

## Retention in care among HIV positive pregnant and breastfeeding women in a rural district in Zimbabwe: A dataset analysis

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#### Abstract

**Background:** Studies have been done on retention in care for the general population but little is known of this phenomenon for HIV positive pregnant and breastfeeding women (PPBW). St Albert's Mission Hospital data showed that 10% PPBW were lost to follow up. We determined retention in care in this population.

**Methods:** We conducted a cross sectional descriptive study using records of PPBW receiving care at the hospital from January 2016 to December 2018. We manually abstracted data from registers and from electronic records for analysis onto an Excel based abstraction sheet. We generated survival curves for the PPBW. We obtained waiver of informed consent for analysis of PPBW records.

**Results:** All pregnant women initiated in ART before ANC were retained up to between 25 and 30 months, where about 75% remained in care. Among those initiated during pregnancy, about 70% were no longer in care by 10 months of follow up. Retention rates were better for pregnant women initiated before ANC (p-value = 0.0272. log rank chi square test). Most breastfeeding women were still in care up to between 30 and 40 months for both who were initiated in pregnancy and before ANC for their current pregnancy. Thereafter a small drop in retention rates for those initiated on ART during pregnancy is noted (log rank chi square test p-value= 0.2183). Women initiated before ANC and those initiated during had generally the same retention rates.

**Conclusion:** Retention in care is high among PPBW but lower if ART initiation was due to the current pregnancy.

Keywords: retention in care, pregnant, breastfeeding, survival rate.

#### Introduction

Worldwide, about 1,400,000 HIV infected women give birth annually. Out of these births almost 330, 000 babies become HIV infected (UNAIDS, 2012). An estimated 91% of these reside in sub-Saharan Africa (UNAIDS, 2012).

The number of newly infected infants has decreased by 58% in sub-Saharan Africa because of the introduction of improved PMTCT strategies (UNAIDS, 2014, 2014a). Retention of mothers in care is still a challenge despite wide scale-up, coverage and benefits associated with PMTCT services. The option B-plus program in Malawi showed an overall antiretroviral therapy (ART) coverage increase for PMTCT, but retention in care of mothers was only 42% in high volume facilities in the first 3 months period following initiation of ART (L Tenthani et al., 2014). Drug side effects, partner support, the desire to prevent transmission and improve health were cited as influencers of mothers' retention in HIV care (Kim et al., 2016).

About 5.5% of pregnant mothers are HIV positive in Zimbabwe. Most women 95.5% access ART in antenatal care (ANC) service. Although 97% of pregnant mothers attend the first ANC visit, those who complete the recommended 4 visits and the trend of retention of HIV positive mothers is much lower (MOH, 2015). The roll out of Option-B plus in Zimbabwe resulted in an increase in more mothers being initiated on ART, however retention of mothers in HIV care is a cause for concern. In Uganda only 79, 70 and 56% of mothers returned for ART drug refill at 1 month, 3 months and 6 months respectively (UAC, 2016). Research shows that health service providers' attitudes, stigma, discrimination and lack

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of means of transportation of clients to health facilities are some of the factors that affect retention in HIV care (Muhumuza et al., 2017).

Ministry of Health and Child Care (MOHCC) has integrated PMTCT into both antenatal and postnatal care to increase retention in HIV care in Zimbabwe. However, data for mothers in the study shows that they continue to disengage from HIV care in the study area (15% of the HIV positive pregnant and breastfeeding women were missing their drug pick-up appointments and 10% were getting lost to follow up). This study determined the level of retention among HIV positive pregnant and breastfeeding mothers.

## Methods

## Study design and setting

We conducted a cross-sectional descriptive study using records of HIV infected pregnant and breastfeeding women at St. Albert's Mission Hospital in Centenary District, Zimbabwe to determine retention in ART care.

