However, as a country, the testing coverage is not as good as it sits at 63% as of 2018. Despite the integration of EID testing and EPI, the coverage is still low while that of EPI is above 90%. This shows that the programme is missing some HIV exposed infants.

Unlike EID, viral load testing was not so good at Harare hospital despite the fact that they are at the same institution with the NMRL. Results take more than 4 weeks to go to the different entry points within the hospital and some never return at all. From the lab it was highlighted that results get lost sometimes if they are not labeled their entry point hence sent to the wrong entry point. They are however working on sending results by email as there is internet at the different entry points. At national level, viral load testing coverage was at 45% and this was far below the set target of 90% (MoHCC, 2014). Viral load

testing is also heavily affected by recurring stockouts which are experienced at the national warehouse. There is need to source adequate funding for uninterrupted viral load testing in the country.

According to the Zimbabwe National Viral Load Scale up Plan (2015-2018), the ministry was to provide a road map to guide VL testing scale-up from 3% to 70% by the end of 2017 and 90% by 2018; to establish collaboration and coordination between government and partners as they scale up VL testing and to support resource mobilization. Statistics on the ground are however not reflective of what was agreed in the plan. A number of factors contribute to failure of the national plan to realise its goals and this include lack of adequate funding for viral load reagents. Government need to increase domestic funding and not fully rely on donor support. There was also delayed decentralization of the tests hence longer turnaround times which discourage sample collection.

Currently the Ministry of Health is working on a project known as the Clinic Lab Interface (CLI) which is aiming at improving the relationship between the clinical side and lab to ensure quality patient care. It is also aiming to improve accountability within the whole testing cascade from pre analytical to post-analytical. Clinic Lab Interface is aimed at reducing turnaround time thus encouraging sample collection, this will in turn increase the national viral load coverage. The intervention aims at extending access of the lab information system to the clinical side for efficient result relay.

According to figure five, 77% of women who infected their infants had either no viral load done (36%) or no documentation of viral load testing (41%). Providing a viral load test early in the pregnancy will inform whether the mother is responding to ART or needs to

switch regimens so as to protect the baby. There is overwhelming evidence to show that early initiation of ART in pregnancy will result in suppressed viral load level at delivery hence reducing the risk of vertical transmission of HIV.

4.3.3 Supply Chain of HIV Drugs

Harare Hospital had an Opportunistic Infections (OI) clinic which provides anti-retroviral drugs for all HIV positive patients. One respondent (pharmacist) reported that they received adequate stocks of ARVs from Natpharm which was just next door. The same respondent highlighted that they dispensed ARV regimen for infants since the site was testing for HIV at birth. He reiterated that

> 'We *do not have challenges with accessing ARVs from Natpharm, the ZAPS truck delivers medicines to us or we can go and collect if it is urgent. We are also happy to be dispensing infant regimens and prophylaxis for our positive babies who are diagnosed as early as 2 days.*'

The HIV commodities Quantification Report of 2018 showed that the Ministry planned to implement the use of Tenofovir/Lamivudine/Dolutegravir 300/300/50mg (TDF/3TC/DTG 300/300/50mg) as the preferred first line regimen for ART naive adults and adolescents starting in January 2019. Ministry was also awaiting the release of the WHO guidelines for full transition of most first line patients to TDF/3TC/DTG 300/300/50mg. Medicines were being distributed to all accredited ART sites in the country regardless of funding source. ARV supply chain financing, procurement and distribution are shown in the Figure below.

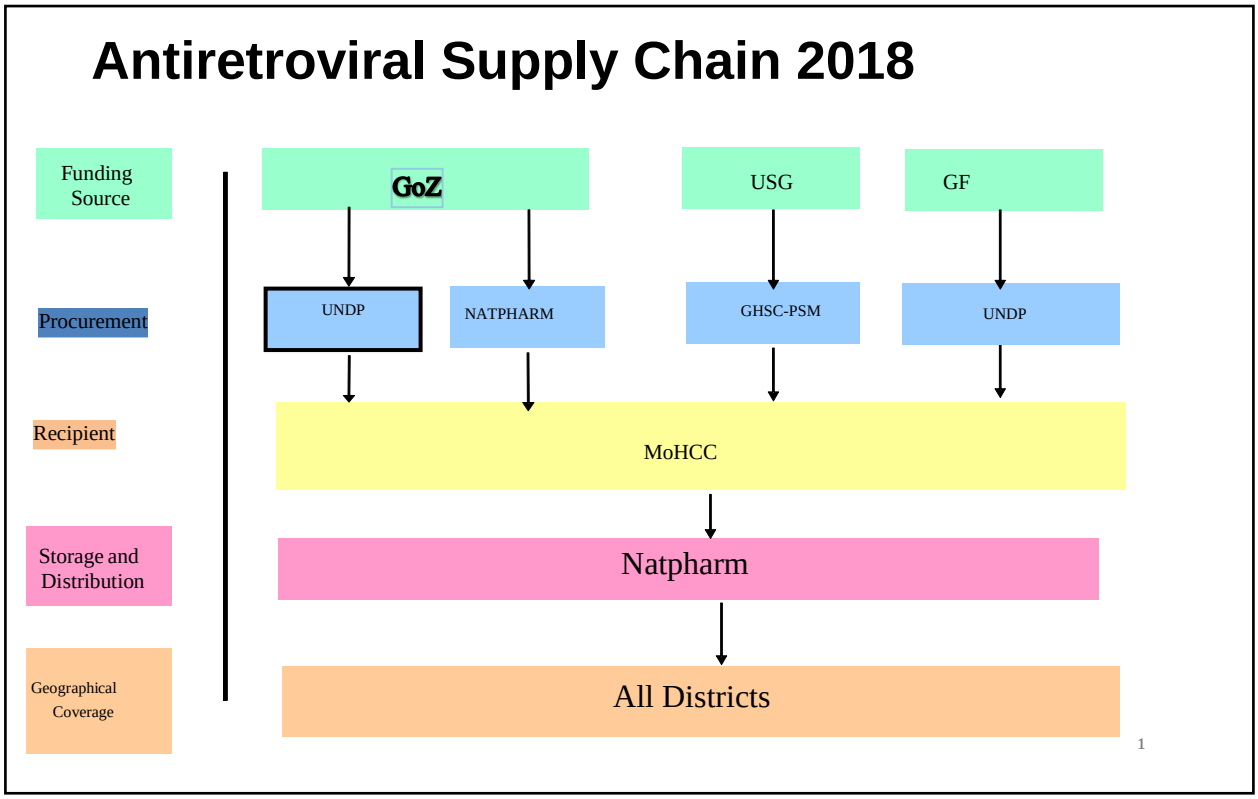

Figure 10: ARV Supply Chain**, Source: Quantification Report (2018)**

Although the site did not record stock outs of both adult and paediatric ARVs and people were accessing without challenges, there were however social-economic factors that affected collection of medicines by HIV positive mothers and these included lack of bus fare, fear of stigma and discrimination from family and colleagues if they found out. The pharmacist highlighted that there was a sizeable number of women who were defaulting treatment due to various reasons. He emphasized stockouts were not a challenge at the hospital.

Supply Chain of both adult and paediatric formulations was seen to be quite impressive. The facility never experienced a stockout of ARVs. The ART programme has a multitude of partners who assist with procurement of drugs. The O.I department highlighted that

patients were accessing drugs without a challenge and also paediatric formulations were always in stock. It was however noted that some women were not coming back for resupply of drugs and the followup mechanisms were not so good. There are however implementing partners in different parts of the country that help in implementation of the PMTCT programme. At Harare Hospital there is ITECH which assists with patient follow up and results followup from the lab. Some of the patients however remain as loss to followup. According to ITECH representative, patients would site busfare as a hinderance to come and restock their ARVs. Social barriers like stigmatization and gender based violence also attributed to some patients defaulting treatment. There is need for ministry to strengthen strategies that break social barriers like male involvement and policies against gender based violence and abuse against women and children.

4.4 Challenges within the PMTCT Programme

The study identified a number of challenges within the PMTCT system need to be rectified for the programme to achieve its goal of eliminating vertical transmission of HIV by 2022. The challenges include:

4.4.1 Inadequate human resources in facilities

The researcher noted that the facility was understaffed and this is the situation with all health facilities. Healthcare workers were overwhelmed with work and this reduces the quality of care offered at the facility. Activities like following up defaulted clients were suffering as they claimed they were too busy to followup. On asking about staff establishment, the sister-in-charge had this to say;

‘ We are so stretched, as you can see today I am alone as my colleagues took the flex time off and I am expected to do a number of duties. It is just not possible, we are so stretched. It is 2 o’clock and I have not yet gone for lunch, it is just too busy.’