### Study population and sample

The study population consisted of records of HIV infected pregnant and breastfeeding women receiving HIV or ART care. A cohort of all HIV positive mothers booking, delivering at the hospital and attending postnatal care at the same hospital from January 2016 to December 2018 were assessed for retention. We extracted from antenatal care and delivery registers mothers booking and delivering at the hospital a list of all HIV positive pregnant women who booked at the hospital, and delivered and were attending post-natal care at St. Albert's Mission Hospital. All their records of pregnant and breastfeeding women within the catchment of the hospital were eligible for data abstraction.

### Definition

**Retention:** This was defined as being alive and receiving antiretroviral therapy at the last scheduled clinic visit

### Inclusion and exclusion criteria

We included records of PPBW from the catchment area from January 2016 to December 2018 were in the study. We excluded all records of PPBW from outside the catchment from the study.

### **Records review data collection methods**

The researcher and a trained assistant abstracted data from paper and electronic patient records of pregnant and breastfeeding women stored at the facility using Microsoft Excel based data abstraction sheets designed for the study. Dates of drug refills and number of drugs dispensed was collected from the drug dispensing register at the pharmacy.

#### Data analysis

Data was analyzed using Microsoft Excel and STATA software. Data was analyzed for frequencies and means. We used Kaplan-Meier analysis to estimate retention in care and compared differences between women retained in care and those LTFU using the log rank chi-squared test. Survival curves were constructed for retention in care at 6, 12, 24 and 30 months

## Permission and ethical considerations

The protocol was reviewed and approved by Medical Research Council of Zimbabwe (MRCZ/A/2457). We obtained a waiver of informed consent to abstract data for PPBW because: "The research presented no more than minimal risk of harm to participants; ii: The waiver or alteration would not adversely affect the rights and welfare of the participants; and iii: The research could not practically be carried out without the waiver or alteration"

Permission to conduct the study was obtained from St Alberts Mission Hospital Management Committee and the community gate keepers (i.e. District Medical Officer, and the Provincial Medical Director).

## Results

We abstracted data for 176 HIV positive women; 104 were pregnant and 72 were breastfeeding. Most of the PPBW were initiated on ART when they were pregnant. The median number of drugs pick up visits for pregnant women was 6 (1-12) while that for breastfeeding women was 7 (1-29). The demographic characteristics of the study participants is shown in Table 1.

#### **Demographic characteristics**

Most of the pregnant women (76.9%) had their initial CD4 done while most breastfeeding women (63.9%) either had no initial CD4 done or it was unknown whether it had been done or not. For both pregnant and breastfeeding women, most had no recent CD4 count done (last 6 months) i.e. 99.1% and 88.9% respectively. The majority of the pregnant and breastfeeding women were active and attending St. Albert's Hospital for their drug pick-ups. No viral load results were documented. The clinical characteristics of the study population are shown in Table 2.

#### **Clinical characteristics**

The majority of pregnant women had an initial CD4 count done before ART was initiated but similar proportions of breast-feeding women either had or had no CD4 count done at ART initiation. Most PPBW had no recent CD4 count done. Forty-four percent and 61 % of pregnant and breast-feeding women respectively were still attending this health facility.

#### Retention in care for pregnant women: survival analysis

All the pregnant women initiated in ART before ANC were retained up to between 25 and 30 months, where about 75% remained in care. Among the pregnant women who initiated during pregnancy, about 70% were no longer in care by 10 months of follow up compared to their counterparts who were initiated before ANC for their current pregnancy. Figure 1 shows better retention rates for pregnant women initiated before ANC. The log rank chi square test yields a p value of 0.0272, suggesting that there is a significant difference between the two survival functions.

Retention in care among the breastfeeding women: Survival analysis

Most breastfeeding women were still in care up to between 30 and 40 months for both who were initiated in pregnancy and before ANC for their current pregnancy. Thereafter there is a small drop in the retention rates for those initiated on ART during pregnancy. The log rank test gives a p-value= 0.2183, and this shows that there is no significant difference between the two survival functions. Women initiated before ANC and those initiated during had generally the same retention rates. Retention in care among the breastfeeding women is shown in Figure 2

We assessed if there would be any difference in retention by age. When stratified by age, there was no difference in retention between older women (>25 years) and younger women ( $\leq$ 25 years) (Figure 3).