Some children would have tested positive but not initiated on ART because the healthcare worker was overwhelmed. Results follow up from the lab also suffered hence most clients were reviewed without a viral load result. Government had frozen posts for health workers hence it meant those who resigned or deceased were not being replaced, this posed pressure on the remaining staff. Furthermore, government had introduced flexi-working periods for health workers so as to cushion them from the ever escalating transport costs. This meant that that a nurse would be on duty for 2 days in a week. This was a further blow which affected human resources in a big way. There was low staff morale due to increased workload with hardly time to break in a day. It was noted that there was high staff turnover due to poor remuneration and the harsh economic environment which the country is currently experiencing. Health workers were quick to move to better organisations as soon as an opportunity presents. This left a number of vacant posts in the institution which were not filled thus affecting quality of care for the patients and poor performance of the PMTCT programme.

In addition to flex time, government has also frozen posts for health care workers, this also further contributes to the staff shortage. A high staff turnover was noted as some staff members not spending more than a year at the institution. Human resources for health (HRH) is one of the building blocks for strengthening health systems. The Ougadougou declaration of 2008 states HRH as one of the focus areas needed to achieve better health for Africa. It encourages member states to strengthen capacity of training institutions and

also ensure workers are motivated so as to improve quality of care (WHO, 2008). There is need for ministry of health to seriously look into human resources issues and ways of retaining and motivating staff as this has heavily impacted a number of programmes.

4.4.2 Inadequate funding for Viral Load and Early Infant Diagnosis testing

It was noted that the hospital relied heavily on EID POC testing which was partner supported, recently the funding came to an end and this has reversed the gains they had realized through POC testing as they had reverted to conventional testing which had long turnaround times. The POC project was funded by EGPAF and CHAI and had just been handed over to ministry. This resulted in stockout of POC commodities causing the hospital to revert back to conventional testing which had long turnaround times. There is also need for support in terms of information technology so that results can be sent via email to facilities once they were ready and avoid relying on hard copies. Although the hospital shared grounds with the testing lab, there was a challenge in accessing test results as they relied on hard copies which could be lost along the way. The SMS phones which were once used to send EID results were no longer functional and there was no funding to replace them, leaving them with an only option of sending hard copies. This increases the turnaround time. The sister from ANC had this to say about viral load results

‘ It is very frustrating that results get more than 8 weeks to return yet samples are processed here at the laboratory there. Most of our patients are reviewed without viral load results and this greatly affects our programme.’

The chief lab scientist highlighted that there was need to increase ownership of EID and viral load programmes by having control over procurements. This would to a greater extent avoid stockouts that were being experienced resulting in interrupted testing.

Funding gaps for health programmes hence poor performance in the respective programmes such as viral load and EID testing were identified and this could be attributed to heavy dependence on donor funding which has a number of limitations. There is need for resource mobilization by the ministry, both domestic and international funding. Ministry of Finance should prioritise health and adequately budget for it. Zimbabwe is a signatory to the Abuja Declaration of 2000 which states that 15% of annual budget of a country should be dedicated to health so as to improve social and economic conditions in poor countries (WHO, 2011). Most African countries including Zimbabwe have never met this target and this poses governments at a risk of over relying on donor funding. In 2018, ministry of health was allocated 9% of the annual budget and 2017 it was 7.7%. Zimbabwe introduced AIDS levy which is deducted from all employees, however this is not enough to cover gaps in the health system.

As discussed earlier, viral load and EID testing have a challenge of long turnaround times resulting in patients not accessing their results at a time they are needed. The ministry decentralized EID testing through the use of point of care machines but most of them have run out of cartridges hence they have reverted back to conventional testing. POC testing has been supported by partners and when they handed over to ministry, it was not able to continue hence a collapse of the programme. Ministry should mobilize funding to procure cartridges for POC machines and also more devices so that the test is further decentralized so as to improve access. There is also need to invest in information systems that allow

electronic sending of results. Computers and internet should at least be available at all provincial and district hospital so that results can be sent via emails.

Viral load testing also need to be decentralized and also adopt the use of point of care machines which can be used at hard to reach areas. Ministry is decentralizing viral load testing and this might see a huge improvement in turnaround time because testing would have been brought closer to patients. Like the EID system, there is also need to ensure results get to facilities in time for review by sending electronic copies. The CLI is an intervention that is aimed at making every Viral load result count. It has identified gaps within the whole VL continuum and has come up with improvement projects at each stage. These will see an improvement in the viral load testing cascade and thus improving the coverage. In 2018, the national testing coverage for viral load was at 45%, it rose to 51 % in 2019. This is way below the target of 90% which was set in the national viral load scale up plan.

Both EID and Viral load suffer from frequent stockouts of reagents and consumables resulting in interruption of services. There is need to secure funding that lasts the whole year so that testing is not interrupted. Equipment for EID and Viral Load should have service contracts that cover them throughout the year so that they can be serviced and maintained on time without interrupting service. Viral load and EID are very important in monitoring the performance of the PMTCT programme hence it is imperative that those tests happen in an effective way and results be used for patient management.

4.4.3 Low uptake of HIV testing at ANC

There was a general decline in number of women who tested for HIV in ANC ward from 2014 to 2018. In 2014 it was 48 619 and went down to 45814 in 2018. HIV testing at booking is very important as it allows early initiation on ART for pregnant mothers. Early initiation will go a long way in reducing viral load hence avoiding vertical transmission of HIV. It was noted that there were a few instances where the pregnant woman would not consent to HIV testing. According to the matrons, clients would site fear of stigma or domestic violence as reasons for not consenting to testing. Counselling was offered to try and encourage clients to take up HIV testing. The hospital did not take part in outreach services to try and test pregnant women in the community. It was highlighted that there were partners who were conducting those outreach programmes. Stockouts in HIV test kits were experienced for about a month in 2018 and this also attributed to the low numbers experienced that year. It was noted that the HIV testing algorithm changed and the new kits were not readily available from the national warehouse. At the time of the study, test kits were available.

A decline in number of pregnant women who were tested for HIV over 5 years was noted. There was a 6% decline from 2014 to 2018. A number of factors could contribute to this decline and there is need to look into each of the factors. The economic hardships being faced by Zimbabweans have affected health seeking behavior in a big way. People will not visit health facilities until there is a major complication or illness. This causes late booking of pregnancies or no booking at all as some women have resorted to home deliveries especially in the rural areas. It then impacts the PMTCT programme in a big way as mothers will now be diagnosed during labour and delivery when it might be too

late to avoid infection of the baby. The government really needs to look at ways of subsidizing transport to critical institutions like hospitals and schools.

Health worker attitudes are also an important factor that has an impact on the uptake of services by patients. There is need for ministry of health to look closely into its human resources and ensure quality care is being provided. Studies conducted in Nigeria revealed that patients had reservations in visiting hospitals while pregnant as they experienced rude attitudes and harassment from the nurses. Health worker attitude needs to be monitored closely as it is a barrier that prevents patients from accessing services. Ministry of Health and Child Care need to ensure health workers are motivated so that they can execute their duties in a friendly manner.

Socio-cultural factors can also act as barriers that prevent women from accessing PMTCT services. Women who belong to the apostolic sect do not visit health facilities as often because it is discouraged at their church. Social barriers like domestic violence and gender inequality also discourage women from accessing PMTCT services as some of them have the fear to disclose HIV status to their partners. There is need for ministry to shift focus from improving the medical system and interrogate the social barriers that are hindering women from accessing PMTCT coverage. We can have robust systems as a ministry with all the technology and human resources, but as long as there are those social barriers that block clients from accessing services then all efforts will be futile.

When it comes to HIV testing, the ministry needs to appreciate and understand that people have different needs. If those needs are not met, they will not come for an HIV test. This speaks to the need of differentiated service Delivery (DSD) so as to target different groups

of people. Strategies like moonlight testing have proven to work for key populations and males. There is also need to design health facilities in a manner that prevents stigma and discrimination among people who come to access services. Privacy and confidentiality should be observed for people who come to access PMTCT services.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, recommendations to the findings of the study were given. Some of the recommendations were based on reviewed literature and some were seen to be compatible with our social and economic environment.