We compared retention of women over time by their initial CD4 count status. Breastfeeding women who had an initial CD4 done we more likely to be retained in care compared to those who had no initial CD count done (Figure 4).

#### Discussion

We found that all pregnant and breastfeeding women remained in care 18 and 24 months following ART initiation, which is above the UNAIDS target of 90% (UNAIDS, 2014, 2014b). This level of retention is high and should be maintained if the 90, 90, 90 targets are to be achieved. This is contrary to findings among ART clients attending clinics in Uganda, and other east African countries. Eighty percent of adults were still in care up to 2.5 years following initiation of treatment (Geng et al., 2015; Namusobya et al., 2013). This is also higher than that reported by prevention of mother to child transmission (PMTCT) of HIV programs in Malawi (80%) (Lyson Tenthani et al., 2014; Tweya et al., 2014) and Ethiopia (83%) (Mitiku, Arefayne, Mesfin, & Gizaw, 2016). We note that definitions of loss to follow up (LTFU) vary across programs (Rosen, Fox, & Gill, 2007).

We noted that among the pregnant women who initiated during pregnancy, about 70% were no longer in care by 10 months of follow up compared to their counterparts who were initiated before ANC for

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their current pregnancy. The desired effectiveness of the PMTCT program can be undermined by low levels of retention. Non-retention leads to failure to attain viral suppression. Failing to attain viral suppression increases the chances of HIV transmission to infant through breastfeeding and perinatally (Baroncelli et al., 2015). If women do not remain on ART, they may also develop symptomatic HIV disease, transmit HIV infection to uninfected sexual partners, and possibly develop drug resistance if they intermittently are taking their ARV drugs (Schouten et al., 2011; Taha, 2011). The reasons for poor retention among those initiating ART in pregnancy need be explored and addressed.

We also found that mostly pregnant women had a CD4 cell count test done compared to their breastfeeding counterparts. The Zimbabwe National ART Guidelines of December 2016 recommended immunological monitoring twice a year (Ministry of Health and Child Care National Medicines and Therapeutics Policy Advisory Committee, 2016). CD4 cell count testing was not a requirement for initiating women on Option B+. It is not clear why there is such a practice among health care workers at this facility. Breastfeeding women who received CD4 count at ART initiation were more likely to remain in care compared to those who did not. The process of CD4 cell count testing may involve more counseling that may increase one's awareness of HIV infection and the benefits of engaging in care (Mitiku et al., 2016). Previous reports show that a patients' knowledge of their CD4 count can influence retention (Mangwiro et al., 2014). Although viral load (VL) testing has been rolled out to monitor treatment response in Zimbabwe, we however noted in our study that most had no documented VL. The national guidelines require a VL at first antenatal care contact and repeat every six months thereafter throughout pregnancy and breastfeeding (Ministry of Health and Child Care National Medicines and Therapeutics Policy Advisory Committee, 2016). We suspect that transportation of specimens to the national laboratory where these could be analyzed was a major barrier for the facility. At the same time, it cannot be true that no VL specimens were taken over a period of three years. The documentation of VL was no up to date.

We also found that there was no difference in retention by age. This is contrary to other studies where younger women were less likely to be retained conducted in Ethiopia (Mitiku et al., 2016), Malawi (Tweya et al., 2014), and Zimbabwe (Dzangare et al., 2016). The counseling among the younger women at this facility may be more effective in making them understand the benefits of taking ART and particularly if they are first-time mothers. They may be very little of stigma in this community and both young and older PPBW have as much social support.