5.2 HIV Infant positivity rates

So as to maintain the observed downward trend of infant positivity in the country, there is need to strengthen all PMTCT policies and ensure pregnant and lactating women have universal access to ART and HIV testing services. This can be done through decentralization of HIV testing services as well as ART initiation to all districts of the country. The researcher also recommends the Ministry to have policies that break social barriers that prevent women from accessing PMTCT services hence increasing the risk of vertical transmission.

5.3 Risk Factors to Vertical Transmission of HIV

5.3.1 HIV Transmission rates by infant age group

The study showed that HIV transmission was mostly occurring during the breastfeeding period hence exclusive breastfeeding for the first 6 months of life was recommended so as to reduce transmission during the breastfeeding period. Exclusive breastfeeding is accessible to all and is easier to implement.

Government could also mobilize funding through Ministry of Health partners to subsidies infant formula so that it can be accessible to all. This will go a long way in avoiding infant feeding which exposes the infant to the risk of transmission. Mothers who are not able to exclusively breastfeed will then have an alternative of infant formula.

Transmission at pre and intrapartum stages can be prevented by ensuring a low viral load level for the pregnant mother hence it was recommended that there be universal access to ARVs and viral load testing for constant monitoring throughout the pregnancy. Currently these services are decntralised only up to provincial level and it leaves out a number of people unable to access

The need to ensure access to infant prophylaxis at all health institutions and initiations are done promptly was also recommended so as to reduce transmissions in the post-partum period. Effective intergration of EID testing at six and nine months with the EPI programme will go a long way in ensuring infants are tested and initiated on ART as the programme has a coverage of over 90%.

5.3.2 Transmission rate by maternal age group

Strategies like male involvement need to be strengthened as they were seen to break social barriers that affect the PMTCT programme. Ministry of Health needs to conduct community education programmes on the importance of male involvement in the PMTCT programme The study showed that social cultural issues were mostly affecting women hence the recommendation to involve men so as to increase support. Male involvement

will go a long way in preventing women of all age groups from transmitting the virus to their infants as they will be having social support which in turn improves adherence to ART and a suppressed viral load.

5.3.3 Transmission rate by maternal ART status

Issues around gender based violence and stigmatization need to be addressed so as to protect women living with HIV. This will go a long way in making the PMTCT programme as women feel free to access PMTCT services thus reducing vertical transmission rates. Transmissions from women who are already on ART are preventable and are low hanging fruits which the programme should take advantage of.

There is need for constant followup on pregnant and lactating women on ART to ensure they are taking their ART consistently. Health institutions should have strategies of following up defaulting pregnant and lactating women and ensure they have a constant supply of ART to maintain a suppressed viral load. This can be achieved by having adequate staff for different activities. There is also need for a budget of following up women on ART, this could be through domestic funding or partner support.

There is also need to come up with ways to encourage women to book their pregnancies early and get an HIV test as early as possible during the pregnancy. Viral load monitoring throughout the pregnancy also need to be strengthened. There is need to ensure uninterrupted viral load testing for pregnant and lactating women through decentralisation of viral load testing across all districts of the country.

Encouragement of couple testing could also motivate women to book their pregnancies early and initiated early. Male involvement was seen to greatly improve success of the PMTCT programme as women need support of their spouses. Community educational programmes are needed to ensure community appreciates the importance of male involvement in the success of the PMTCT programme.

5.3.4 Transmission by maternal viral load level

The researcher recommended need to invest in robust sample transportation and results return system so as to encourage sample collection. If results do not return, patients lose trust in the system and will not consent for sample collection.

It was also recommended that ministry invests in information technology i.e computers and internet to allow sending results by email using the laboratory information system. There is need for adequate funding for decentralization of IT systems.

Government needs to increase domestic funding so that there is control of procurement of critical reagents and consumables and avoid interrupted testing for viral load and EID testing. Viral load testing also needs to be readily accessible, affordable and available to all pregnant and lactating women so that they are closely monitored.

5.4 Effectiveness of the PMTCT Programme

5.4.1 HIV testing at ANC

It was recommended that HIV services be integrated with other diseases so that the patients are not segregated. HIV drug dispensation should be done everyday not to have specific dates, this exposes clients and breaches their right to privacy and confidentiality.

Ministry should not only focus on the medical strategies of improving PMTCT but also socio-cultural issues that affect implementation of PMTCT.

The ministry must ensure health workers are motivated to work by offering monetary or non-monetary incentives as they do a great job in keeping a healthy nation. This will go a long way in boosting morale hence improving chances of success of health programmes like PMTCT.

5.4.2 Viral Load and Early Infant Diagnosis Testing

Government needs to increase domestic funding so that there is control of procurement of critical reagents and consumables and avoid interrupted testing for viral load and EID testing. Ministry also needs to mobilise funding for laboratory information systems across all provinces and districts to ensure quick turn around times of results. There is also need for demand creation of the tests, awareness campaigns to encourage HIV positive mothers to bring their babies for EID testing and themselves for viral load monitoring.

5.4.3 Supply chain of HIV Drugs

There is need for adequate human resources in health facilities so that patients can be followed up and adherence to ART could be improved. This can be achieved by opening up frozen posts within Ministry of Health.

5.5 Challenges within the PMTCT Programme

5.5.1 Inadequate Human Resources

So as to curb the staff shortages being experienced in health institutions, the researcher recommends that ministry come up with innovative ways to motivate staff and improve retention. This can be through transport and other allowances.

There is need to improve working conditions by hiring more staff so that staff is not overwhelmed. This goes a long way in ensuring that activities that improve success of programmes are not neglected.

5.6 Conclusion

In conclusion, the study revealed that Harare Hospital is implementing the PMTCT programme, however there are a number of challenges that need to be mitigated to ensure effectiveness of the challenge. The researcher tried to identify possible root causes of some of the challenges and also suggest possible sustainable solutions to solve the problems. The major recommendations by the researcher include:

- Resource mobilization to cover funding gaps within the ministry resulting in low coverage for EID and Viral Load testing and treatment of clients living with HIV.

- Invest in research of social barriers affecting uptake of PMTCT services and come up with policies that break them.
- Improvement of working conditions and remuneration for healthworkers so as to keep them motivated and also to improve retension.
- Strengthen Differentiated Service Delivery models for HIV testing so as to reach to all populations.

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Appendices

Appendix 1: Consent Form

Consent Form: Challenges of the PMTCT programme at Harare Hospital.

Date……

Good morning/afternoon. My name is Agnes Chibango. I am a Public Health Officer with the Africa University and conducting a study on assessing challenges of the PMTCT programme at Harare Hospital. You have been selected to participate in this study because you are a key informant and the information that you will provide will help in improving the programme.

All data collected will be treated with confidentiality and privacy as it will not be shared with anyone else except the investigators. Data collected from this study will be stored under secure lock and no one will have access to it except the investigators. Your identity will also be protected.

Participation in this study is voluntary and no payment in cash or in kind will be given to you for participating. Participating in this study does not put you in any risk. You are free to discontinue from participating in this study at any point in time during the course of the study. You are also free to ask me any questions pertaining to this study before signing the consent form or even during the course of the study.

The findings from this study will be used to make recommendations for interventions to resolve any challenges highlighted from this study. If you have any questions concerning this study or consent form beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, please feel free to contact the Africa University Research Ethics Committee on telephone (020)20 60075 or 60026 extension 1156 email aurec@africau.edu.

To indicate that you are willing to participate, you may sign below.

Participant Signature/ Thump

print…….....Date…….....

Appendix 2: Qualitative Tool

Date: ..... Name of Facility.....

Entry Point.....

Name of Interviewee.....
Designation.....

IMPLEMENTATION GUIDELINES AND TREATMENT PROTOCOLS IN USE

	Confirm that the facility has the latest guidelines (Physical Verification Required):	**Yes**	**No**	**Comments (Check if the policy is the latest version and if everyone was trained on it).**
1a.	2016 National Guidelines for Antiretroviral Therapy for the Prevention and Treatment of HIV in Zimbabwe			
b.	Zimbabwe HIV Viral Load Scale-up Plan, 2018 – 2020			
c.	Zimbabwe National HIV Testing Services Guidelines 2016			