This study was conducted in a completely rural setting. Women living in rural areas are poorly resourced which may have contributed to poorer retention among some of these women. Work and responsibilities for child care compete with the cost of and time required to travel to clinics for appointments among poor families (Maskew, MacPhail, Menezes, & Rubel, 2007). For some women lack of food with which to take the drugs could also be a barrier to retention (McCoy et al., 2017). When drugs are taken on an empty stomach, the side effects of ART are worsened (Sanjobo, Frich, & Fretheim, 2008). Some ARV drugs increase one's appetite (Weiser et al., 2010), which may make PPBW drop out of the program if they do not have adequate food. In addition, during seasons when food scarcity is greatest, women spend long work days searching for food and may forget to take their medication.

This study has several limitations. First, our determination of retention in care was based on records availability. It is a possibility that women LTFU may have died or transferred to other facilities without documentation and thus have been misclassified. It is common to have transfers that are not accounted for. Secondly, we relied in this study on a retrospective review of records. The information obtained was limited by routinely recorded data. We were unable to obtain information on basic sociodemographic characteristics such as marital and educational status, income level, parity and the timing of HIV diagnosis which may have been associated with retention. Although some variable would have been available in other registers, we had time limitations to link records across registers where the information was not stored electronically. Finally, routine health facility information does not include actual reasons for LTFU.

## Conclusions

This study demonstrated high retention in care in this study population. Women who had initial CD4 count done (at ART initiation) had better retention in care than those who did not as well as those who initiated ART during their current pregnancy. There is need to strengthen CD4 cell testing for all PPBW and counseling for pregnant women who are initiating ART during their current pregnancy.

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 Table 1. Demographic characteristics of the pregnant and breastfeeding women receiving care at St. Albert's Mission Hospital, Zimbabwe

Demographic Characteristic		Pregnant (n=104)	Breastfeeding (n=72)
Mean age (standard deviation)		27 (6)	27 (6)
Median weight (interquartile range)		62 (10)	61 (11)
Period of Diagnosis	During current pregnancy	77 (74%)	49 (68%)
(n and %)	Breastfeeding period	0 (0%)	0 (0%)
	Before this pregnancy	27 (26%)	23 (32%)
Year of Diagnosis	2014 and before	10 (9.6%)	10 (13.9%)
	2015	29 (27.9%)	26 (36.1%)
	2016	30 (28.8%)	7 (9.7%)
	2017	21 (20.2%)	16 (22.2%)
	2018	13 (12.5%)	13 (18.1%)
Year of ART Initiation	2014 and before	9 (8.7%)	9 (12.5%)
	2015	29 (27.9%)	26 (36.1)

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	2016	29 (27.9%)	7 (9.7%)
	2017	21 (20.2%)	14 (19.4%)
	2018	16 (15.4%)	16 (22.2%)
Median No. of Visits (Range)		6 (1-12)	7 (1-29)

**Table 2.** Clinical characteristics of the pregnant and breastfeeding women receiving care at St. Albert's Mission Hospital, Zimbabwe

Clinical Characteristic		Pregnant (n=104)	Breastfeeding (n=72)
Initial CD4 count done	Yes	80 (76.9%)	26 (36.1%)
	No	24 (23.1%)	30 (41.7%)
	Unknown /No record	0 (0%)	16 (22.2%)
Recent CD4 count done (last	Yes	1 (0.9%)	1 (1.4%)
six months)	No	103 (99.1%)	64 (88.9%)
	Unknown/No record	0 (0%)	7 (9.7%)
Viral load		Not documented	Not documented
Outcome	Active (attending this clinic)	46 (44.2%)	44 (61.1%)
	Transferred to other facility	42 (40.4%)	23 (31.9%)
	Lost to follow up	15 (14.4%)	5 (6.9%)
	Died	1 (1.0%)	0 (0%)



Figure 1. Survival estimates for pregnant women attending St. Alberts Mission Hospital by time of initiation



Figure 2. Retention in care among breastfeeding women receiving care at St. Alberts Mission Hospital by time of ART initiation, 2016-2018



Figure 3. Comparison of retention in care between older and younger breastfeeding women receiving care at St. Alberts Mission Hospital over time, 2016-2018



Figure 4. Proportion of breastfeeding mothers retained in care by initial CD4 count status