SERVICE DELIVERY

No.	Question	YES	NO	Comments/ Challenges
2	Is there a comprehensive SRH/MNCH/HIV service delivery package available at the	Y	N	**If check suggest verify with registers**
3	How is service delivery organized at this facility to facilitate optimal accessibility, efficiency	Explain		
4	What are turn around times for Viral load, EID tests and initiation of treatment? Are they reasonable?	Y	N	**Explain**
5	Are there measures in place to prevent or address loss to follow up of pregnant women who tested positive for HIV or syphilis, and	Y	N	**Explain**
6	Are there policies for HIV management for pregnant women who arrive late in	Y	N	
7	Are EMTCT services inclusive of family planning and birth-spacing services for women of child -bearing age including young women	Y	N	
8	Do you promote early initiation/booking of antenatal care?	Y	N	If yes explain
9	Does the facility offer routine HIV testing and treatment for pregnant	Y	N	
10	Is HIV testing and treatment for sexual partners offered at	Y	N	
11	Do you offer counselling on infant feeding for both HIV-positive and HIV negative	Y	N	
12	Are there strategies for follow up and diagnosis of HIV exposed infants?	Y	N	If yes, please explain
13	What are the challenges being faced in diagnosis and follow up of children?			

14	Do you have any structures for follow up and retention of women and baby pairs	Y	N	If yes state
15	What are the main strengths and weaknesses of the current PMTCT program implementation **at your**			
16	Which partners are supporting the MoHCC in the			
17	What kind of support do they provide?			
18	Is there anything that you feel needs funding but is not			
19	Are there adequate categories and numbers of staff to	Y	No (Explain)	
20	Please elaborate on gaps of staffing related to RMNCH and HIVservices			

INDICATORS OF PMTCT

LINKAGE TO HIV CARE AND TREATMENT					
21	Of the infants who received HIV positive results in the last year (January to December 2018) How many were successfully linked to HIV care and treatment?				
22	What strategies is the health facility implementing to manage adherence to HIV treatment? *Tick the responses that apply and If Yes please briefly describe)*	a.Expert Patients	Yes	No	
		b. Peer to Peer Support (include DSD model)			
		c. Reminders (SMS/whatsapp/			

		Calenders)						
		d. Appointment Systems						
		e. Other (Specify)						
23	Are there challenges in the implementation of these strategies? Please explain							
24	What nationally approved differentiated service delivery models are available for HIV clients on ART at this facility	a.Not Sure	b. Multi month Dispensing (MMD) [3 months ART Supply]	c. Fast track	d. Community ART refill groups (CARGS)	e. Outreach	f. Family ART Refill Groups	g. Facility Club
		State number of total patients in the model						

25	What are the challenges being encountered in implementing the differentiated Service Delivery Models being offered at this health facility?				
26	What is the overall 12 Month Retention Rate for the Cohort of Clients Initiated in on ART at the Facility				
27	Are there any challenges to implementing these strategies to improve retention in HIV treatment?				

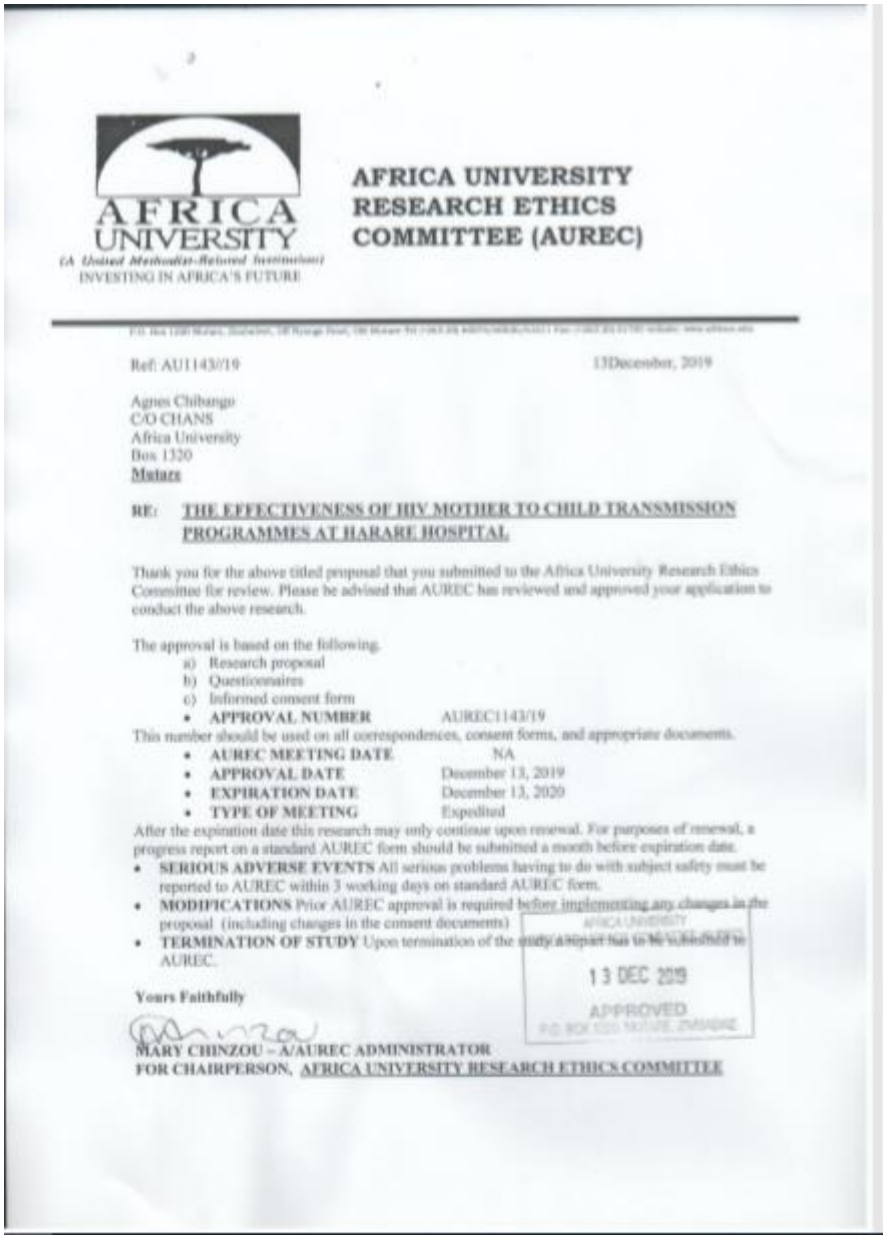
28	**Viral Load Monitoring**	a. Number of pregnant and lactating women on ART who are eligible for VL	b. Number of pregnant and lactating women on ART who were tested for VL in the Last 12 months	c. Number of clients received VL Results d.# Unsuppressed:	

				e.# Suppressed:		
29	Of the clients with unsuppressed VL results please record the numbers in the last 12 months:	a. Number of clients offered EAC	b. Number completed EAC (3 sessions)	c. Total number with repeat VL after EAC:	d. Total number of clients received repeat VL Results e. Unsuppressed:	
					f. Suppressed:	
30	Are there challenges in offering VL monitoring for Clients on ART:					

Appendix 3: Quantitative Data Collection Tool

Laboratory Request Number	Referring clinic or hospital name	mother id	Infant id	Age	Date of birth of infant	Mode of Delivery	Sex of baby	ARV Prophylaxis given to infant	Infant already on CTX prophylaxis	Is Mother on ART	If No did mother receive ARV prophylaxis?	If Yes what did the mother receive	Ever mix breast with other feeding	Replaced feeding	Never breastfe

Appendix 4: Aurec Approval



AFRICA UNIVERSITY
(A United Methodist-Related Institution)
INVESTING IN AFRICA'S FUTURE

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

Ref: AU1143/19 13December, 2019

Agnes Chibango
C/O CHANS
Africa University
Box 1320
Mutare

RE: THE EFFECTIVENESS OF HIV MOTHER TO CHILD TRANSMISSION PROGRAMMES AT HARARE HOSPITAL

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal
b) Questionnaires
c) Informed consent form

- **APPROVAL NUMBER** AUREC1143/19

This number should be used on all correspondences, consent forms, and appropriate documents.

- **AUREC MEETING DATE** NA
- **APPROVAL DATE** December 13, 2019
- **EXPIRATION DATE** December 13, 2020
- **TYPE OF MEETING** Expedited

After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.

- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
13 DEC 2019
APPROVED
P.O. BOX 1320 MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU – A/AUREC ADMINISTRATOR
FOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE