Prevention of Postnatal MTCT of HIV: Addressing Missed Opportunities in PMTCT through Community Based Infant Feeding and Counselling

A twelve month prospective cohort study embedded in a three year programme supported by the European Union utilising trained Village Health Workers to prevent postnatal MTCT of HIV through infant feeding and HIV prevention counselling in the community

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For further information contact:

OPHID Trust
3 Rowland Square, Milton Park
Harare, Zimbabwe
Telephone: +263 4 792352/3, 797350
Fax: +263 4 792361
Email: bengelsmann@ophid.co.zw
Website: http://www.ophid.co.zw

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Abbreviations:

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
CTX	Cotrimoxazole
FP	Family Planning
HC	Health Centre
HIV	Human Immunodeficiency Virus
MOHCW	Ministry of Health and Child Welfare
MTCT	Mother to Child Transmission
OI	Opportunistic Infections
OPHID	Organisation for Public Health Interventions and Development
PMTCT	Prevention of Mother to Child Transmission
VCT	Voluntary Testing and Counselling (for HIV)
VHW	Village Health Worker
WHO	World Health Organisation
ZDHS	Zimbabwe Demographic and Health Survey

Appendices:

Baseline Questionnaire for Lactating Women
Questionnaire 1 - HIV positive mothers
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Questionnaire 3 - Mothers of unknown HIV serostatus

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1. Introduction

1.1. Background

The research was embedded in a three year EU funded programme designed to contribute to the national efforts of implementing effective and comprehensive HIV/AIDS prevention, treatment and care services to eradicate paediatric HIV/AIDS by addressing postnatal missed opportunities in the national PMTCT programme amongst the most vulnerable rural populations of Murewa and Marondera Districts in Mashonaland East Province and Mutare District in Manicaland Province of Zimbabwe. The main approaches under the programme were:

- Mobilising and supporting communities to strengthen community based care and support services for HIV infected families by establishing successful linkages with institutional health care services.
- Increasing chances of infant survival and reducing infant morbidity by involving and enhancing the capacity of the community health care cadres to provide community based infant feeding counselling.
- Preventing re-infection and new HIV infections of the mother and the onward transmission to baby by making family planning readily available to breastfeeding mothers.
- Combating stigma and reducing chances of MTCT by improving information in the community on and access to prevention, care and treatment of HIV/AIDS with particular emphasis on PMTCT and promoting community ownership of the project.
- Documenting the process and procedure of the project and sharing it with MOHCW and other stakeholders/partners for possible national roll out of the programme.

The specific objective of the action was to enhance the capacity of community health cadres and People Living with HIV and AIDS (PLWHA) towards the provision of HIV/AIDS prevention, care and support services by focussing on reducing the postnatal MTCT of HIV through the provision of sustainable community based infant feeding counselling programmes and the establishment of successful linkages with institutional health services e.g. Family Planning, HIV testing and counselling, OI/ART services, in the rural districts of Murewa and Marondera in Mashonaland East Province and Mutare in Manicaland Province.

The basis of the training provided to Village Health Workers (VHWs) was the Ministry of Health and Child Welfare (MOHCW) training addendum *"Community Based Care for Mothers and Newborns",* which is complementary to the standard VHW training manual, covering maternal and neonatal care aspects. One week of the standard three week VHW training addendum is dedicated to PMTCT and infant feeding issues, and includes both theoretical and practical sessions. The training addendum is the basis for national efforts to provide existing VHWs with refresher training as well as training for newly recruited VHWs. With funds from this project, complemented by Global Fund support, OPHID in collaboration with the MOHCW ensured district wide training of all VHWs in the project in PMTCT with additional technical input from the OPHID PMTCT District Coordinators, who drew on their

experiences of supporting PMTCT related training of healthcare workers in the respective districts for the last nine years. Post training, VHWs were mentored and supervised by the EU project field coordinators for a defined period of time in the provision of high quality ante- and postnatal advice to the beneficiaries of this project. The following project specific IEC materials were developed and pretested by OPHID to support the training:

- Leaflets introducing the project and highlighting key messages; and
- PMTCT slogans for VHW's t-shirts, hats and bags.

Trained VHWs then reached out to the community through individual and group counselling sessions. Individual counselling sessions are counselling sessions that are provided by the VHWs to pregnant and lactating women and other family members during home visits. Group counselling sessions are counselling sessions that are provided to a group of people usually at health related gatherings such as immunisation outreaches and community based growth monitoring for under-fives. Group counselling sessions include pregnant and lactating women, men, and other community members.

1.2. Justification for the Study

With an HIV prevalence rate of 16.1% among pregnant rural women in Zimbabwe an estimated 46,000 HIV-exposed infants are born annually.[1] Although major progress has been made in preventing MTCT when the baby is still in the mother's womb, or during labour and delivery, the postnatal period is less well supported. Once the baby is born postnatal transmission of HIV through breastfeeding may account for around 45% [2] of MTCT and is of grave concern.

Different feeding practices including exclusive breast feeding, predominant breast feeding, mixed feeding and replacement feeding all present different risks of infant mortality, HIV transmission and HIV-free survival among HIV-exposed infants in resource poor countries. Exclusive breastfeeding has been shown to significantly reduce the risk of HIV transmission when compared to predominant or mixed breastfeeding,[3] while replacement feeding has been shown to be associated with a greater risk of infant mortality than exclusive breastfeeding.[4] Furthermore, the risk of HIV MTCT is even higher when the mother gets newly infected (or re-infected) during this breastfeeding period. HIV positive mothers whose health is deteriorating require HAART for their own health and represent a high risk group to transmit the virus to their infants through breastfeeding due to their high viral load.[5] Referral of mothers postpartum to OI/ART services can be slow, with mothers often not accessing care in time due to multiple family pressures at home (care for newly born infant, breastfeeding, stigma) and insufficient recognition of her needs for such services. Hence,

[1] MOHCW Report of ANC HIV Estimates Technical Working Group Zimbabwe 2009

[2] De Cock KM et al. Prevention of mother-to-child transmission in resource-poor countries. JAMA 2000; 283990; 1175-1182

[3] Coutsoudis A et al. Influence of infant-feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa: a prospective cohort study. Lancet 1999; 354: 471-476: Iliff PJ et al. Early exclusive breastfeeding reduces the risk of postnatal HIV-1 transmission and increases HIV-free survival. AIDS 2005;19: 699-708: Coovadia HM et al,. Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. Lancet 2007; 367:1107-1116

[4] Coovadia HM et al,. Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. Lancet 2007; 367:1107-1116

[5] WHO. HIV and infant feeding: new evidence and programmatic experience: report of a technical consultation held on behalf of the Inter-agency Task Team (IATT) on Prevention of HIV Infections in Pregnant Women and their Infants, Geneva, Switzerland 25-27 October 2006. WHO Press: Geneva Switzerland, 2007

comprehensive infant feeding counselling, tailored to individual circumstances and needs, addressing issues as far reaching as the timing and type of infant feeding, breast health, latching techniques paired with appropriate family planning counselling and facilitated access to HAART for mothers who require it are the cornerstones of the prevention of MTCT of HIV in the postnatal period.

In recognition of the challenges in resource poor areas, the WHO/UNICEF guidelines on infant feeding of HIV-exposed infants recommend that HIV-positive mothers should exclusively breastfeed for the first six months of life unless replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS criteria).[6] Thereafter gradual weaning where appropriate complementary food is available is advocated. In the prevention of mother to child transmission (PMTCT) of HIV programme in rural Zimbabwe infant feeding remains a considerable challenge.

The MOHCW propagates and supports WHO advice to exclusively breastfeed until 6 months of age. Yet, mixed feeding has been shown to be common.[7] This may be due to a diverse number of factors including cultural attitudes and behaviours, and the suboptimal quality of counselling within the ante and postnatal services of the health centres. Healthcare workers, when counselling, are frequently pressured for time and have too little insight into the mother's personal circumstances to offer appropriate comment and recommendations on the basis of the AFASS criteria. At the March 2009 meeting of the Zimbabwe Infant and Young Child Feeding working group of the MOHCW and partners convened at UNICEF, concerns were raised that some health care workers (HCWs) are delivering wrong infant feeding messages. HIV positive mothers were being told to abruptly wean their babies at six months. The MOHCW led forum for all PMTCT partners voiced similar concerns. The multiple pressures on HCWs these days leave little time to repeat or re-emphasize infant feeding advice, thoroughly check on infant feeding practices and assess family planning needs. Advice is often given during the antenatal period, rather than after delivery when the mother is vulnerable to stigmatisation and subject to multiple cultural pressures.

2. Aims and Methodology

2.1. Study Objectives

The overall goal of the study is to demonstrate the impact of the community based programme on changing practices of lactating women to reduce mother-to-child transmission of HIV in the postnatal period.

Specific objectives of the cohort study include:

- To describe current infant feeding practices of HIV positive and negative lactating women;
- To assess family planning methods used by lactating women;
- To evaluate services provided by VHWs to minimize postnatal MTCT;
- To inform policy makers on strengthening and improving PMTCT in the postnatal period.

2.2. Study Design

[6] WHO. HIV and infant feeding: new evidence and programmatic experience: report of a technical consultation held on behalf of the Inter-agency Task Team (IATT) on Prevention of HIV Infections in Pregnant Women and their Infants, Geneva, Switzerland 25-27 October 2006. WHO Press: Geneva Switzerland, 2007

[7] Orne-Gliemann J et al. Knowledge-Attitude-Practice Survey on HIV-AIDS and PMTCT, ISPED Zimbabwe 2005

The study is a descriptive cohort study of lactating women residing in the Murewa, Marondera and Mutare districts, where OPHID Trust is implementing a community based programme to reduce mother to child transmission of HIV in the postnatal period.

The impact of the project intervention will be measured by:

a) An increase in uptake of HIV related advice/services over time linked to the number of VHW contacts with the beneficiary and type of services received (prospective design).

b) A comparison with a control group equal in size to the intervention cohort.

c) Comparison with nationally available data (where applicable).

2.3. Study Population and Sampling Procedure

Lactating women who have infants less than one month old and are residing in the implementing districts will be recruited in the study. A sample size of 704 study participants has been calculated based on the following parameters (using Epi Info statcal):

Parameter	
Exclusive breastfeeding rate in the unexposed group	5%
Exclusive breastfeeding rate in the exposed group	11%
Confidence Interval	95%
Power	80%

With an estimated ANC HIV sero-prevalence of 16.1% (ANC estimates 2009), 119 women of the sample can be expected to be HIV positive. Each of the three implementing districts contributed with one third of the study population. Enrolment was done consecutively until the total sample size was achieved. Actual enrolment across the three districts exceeded the calculated sample. The final number of enrolled women in the study was 829 across the three districts, exceeding the proposed sample size by 18%.

A control group comprising of 739 women with a one year old infant was assessed against the same outcomes of interest at one time point only (at 12 months).

2.4. Data Collection Methods

2.4.1 Cohort

Three OPHID field officers (one per district), who were responsible for the coordination and implementation of the overall programme, were trained to administer a specifically designed, structured, pilot-tested questionnaire (See Appendix 1) to each study participant. The first part of the questionnaire comprised four sections: demographic characteristics, obstetric history, HIV counselling and testing, and infant feeding. Three different versions of the second part of the questionnaire were designed to be administered according to the respondent's HIV status (positive, negative or unknown). This section of the questionnaire asked about the mother's marital status and religion, family planning use and methods, infant feeding and health and access to community based care (visits by Village Health Workers). Questionnaire 1 (for those who tested HIV positive) also asked about care and treatment for HIV for both mother and baby. Questionnaires 2 and 3 (for those who tested negative and did not know their status respectively) also asked whether the mother had been tested for HIV in the previous month. Data was collected monthly from each lactating woman for a 12 month period after enrolment, including information on demographic characteristics and uptake of advice and services received to minimize postnatal PMTCT. The main outcomes of interest

refer to infant feeding behaviour, application of family planning methods, access of HIV care and treatment services and HIV counselling and testing services.

2.4.2 Control Group

The same questionnaire as described above was administered to the control group as a once off exercise in the twelfth month of the study period.

2.5. Ethical considerations

The overall programme, into which the cohort study is embedded, seeks to enhance and strengthen the national PMTCT programme towards achieving the overall goal of virtual elimination of paediatric HIV. It complements PMTCT services offered at health centre level by extending and supporting activities into the community and households and linking the community and household with the health services.

HIV testing as encouraged and advised by VHWs in this programme and as advocated for in the national PMTCT programme may in some instances lead to domestic violence, spousal abuse, rejection and divorce when a woman tests positive. At health care facility level, post-test counselling is routinely provided to mothers tested ante- or postnatally and every effort is made to encourage partners to be tested and counselled together with the mother. In addition, the programme provided closer supervision/support by the VHW at community level to prevent, identify and deal with possible adverse effects as described above. Group education, targeted male mobilisation campaigns, regular home visits paired with further counselling provided by the VHWs as part of the programme were all designed to minimize adverse events. There were no reported cases of negative consequences to mothers as a result of testing positive during the study period or participating in the project.

There were some potential risks for the mother surrounding knowing her HIV status and disclosure of HIV within the context of any PMTCT programme. Mothers will be receiving enhanced routine services within the government health system and due care was taken to ensure confidentiality, full education, appropriate counselling and referral for further medical and psychosocial care as needed.

Study participants who had completed all 12 monthly interviews were awarded a Zambia (a cloth wrap) printed with prevention messages specifically for the purpose of this project. No additional direct costs as a result of participation in this study were incurred by participants.

Written consent was obtained from all the study participants after explaining to them what the study involves. Mothers were given the option to opt-out of the interviewing process at any stage during follow-up visits without any negative impact on the health care services provided.

Confidentiality was assured to all study participants. Individual information collected cannot be linked to the identity of a patient, but only a record interview number,

2.6. Data Management, Analysis and Presentation

Questionnaires were serialized and data entered in EPI Info and analyzed using SPSS statistical package. Descriptive statistics are used to describe the cohort sample for demographic characteristics of the sampled women. Graphical presentation of the data over the 12 month period has also been done to assess changes over time on certain variables. Finally, the analysis also seeks to investigate factors that are associated with uptake of PMTCT advice and services in the postnatal period by lactating women.

2.7. Study Limitations

As the control group were not receiving any additional services or support provided by the project it was not felt appropriate to collect data from them on a monthly basis because of the time required for non-project participants to contribute at that level while receiving none of the benefits of the project. Therefore the control comparison is only at a fixed point in time (month 12) and not the duration of the study.

The study is primarily based on self-reporting by participants. Only HIV status and number of ANC visits could be verified directly (in most cases) by cross referencing with the participants health card. All other data, such as infant feeding practices, family planning, condom use and counselling received, is based solely on participant's responses to the questionnaire and could not be verified by other means.

3. Findings

3.1. Women in the Study

829 postnatal women were recruited into the study. Therefore unless otherwise stated N=829.

General Demographics

Age: 69% of the women in the study were aged 30 and under (19% age 12-20; 50% age 21-30). 30% were age 31-40 and 1.4% were 41-50. The mean age of the women in the study was 27.

Occupation: The majority of the women described themselves as housewives (70%) or peasant farmers (23%). The remaining women described their occupation as domestic workers, vendors and formally employed. Four people were volunteers.

Education: 74% of the women participating in the study had attended secondary education and 25% had attended primary education only.

Control Group: 739 women from neighbouring areas who did not participate in the programme were interviewed in month twelve of the study and serve as the control group for the end point of the study.

The control group had broadly similar demographic characteristics to the women in the study. The mean age of the control group was 26 and 75% were aged 30 and under. 86% of the control group described themselves as housewives or peasant farmer, although there were fewer peasant farmers in the control group (9%) than in the study cohort (23%). More of the control group were formally employed (11%) than the cohort (3%). 68% had attended secondary education and 30% had only attended primary education. This is a slightly lower level of education overall than the cohort where 74% had attended secondary education.

Table 1

Comparison of Cohort and Control Group		
	Cohort	Control
Mean Age	27	26
Housewife	70%	77%
Peasant Farmer	23%	9%
Primary Education	25%	30%
Secondary Education	74%	68%
Mean number of pregnancies	2.98	2.84
Mean number of living children	2.78	2.59
Accessed ANC	95.1%	94.5%
ANC at Hospital	23.5%	19.6%
ANC at Clinic	76.2%	80.3%
Four or more ANC visits	70.3%	65.9%
HIV Positive	12.4%	9.3%
HIV Negative	81.8%	83.9%
Status Unknown	5.8%	6.7%

Obstetric History

45% of the women, both in the cohort and control group, had 1-2 pregnancies and 3-4 pregnancies (38% and 40%). The mean number of pregnancies for women in the cohort was 2.98 versus 2.84 in the control group, with the mean number of children being slightly lower at 2.78 and 2.59 respectively.

3.2. Access to ANC

95.1% of the women in the cohort accessed ANC. This is slightly higher than the national average of 90%.[8] Of the 5% that did not (n=41) the major reasons cited for not accessing ANC were lack of booking fees (56.1%) and religious reasons (31.7%). Most of the women accessed ANC at a clinic (76.2%) with the remaining 23.8% accessing ANC at a hospital. The majority (96.1%) accessed ANC at a health centre in their district. In the control group 80.3% accessed ANC at a clinic and 19.6% at a hospital.

70.3% of women who attended ANC attended four or more ANC visits, 23.1% had six or more ANC visits. Only half of those who did not know their HIV status (50%) accessed ANC, compared with 95.1% who were HIV positive and 98.2% who were HIV negative.

A similar proportion (94.5%) of women in the control group also accessed ANC. 65.9% of the control group attended four or more ANC visits.

3.3. Delivery

30.5% of the cohort delivered at home and the remainder delivered at a health centre (34.1% at a hospital; 35.3% at a clinic). Of those who delivered at home (n=249) difficulty reaching a health centre was cited as the main constraint for 59.8% of the cohort (17.3% HC too far away; 42.6% no transport to HC). Lack of money for clinic fees was cited by 25.7%. 7.6% delivered at home for religious reasons.

88.1% of those who delivered at home took their baby to a health centre. Most babies were taken to a health centre in the first week after birth (81.8%), with 40.7% taken on the same day, 22.9% within 2-3 days and 18.2% within 4-7 days.

Women in the cohort who did not know their HIV status were more likely to give birth at home (66.7%) than were women who knew their status (27.2% HIV positive; 28.5% HIV negative).

3.4. HIV Testing and Status

The majority of women in the cohort had been tested for HIV (95.8%). Of those who tested for HIV (n=794) most (94.6%) tested in ANC. Of those who had not been tested for HIV (n=35), 82.9% chose not to take the test (40% referred but did not go; 42.9% refused to test). 17.1% (n=6) stated that the centre was unable to do the test. A further 13 women who tested for HIV (1.6%) stated that they did not get their test results. Therefore 5.8% of the women in the cohort did not know their status (n=48: 35 did not test, 13 tested but did not get their results). 12.4% of the cohort tested HIV positive and 81.8% were HIV negative. Including those who did not know their status between 12.4% and 18.4% of the women in the study were HIV positive. This is in line with the national estimated

[8] Zimbabwe Demographic and Health Survey 2010-11 Preliminary Report, Zimbabwe National Statistics Agency. MEASURE DHS ICF Macro Calverton, Maryland, USA June 2011 p12. 90 percent of women who gave birth in the five years preceding the survey received antenatal care from a trained health professional at least once for their last birth.

ANC HIV sero-prevalence of 16.1% (ANC estimates 2009). 80.9% of HIV test results were verified using the ANC book (with the ANC books being unavailable for the remaining respondents).

The majority of the control group had also been tested for HIV (93.9%). Overall, 83.9% of the control group were HIV negative, 9.3% were HIV positive and 6.7% did not know their status. This gives a range of 9.3%-16% of women in the control group who were HIV positive, including those who do not know their status, a slightly lower range than for women in the cohort.

3.5. Infant Feeding

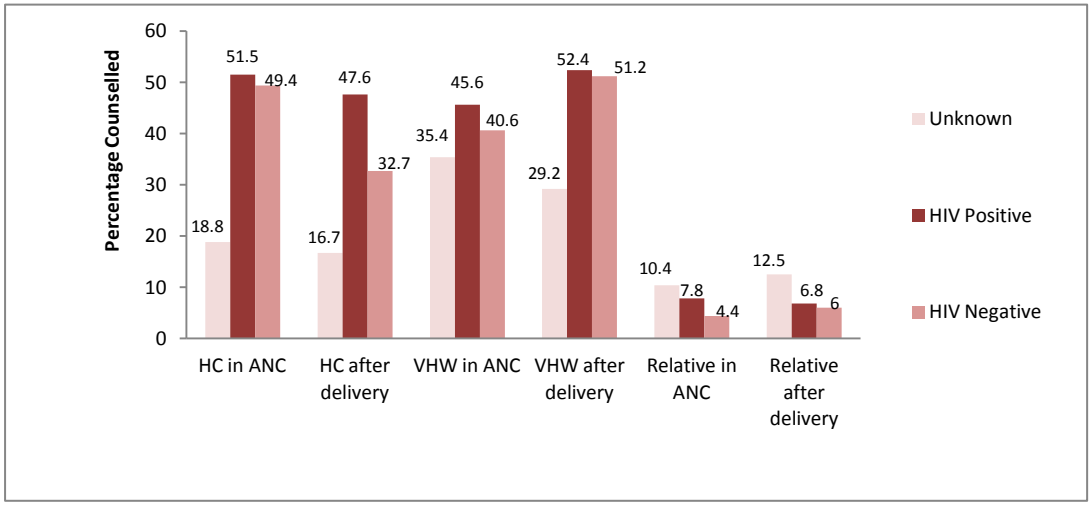
Most mothers in the cohort initiated breastfeeding within one hour (74.2%) and within the first 12 hours (23.8%) after birth. 2.1% initiated breastfeeding after 12 hours.

Most women received counselling on infant feeding after delivery by a VHW in the community (50.1%) and at the health centre during ANC (47.9%). 33.7% of the women stated that they had received counselling at the health centre after delivery and 40.9% were counselled on infant feeding by a VHW in the community in ANC. Only a few were counselled by relatives in the community on infant feeding, 5.2% in ANC and 6.5% after delivery.

Women in the cohort were asked about the topics covered during pre- and postnatal counselling in the first month of the study. At that time the most common topic that had been covered was exclusive breastfeeding (92.6%) followed by positioning and attaching baby to the breast (70.9%), condom use (65.5%), complementary feeding (48.5%), and baby weaning (41.7%). Women in the control group were asked to recall topics covered during pre- and antenatal counselling in month twelve of the study. At that time, women in the control group had been advised on the same topics during counselling as the cohort but fewer recalled being advised on exclusive breastfeeding (92.6% cohort; 79.4% control) and condom use (65.5% cohort; 50.2% control). However the difference in timing of this question – month one for the cohort and month twelve for the control group – makes it difficult to make a direct comparison between the types of counselling received by the two groups.

Figure 1 (below) shows that women who did not know their HIV status were less likely to access any formal counselling either in the health centre or from VHWs in the community than women who knew their status (whether positive or negative). However, women who did not know their status received more counselling from VHWs in the community than any other source.

Figure 1: HIV Status by Counselling Received

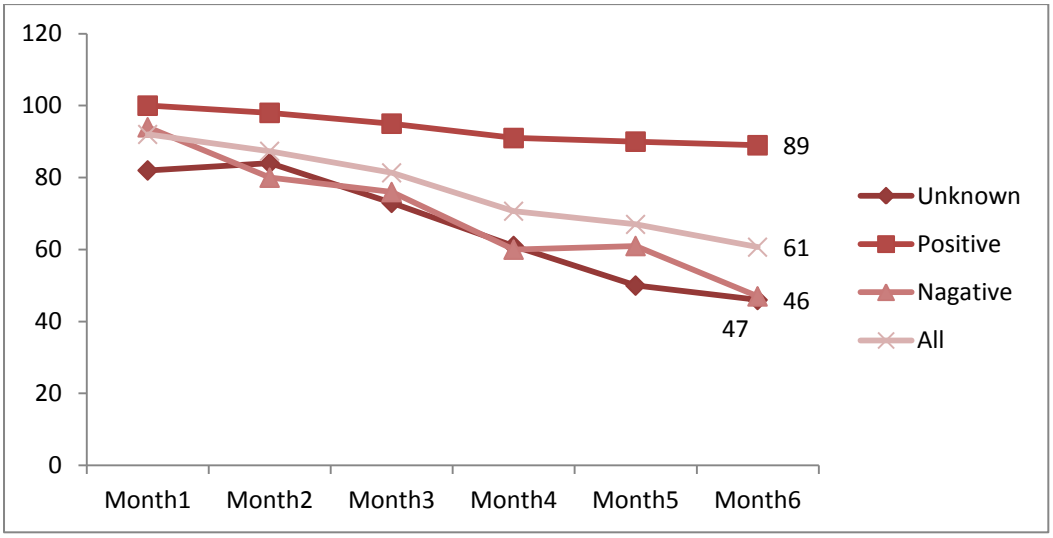


By month twelve fewer women in the control group had received counselling from VHWs either in ANC (cohort 40.9%; control 9.7%) and / or after delivery than was reported by women in the cohort at month one (cohort 50.1% at month one; control 12.4% at month twelve). Women in the control group were most likely to receive counselling at a health centre either in ANC (49.8%) and / or after delivery (26.5%).

Exclusive Breastfeeding (EBF)

Figure 2 below shows the percentage of mothers in the cohort who were exclusively breastfeeding their babies over the first six months of the study by HIV status. At month six, 61% of all the women in the study were exclusively breastfeeding their babies. This is exceeding the national average of 31.5% at this stage.[9] The rate of exclusive breastfeeding was particularly high amongst HIV positive mothers, with 89% still exclusively breastfeeding at six months. Amongst HIV negative women and those who did not know their status less than half (46% and 47% respectively) were still breastfeeding at six months, which is still more than the national average at this stage in both cases. By month six 19.4% of the cohort were supplementing breast milk with other liquids and 16.1% were supplementing with other solids.

Figure 2 Percentage of Women in Cohort Exclusive Breastfeeding Over First Six Months by HIV Status

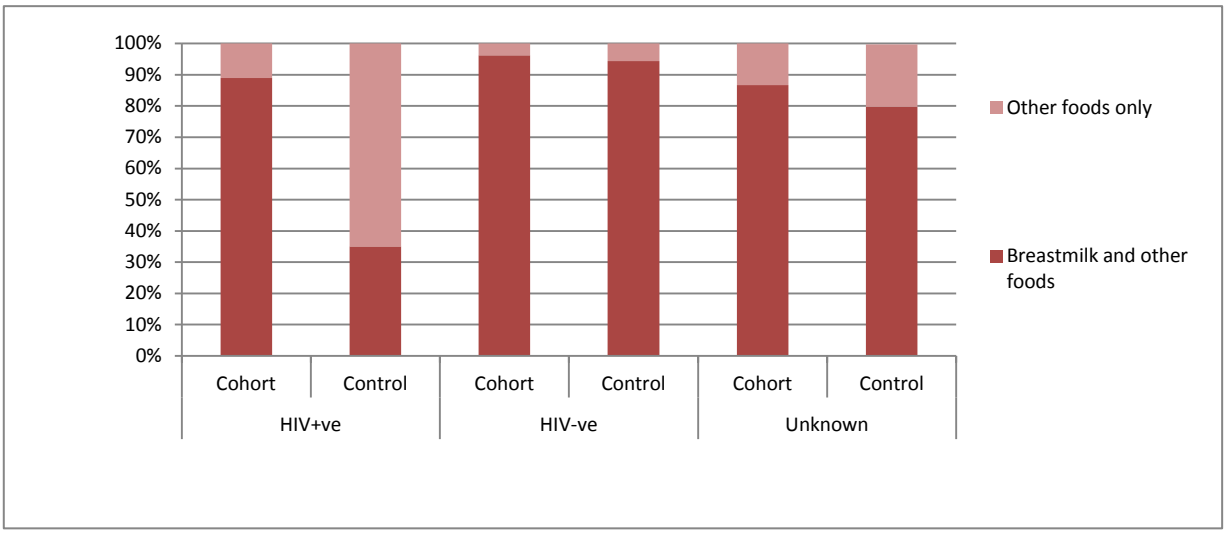


Weaning Status

Figure 3 (below) shows the weaning status amongst infants in the cohort and control group by HIV status at month twelve of the study. HIV exposed infants in the cohort were more likely to still be breastfeeding than HIV exposed infants in the control group (89% versus 35%, $p<0.05$). HIV negative women across both the cohort and control group were least likely to have fully weaned their babies by twelve months (3.8% cohort; 5.6% control group).

Figure 3 Weaning Status at Twelve Months by HIV Status

[9] Zimbabwe Demographic Health Survey 2010-2011



3.6. Family Planning (FP)

Use of family planning increased steadily over the twelve month period from 73% in the first month to 96% in month 12. Amongst the control group 87% were using family planning in month 12. The majority were using contraceptive pills (67.6%) and injectables (15.6%) as their main form of family planning followed by condoms (13.5%).

Of those who did not use family planning, the main reasons given suggest they were not sexually active at that time either due to not being married (24.5%), waiting for six weeks after birth (18.5%) or the husband's absence (14.5%). 30.6% also stated that they were not sure which family planning method to use. 8% did not use family planning for religious reasons.

Figure 4: Family Planning Use by HIV Status

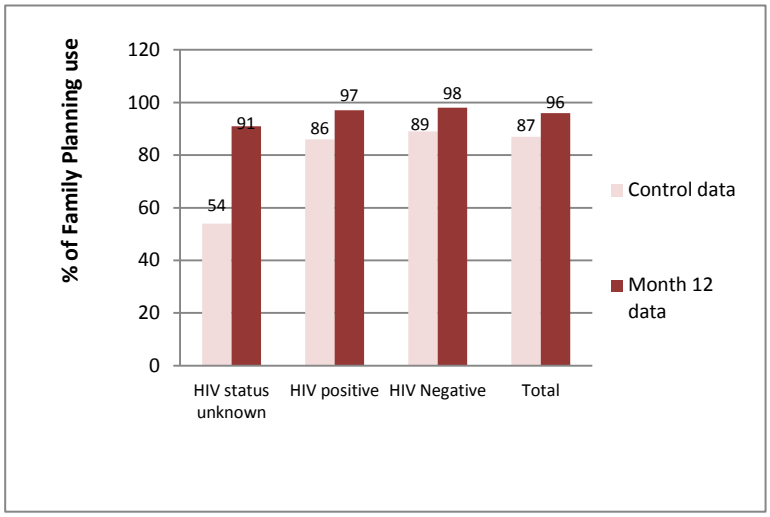
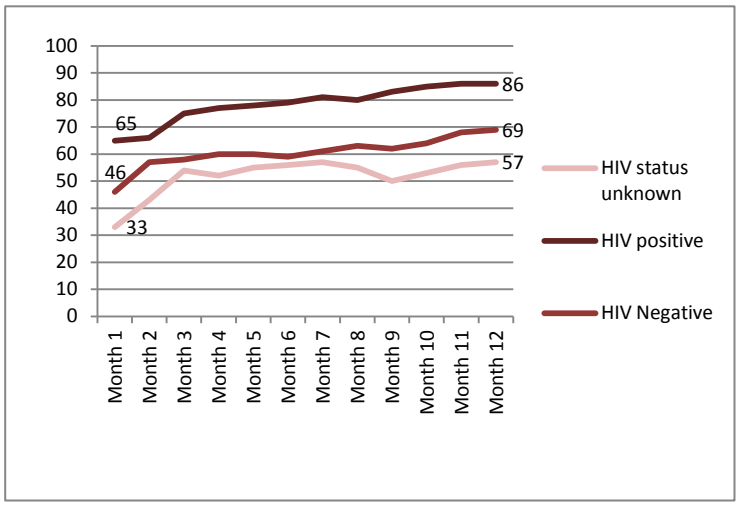


Figure 4 (right) shows that in month twelve family planning use was higher across all status groups in the cohort than in the control group. This difference was most pronounced amongst the group of women whose HIV status was unknown with 91% of the intervention group stating use of a family planning method at month 12 versus 54% in the control group (statistically significant at p=0.000).

3.7. Condoms

Figure 5 (right) shows condom use over the twelve months by HIV status of participants. Condom use steadily increased over the twelve month period for women who knew their HIV status and was higher in all months for women who were HIV positive. Amongst women who did not know their status overall condom use was lower than women who knew their status and there were greater fluctuations over the twelve month period.

Figure 5: Condom Use by HIV Status

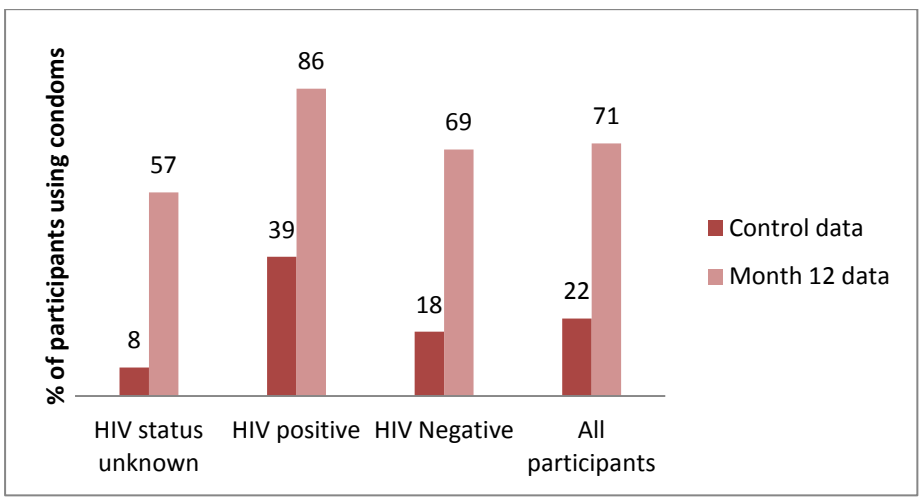


Across all participants condom use increased over the twelve month period from 46% in the first month to 65% in month twelve, an increase of 41% in condom use over the study period.

Of those that did not use condoms the biggest single reason for not using condoms was that either the woman was not willing to use condoms or the husband refused to use them (46.8%). Most other reasons for not using condoms suggested that the women were not sexually active at that time (husband away 25.2%, does not have a husband 16%, and waiting for six weeks after birth 4.3%). 4.3% did not use condoms for religious reasons.

As illustrated in Figure 6 (below), at month twelve, women in the cohort study were at least three times more likely to use condoms than women in the control group ($p<0.05$). Only 22% of women in the control group were using condoms compared with 64% of women in the cohort. Women in the cohort who did not know their status were almost seven times more likely to use condoms than women in the control group. Just 8% of women in the control group who did not know their status were using condoms, compared with 54% of women in the cohort.

Figure 6: Condom Use by HIV Status for Cohort Month 12 and Control Group



3.8. Access to HIV and AIDS Services

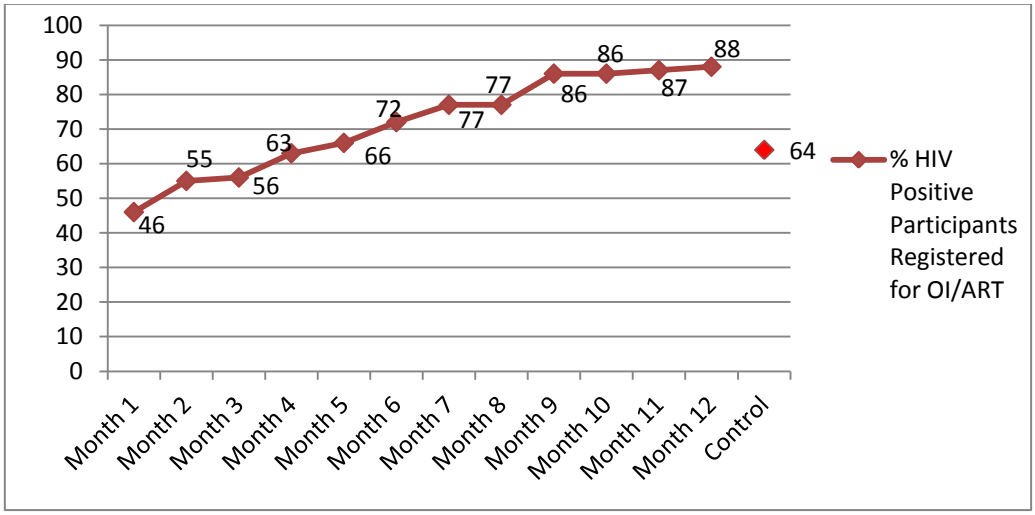
Postnatal HIV Testing

Women who seroconvert postnatally are more likely to pass on the infection to their infants through breastfeeding than women who tested HIV positive during pregnancy.[10] This means that postnatal testing for HIV is critical for identifying women who tested negative during pregnancy but seroconvert during pregnancy or in the postnatal period. At month twelve 67.9% of the cohort who had tested negative during pregnancy or did not know their status had tested for HIV within the last three months, compared with 36.2% of the control group ($p<0.05$). Amongst those that had been visited by a VHW in the previous month the proportion of the cohort that had tested for HIV in the last three months increased to 73.3% (an increase of 8%) while the number in the control group remained constant (36.2%).

Registered for Opportunistic Infection (OI)/Antiretroviral Therapy (ART)

Figure 7 (below) shows a steady increase in the percentage of HIV positive participants in the cohort that registered for OI/ART over the twelve months of the study, from 46% in month one to 88% in month twelve. At month twelve 37.5% more HIV positive participants in the cohort were registered for OI/ART compared with the control group (88% of the cohort; 64% of the control).

Figure 7: Percentage of Cohort and Control Registered for ART at Month 12



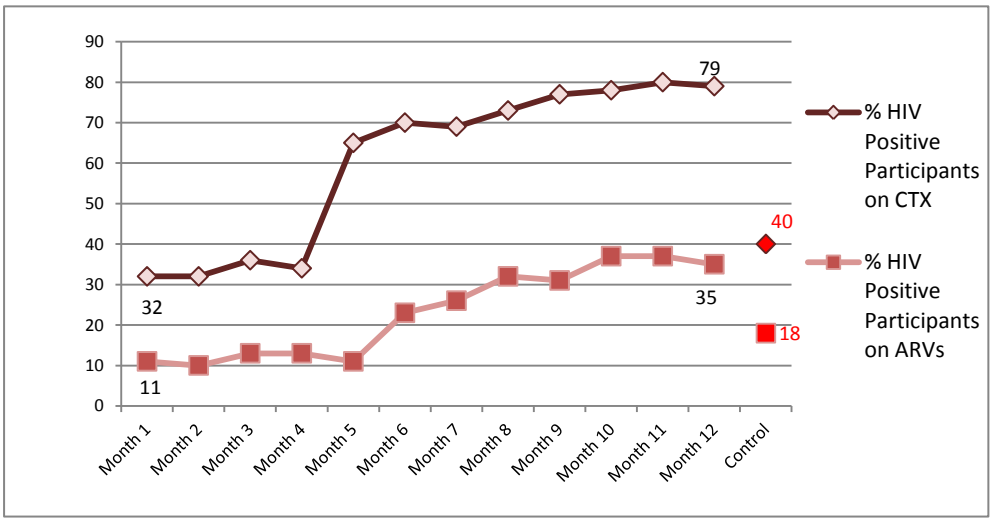
Taking HIV Medication (ARVs or CTX prophylaxis)

The percentage of HIV positive participants taking HIV medication changed little in the first four months followed by a steep increase in month 5 for CTX and month 6 for ARV's (taken by the mother for her own health), almost doubling in each case and then continued to further raise for the remainder of the study period (Figure 8 below). Over the twelve months period the percentage of

[10] Humphrey JH et al *Mother to child transmission of HIV among Zimbabwean women who seroconverted postnatally: prospective cohort study.* Among mothers who tested HIV positive at baseline and whose infant tested HIV negative with polymerase chain reaction (PCR) at six weeks (n=2870), breastfeeding associated transmission was responsible for an average of 8.96 infant infections per 100 child years of breast feeding (95% CI 7.92 to 10.14) and varied little over the breastfeeding period. Breastfeeding associated transmission for mothers who seroconverted postnatally (n=334) averaged 34.56 infant infections per 100 child years (95% CI 26.60 to 44.91) during the first nine months after maternal infection, declined to 9.50 (95% CI 3.07 to 29.47) during the next three months, and was zero thereafter.

HIV positive mothers taking ARVs for their own health increased from 11% in month 1 to 35% in month 12 and from 32% in month 1 to 79% in month 12 for CTX. In month twelve almost twice as many HIV positive mothers of the cohort were taking HIV medication compared to the control group (for ARVs: 35% versus 18%, and for CTX: 79% versus 50%).

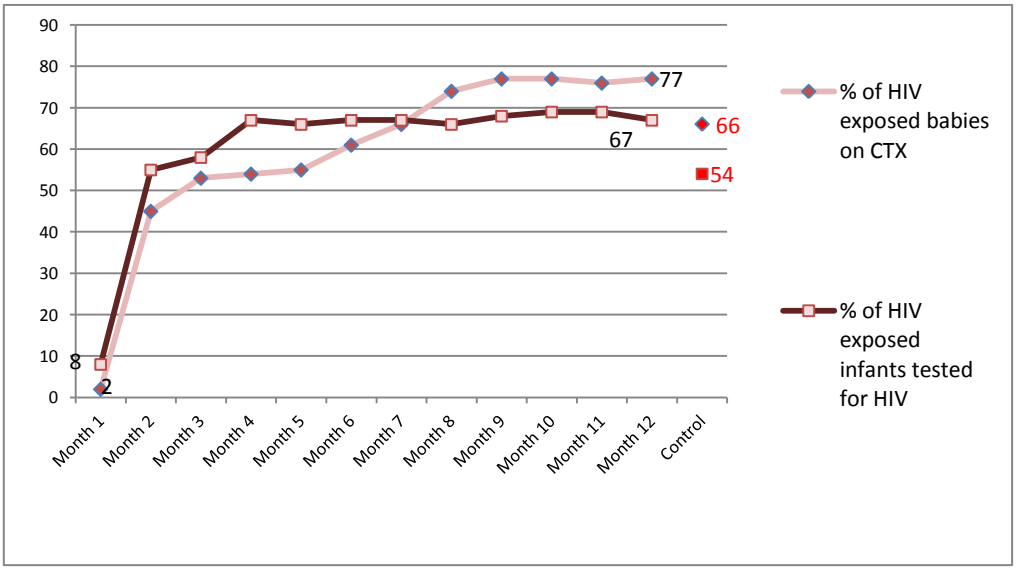
Figure 8: HIV Positive Participants taking HIV Medication



Access to Services for HIV Exposed Infants

The percentage of HIV exposed infants tested for HIV increased dramatically in month two and then increased slightly for the next two months before remaining steady at around 67% for the remainder of the study period. There was a similarly pronounced increase of HIV exposed infants on CTX in month 2 - in line with national guidelines. In the following months this figure continued to rise gradually, reaching 77% in month 12. At month twelve 11 % more cohort participants' HIV exposed babies were on CTX than in the control group (77% of the cohort; 66% of the control). 13% more HIV exposed babies in the cohort had been tested for HIV than within the control group (67% of the cohort; 54% of the control).

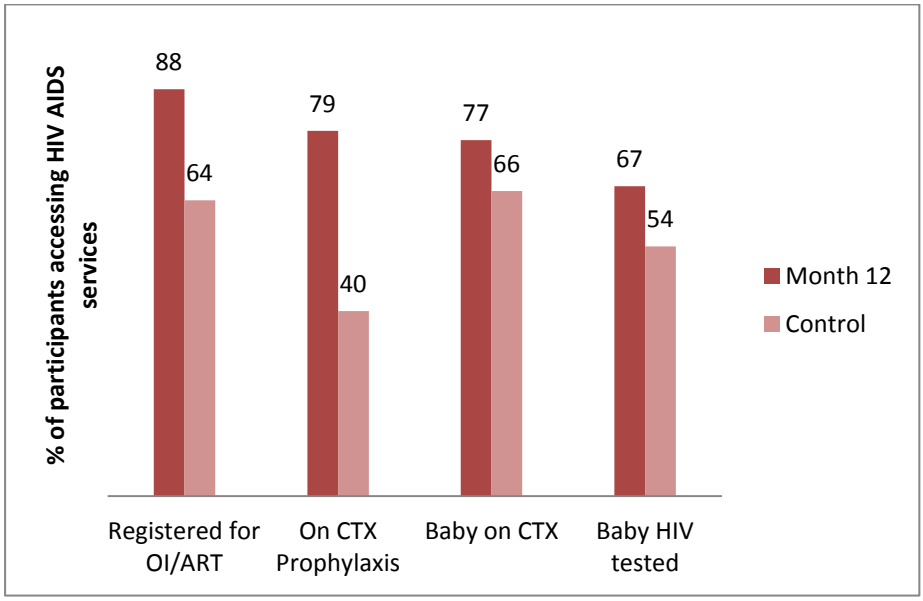
Figure 9: Access to HIV Services for HIV Exposed Infants



Comparison of HIV Services Accessed by the Cohort and the Control Group

Overall, at month 12 women and infants in the cohort study were more likely to be accessing HIV and AIDS services than women in the control group.

Figure 10: Proportion of mothers/infants who accessed HIV Services in Cohort and Control Group at Month 12



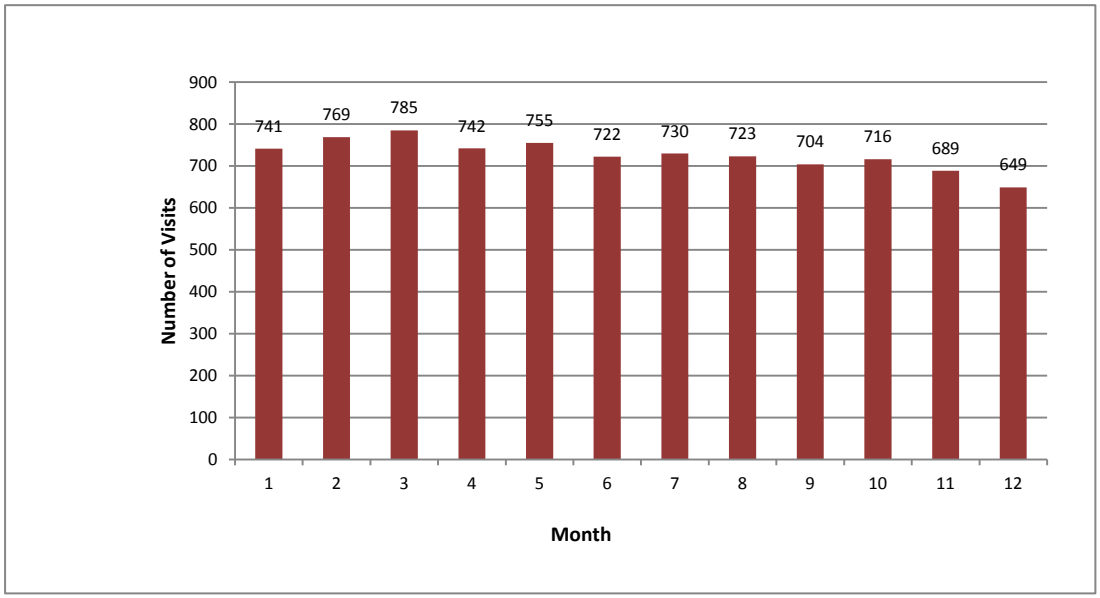
Mothers in the cohort study were 24% more likely to be registered with a OI/ART clinic ($p<0.05$), and 39% more likely to be on CTX prophylaxis compared to their counterparts in the control group ($p<0.05$). For infants, although more services were accessed in the study group, the difference was not statistically significant. Just over half of the women in the control group were accessing HIV and AIDS services for their babies (66% baby on CTX, 54% baby tested for HIV) compared with 77% (and 67%) of mothers in the cohort group who ensured that their baby is on CTX (and was tested for HIV).

3.9. Village Health Worker (VHW) Activities

VHWs carried out a total of 8,725 visits to the 829 women enrolled in the study over the twelve months. Each mother would have received an average of 10.5 visits over the study period of one year. This means that on average 87% of the participants were visited by a VHW in a month. The peak number of visits was in month 3 (n=785) when 94.7% of the cohort were visited. Fewer visits were conducted towards the end of the twelve month period with 649 VHW visits in month twelve (representing 78.3% of the cohort).

The most common services received by the cohort from VHWs were infant feeding advice (including exclusive breast feeding, complementary feeding, weaning, positioning and attaching baby to breast, and balanced diet) (52.4%) and HIV&AIDS prevention information (condom use, VCT, PMTCT, dual protection) (22.4%). Other services included family planning (11.8%), basic medical care for the baby (growth monitoring, immunization, cord care, SSS, and drug adherence) (10.4%) and personal, baby and family hygiene (3%).

Figure 11: Number of Village Health Worker Visits per Month



4. Summary of Key Findings and Discussion

The "Countdown to Zero" initiative announced by the Joint United Nations Programme on HIV/AIDS ambitiously aims to eliminate paediatric HIV infection by 2015.[11] This means less than 5% MTCT at a population level or a reduction of paediatric infections by 90% between 2015 and 2009. Towards this end, the Zimbabwean Ministry of Health and Child Welfare's has made considerable progress in the expansion of antiretroviral therapy (ART) and PMTCT services, as well as implementation of more efficacious PMTCT as outlined in the 2010 World Health Organisation (WHO) guidelines, the prospect of eliminating paediatric HIV is closer than ever. [12] However, despite improved access to antiretrovirals, PMTCT service utilization in the post-natal phase remains suboptimal with many mother infant pairs lost to follow-up for treatment and care with PMTCT opportunities lost in the post-natal phase. Any breakdown in the cumulative successive steps of the PMTCT cascade increases the risk of HIV transmission to infants.

The three year project in which this study was embedded sought to address post-natal gaps in the National PMTCT Programme at the community level by training VHWs in critical aspects of postnatal PMTCT. The results of the twelve month prospective cohort study indicate that VHWs can play a vital role in enhancing community based support networks and increasing knowledge on PMTCT in the postnatal period. The VHW intervention was able to mitigate the observations made in the draft Infant and Young Child Feeding Policy for Zimbabwe that "In Zimbabwe, there are weak community

11 Joint United Nations Programme on HIV/AIDS (UNAIDS). Countdown to zero: global plan towards the elimination of new HIVinfections among children by 201 and keeping their mothers alive, 2011-2015. Geneva: UNAIDS; 2011

12 World Health Organization. Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants. Recommendation for a public health approach (2010 version). Geneva : World Health Organization; 2010

based infant and young child support networks to follow up mothers with young infants. There is a glaring absence of community feeding safety nets for infants during difficult circumstances. Community knowledge gaps still exist in the link between infant and young child nutrition and HIV".[13] These three observations have all been addressed by the OPHID support for the VHWs in this projects and the outcomes of the study attest to this.

The study showed that uptake of facility based care and improved outcomes for the prevention of vertical transmission of HIV can be strengthened by bridging the gap between communities and the formal health sector through community based counselling and health education provided by well-trained and supervised village health workers.

4.1. Women participating in the project were more likely to take postnatal action against MTCT

A similar proportion of women in the control group as in the study cohort attended ANC at a clinic or hospital, where the PMTCT process begins. However, positive postnatal behaviours relating to PMTCT were much higher across all categories for the cohort than the control group. Compared with the control group, at month twelve women in the cohort were:

- More likely to still be breastfeeding at month 12 compared to the control group. This difference was particularly pronounced for the group of HIV-positive mothers;
- More likely to be using family planning, especially amongst those that did not know their HIV status;
- At least three times more likely to be using condoms to prevent HIV infection or re-infection in the postnatal period;
- 24% more likely to be registered for OI/ART (among HIV positive mothers);
- Almost twice as likely to be on CTX prophylaxis;
- 11% % more likely to have HIV exposed babies on CTX;
- 13% more likely to have had HIV exposed babies tested for HIV;
- Almost double as likely to have taken a HIV-test in the last three months following a negative HIV test result in the antenatal period (67.9% versus 36.2%)

Lost to follow up post-delivery of HIV-exposed babies has been a continuing problem in the Zimbabwean National PMTCT programme and these findings demonstrate that with VHW intervention at community level post-natal PMTCT opportunities are considerably reinforced. The regular interaction between the mother and other family members and peers with trained VHWs had a positive effect on women's uptake of PMTCT advice and services. VHWs live and work within their own communities and are known and trusted by the communities they work with. They are more likely than medical personnel at a health centre to understand the individual circumstances of the women they are counselling. They form an important link between the formal medical system and the community. The project field officers observed that the VHWs establish a close and long term relationship with the beneficiaries, often physically accompanying them to the clinic to access services. A recent review of the literature on community-based interventions to prevent the vertical

[13] Policy number: MOHCW/IYCF/01/2013 (Government of Zimbabwe (GOZ) Ministry of Health and Child Welfare)

transmission of HIV supports these observations and recognises that village health workers are respected by and have the confidence of the community.[14]

4.2. Uptake of HIV related advice and services increased during the period of the study

Uptake of all PMTCT services and actions increased amongst women in the cohort over the twelve months of the study:

- Use of family planning increased from 73% in the first month to 96% in month 12.
- Condom use increased from 46% to 65% over the twelve months.
- The percentage of women registered for OI/ART almost doubled (from 46% to 88%).
- The percentage of HIV positive participants on CTX more than doubled from 32% to 79%.
- The percentage of HIV positive participants on ARVs increased more than threefold from 11% to 35%.

This suggests that the continued interaction with VHWs over the twelve month period and the ongoing counselling received during this time resulted in a continued increased uptake of PMTCT services and protective actions amongst the cohort over time. This increase in women accessing treatment and care for themselves and their babies impacts positively on the survival of mother and child. This is crucial if Zimbabwe is to achieve the Millennium Development Goals 4, 5 and 6 by 2015. Information disseminated by community cadres to their peers has demonstrated that it influences health seeking behaviour. Individual and group counselling by VHWs of pregnant and lactating women within a supportive community environment encouraged by their peers, shows that overtime during the study there was increased uptake of advice and services. Additionally, at community level, VHWs provide an appropriate integrated MNCH service of family planning, PMTCT, nutrition and infant growth monitoring.

4.3. Women in the study were more likely to meet optimum infant feeding standards

Previously the possibility of MTCT of HIV through breastfeeding received little attention in low-resource, high-HIV settings where safe alternatives to breastfeeding are not available. The draft Zimbabwe Infant and Young Child Feeding Policy (February 2013) recommends exclusive breastfeeding for the first six months of life, noting that "suboptimum breastfeeding, especially non-exclusive breastfeeding in the first 6 months of life, results in 1.4 million deaths and 10% of disease burden in children younger than 5 years". The policy states that "HIV infected mothers shall be encouraged to exclusively breastfeed for the first six months of life and introduce appropriate complementary foods thereafter, while continuing breastfeeding up to two years of age or beyond." The information on breastfeeding given by the VHWs in the study was crucial for child survival and not just the minimization of HIV transmission.[15] Strategies that can reduce breast milk transmission of HIV while maintaining its life saving benefits in terms of nutrition and protection against serious endemic infectious diseases are crucial to overall PMTCT efforts[16]

[14] Marcos Y et al. Community strategies that improve care and retention along the prevention of mother-to -child transmission of HIV cascade: a review JIAS 2012 Jul 11;15 Suppl 2:17394

[15] Chopra M et al. Rapid Assessment of infant feeding support to HIV-positive women accessing prevention of mother to child transmission services in Kenya, Malawi and Zambia *Public Health Nutr*. 2009 Dec;13(12):2323-8

[16] Chopra M et al. Rapid Assessment of infant feeding support to HIV-positive women accessing prevention of mother to child transmission services in Kenya, Malawi and Zambia *Public Health Nutr*. 2009 Dec;13(12):2323-8

By month six, women in the cohort were more than twice as likely to be exclusively breastfeeding their babies than the national average at this stage (65% of the cohort compared to ZDHS average of 32% for 2010-11). An incredible 95% of HIV positive mothers in the study exclusively breast fed their babies for the first six months of their lives. By month twelve 65% of HIV positive mothers in the control group had completely weaned their babies from breast milk compared with only 11.1% of the HIV positive mothers in the cohort.

4.4. VHWs are an important source of information on postnatal care for women in the community

VHWs carried out a total of 8,725 visits to the 829 mothers of the project cohort during the twelve month period of the study. Programmatic efforts to train and mentor VHWs to visit lactating mothers resulted in regular, sustained contact between the VHWs and the mothers as evidenced by the monthly visiting rate of VHWs (on average 87.7% of the cohort were visited by a VHW each month). The number of visits per month was greatest in the first six months and then reduced gradually over the next six months as the babies got older and the mothers were probably more confident, although 78% of participants were still visited by a VHW in month twelve. The main services received from the VHWs included infant feeding and counselling (including exclusive breast feeding, complementary feeding, weaning, positioning and attaching baby to breast, and balanced diet) and HIV&AIDS prevention (condom use, VCT, PMTCT, dual protection). Across women who were HIV positive, HIV negative and those who did not know their status VHWs were a greater source of information at the community level than were relatives for infant feeding counselling.

The promotion of exclusive breastfeeding has been shown to have the potential to reduce postnatal HIV transmission from HIV-positive mothers and women who do not know their status.[17] Because they can have regular interaction with mothers in their home settings during the postnatal period and significant cultural rapport and trust the VHWs have an important role to play in educating women on appropriate infant feeding practices and prevention of HIV to reduce MTCT in the postnatal period. VHWs also played an important role in providing education about and access to condoms, both female and male, in community and individual family counselling sessions. This is particularly important in helping HIV-infected women and women of unknown status accessing dual protection as well promoting condom use to keep negative women negative [18].

4.5. VHWs are the main source of information for women who do not know their HIV status

Women who did not know their HIV status were less likely to attend ANC and more likely to give birth at home than women who knew their status. This group therefore also misses out on critical opportunities at the institutional level to learn about PMTCT and are therefore at greater risk of passing on HIV to their infants. Women who give birth at home are also less likely to ingest their PMTCT medications even if they have enrolled in PMTCT during ANC.[19]

VHWs are able to reach out to those women who do not access ANC (4.9%) or who deliver their babies at home (30.5%) and therefore have less access to formal PMTCT counselling and intervention at the institutional level. Women who did not know their status were less likely than those that did to receive infant feeding counselling at a health centre either in ANC or after delivery.

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[17] Ellen G. Piwoz, ScD, et al *The Impact of Safer Breastfeeding Practices on Postnatal HIV-1 Transmission in Zimbabwe*

[18] Sarnquist C et al *Reproductive Health and Family Planning Needs Among HIV-Infected Women in Sub-Saharan Africa* Current HIV Research, 2013, 11, 160-168

[19] Mirkuzie AH, Hinderaker SG, Sisay MM, Moland KM, Mørkve O. *Current status of medication adherence and infant follow up in the prevention of mother to child HIV transmission programme in Addis Ababa: a cohort study.* Mother-infant pairs attended in health facilities at birth were more likely (OR 6.7 95% CI 2.90-21.65) to ingest their medication than those who were attended at home.

This group were most likely to receive counselling on infant feeding from VHWs in the community both before and after delivery. VHWs therefore play a critical role in reaching women who are less likely to engage with formal health centres and may fall through the cracks of traditional PMTCT programmes. Therefore, VHWs are shown to be crucial in addressing the hard to reach communities and groups that are under enrolled in PMTCT programme as well as those who are lost to follow-up.[20]

4.6. Other decision makers in the household and community may affect the health seeking behaviour of lactating women

One of the main reasons cited by the women in the study for not using condoms was that they were not willing or their husbands refused. Although men were included in the community level counselling sessions and some individual sessions conducted by the VHWs, this suggests that possibly more could be done to engage with men as well as women for promotion of PMTCT in the postnatal period. Intra-household gender dynamics could also affect women's health seeking behaviours both in the prenatal and postnatal periods[21]. For example, men are often the primary decision makers for household expenditure, which includes access to medical services. The majority of women in the study described themselves as housewives of peasant farmers suggesting that they have no or little income of their own and are therefore likely to be reliant on their husband for meeting household expenses, including healthcare. In some instances, for example, where lack of booking fees is cited for not accessing ANC (56.1%), this could possibly reflect lack of prioritisation of resources for this purpose as much as lack of availability of resources in the household.

Relatives were also seen to play a small part in counselling the women on infant feeding, particularly amongst women who did not know their HIV status (10.4% of women who did not know their status received counselling from relatives in ANC and 12.5% after delivery). Traditionally older women in the household (grandmothers and the female relatives of the woman's husband) have great influence over infant feeding practices, in particular the duration of breastfeeding and the introduction of complementary foods. Family-centred approaches are essential in addressing socio-cultural barriers and increasing awareness and uptake of PMTCT services, and this project went some way to addressing this.

Religious reasons were also cited as reasons for not accessing ANC (31.7%), for delivering at home (7.6%), for not using family planning (8%) and for not using condoms (4.3%). This suggests that religious leaders in communities (and at national and international levels) may act as a barrier to PMTCT at the community level.

4.7. There are still gaps in the uptake of postnatal PMTCT services and advice

While uptake of PMTCT services and advice is higher amongst the women who participated in the project compared to those who did not, not all of the women in the cohort took the necessary actions to protect themselves and their babies. Where referral for care and treatment was not taken up this may often be due to stigma and non-disclosure to grandmothers and fathers of their babies. For example, at month 12 almost one quarter (23%) of HIV exposed babies were not on CTX, one third (33%) of HIV exposed babies had not been tested for HIV and just over one third (35%) of women were not using condoms to protect themselves from new or re-infection of HIV. This suggests that while the additional layer of counselling at community level can reduce the rate of

[20] Rawizza H *Improving Retention in the PMTCT Care Cascade* www.medscape.com May 30,2012
[21] Jewkes RK et al *Intimate partner violence, relationship powerinequity, and incidence of HIV in young women in South Africa: A cohort study* Lancet 2010;376(9734): 41- 8

MTCT there are still a considerable proportion of women who are not taking up the advice and services promoted by the VHWs, although the reasons for this may not be known.

5. Recommendations and Conclusion

5.1. Recommendations

Standardisation and Replication of the Model

The current study shows that VHWs can have an important impact on the behaviour of women to prevent MTCT in the postnatal period compared to women who did not have this additional level of support in the community. These results support a wider scale roll-out of the model across the healthcare system. The additional tools and content developed by the project for enhanced training of VHWs in postnatal PMTCT counselling should therefore be reviewed and standardised with the MOHCW for integration into the PMTCT section of the "*Community Based Care for Mothers and Newborns*" VHW training addendum.

Next Steps

While the approach was shown to be successful overall in increasing uptake of PMTCT services and advice both over time and compared to the control group, a substantial proportion of women did not take up the advice and services promoted by the VHWs. A recent review of community-based strategies that improve retention into care and treatment along the PMTCT cascade observed that rigorous measurement and evaluation of community interventions are necessary to ensure that "community-based interventions live up to their promise in the years ahead"[22] Whilst this study contributed to the body of evidence, community based, standardized, national data collection tools for VHWs and the services they provide would go a long way to strengthen both the implementation and monitoring of services provided. Further research could be useful in identifying the social, cultural, financial, physical or other barriers to uptake of postnatal PMTCT services and advice amongst this group of mothers, including the roles played by other decision makers in the household. Particular focus is required on the transition to infant care.

5.2. Conclusion

The study shows that the intervention has had a positive impact on behaviours likely to result in reduced MTCT of HIV in the postnatal period. Women who were visited regularly by VHWs who had been trained in counselling on infant feeding and HIV&AIDS prevention were more likely to take positive actions to protect themselves from HIV infection or re-infection during the postnatal period than women who did not participate in the intervention. Women who were HIV-positive were more likely to access HIV&AIDS services for themselves and their babies. In particular, women who did not know their HIV status and were less likely to engage with formal health centres (e.g. delivering at home or not attending ANC) were more likely to take positive steps towards PMTCT than women who were not part of the intervention. The study supports the integration of the improved postnatal PMTCT training into the standard training modules for VHWs as an important aspect for addressing gaps in the institutional based PMTCT programme for the postnatal period. Ultimately if the elimination of MTCT of HIV is to be successful, the continuum of care for pregnant and lactating women and their babies must be community based and community oriented if multiple barriers to follow-up and access of care and treatment are to be addressed. Community involvement of VHWs,

[22] Marcos Y et al. Community strategies that improve care and retention along the prevention of mother-to –child transmission of HIV cascade: a review JIAS 2012 Jul 11;15 Suppl 2:17394

as demonstrated in this study, has gone a considerable way to achieving these goals through accelerating geographical reach and strengthening referral structures to the health facilities in a socio-culturally appropriate manner.

Appendix 1: Questionnaire

Prevention of Postnatal MTCT of HIV: Addressing Missed Opportunities in PMTCT Through Community Based Infant Feeding Counselling

Baseline Questionnaire for Lactating Women

1. Record Number: ☐ **2**. Ward ..... **3**. Village ..... **4**. Date of interview.....

My name is ----------. I am a Field Officer with OPHID in the community based infant feeding counseling programme being implemented by village health workers. OPHID is in the process of collecting data related to this programme on a monthly basis over a period of 12 months. The overall goal of the research is to evaluate the impact of this programme in preventing postnatal mother to child transmission of HIV. Kindly go through this consent form which outlines important issues that you may want to know about this study. (Enumerator give woman time to read and understand the consent form.)

Part 1: Demographic Characteristics

5. Age of mother ..... **6**. Occupation:.....

7. Level of Education 1. None 2. Primary 3. Secondary 4. Tertiary

Part 2: Obstetric History

8. Number of pregnancies ☐

9. Number of living children ☐

10. Have you accessed antenatal care for this last pregnancy? ☐

1. Yes 2. No

11. If yes where?

1. Hospital in this district

2. Clinic in this district
3. Hospital outside this district
4. Clinic outside this district

12. How many antenatal care visits did you have for this last pregnancy? ……

13. If no to Q10 why not?

……
……
……
…….

14. Where did you deliver for this last pregnancy?
    1. Hospital in this district
    2. Clinic in this district
    3. Hospital outside this district
    4. Clinic outside this district
    5. At home

15. If you delivered at home, what were the reasons of delivering at home
    1. Health centre too far away
    2. No transport to get to health centre
    3. Religious reasons
    4. No money for clinic fees
    5. Other (Specify) .....

……

16. If you delivered at home, did you take your new born to the health centre?
    1. Yes
    2.No

17. If yes, how soon after delivery did you go? ……..(specify hours or days)

Part 3: HIV Counseling and Testing

18. Did you test for HIV in your last pregnancy
    1. Yes during ANC, PMTCT programme
    2. Yes during ANC, VCT centre
    3. Yes during labour and soon after delivery
    4. Yes, in the postnatal period
    5. No

19. If you did not test for HIV in your last pregnancy, why not?
    1. Counseling and testing not offered to me
    2. Centre could not do the test
    3. Referred but did not go
    4. Refused to test
    6. Other (Specify) ……

20. If you tested for HIV, did you get your results?
    1. Yes
    2. No

21. Did you disclose your status to anyone?
    1. Yes
    2. No

22. If not why not?

1. Fear stigmatization
2. Fear rejection
3. Not prepared to talk about it
4. Other (Specify)……..

……

23. If tested, are you willing to disclose your results to me

1. No
2. Yes Positive
3. Yes Negative

Part 4: Infant Feeding

24. When you gave birth to your child, how long did it take you to initiate breastfeeding? ---------- ----- (specify hours/minutes)

25. Did you receive infant feeding counseling? (***circle all that apply***)

1. Yes at the HCC in ANC
2. Yes at the HCC after delivery
3. Yes in the community by VHW in ANC
4. Yes in the community by VHW after delivery
5. Yes in the community by relative in ANC
6. Yes in the community by relative after delivery
7. Yes other (specify) ……..
8. No

26. What issues were discussed in infant feeding counseling (tick all that apply)

	Exclusive breastfeeding
	Positioning and attaching baby to breast
	Weaning the baby
	Complementary feeding
	Condom use during breastfeeding
	Other (specify)

Verify Results with ANC card/book: 1. Positive 2. Negative 3. ANC book not available

If HIV Positive go to **Questionnaire 1**, HIV Negative go to **Questionnaire 2** and Unknown status and undisclosed status go to **Questionnaire 3**

Questionnaire 1

Part 1: Baby details

1. Sex of baby 1. Male 2. Female **2**. Date of birth of baby ……**3**. Birth weight ……..

Indicator	Month	Month	Month	Month
Mother details				
4. Marital Status 1. Married 2. Single 3. Divorced 4. Widowed				
5. Religion/Denomination				
Family Planning				
6. Are you currently using any family planning method? 1. Yes 2. No				
7. If no, why are you not using family planning?				
8. If yes, which method are you using? 1. Pill 2. Injectables 3. Implants 4. Natural 5. Condoms 6. Permanent				
If you are re-infected with HIV during this breastfeeding period your chances of infecting your baby with HIV are high. Use of Condoms during this breastfeeding period protects your baby from HIV infection. **9.**Did you use condoms at any time this month 1. Yes, female condoms 2. Yes, male condoms 3. No				
10. If no why not?				
Mother Care and Treatment				
11. Are you registered with OI/ART clinic? 1. Yes 2. No				
12. Are you taking any medication for prophylaxis? 1. Yes-CTX 2. Yes-ARVs 3. No				
Infant Care and Treatment				
13. Is baby on cotrimoxazole prophylaxis 1. Yes 2. No				
14. Was baby tested for HIV 1. Yes, Negative 2. Yes, Positive 3. Yes, not disclosed 4. No				

15. Did baby suffer any illness that needed medical attention in this current month? 1. Yes 2. No				
16. What foods (including liquids) did you give your baby yesterday?				
Breakfast				
Mid morning snack				
Lunch				
Afternoon snack				
Supper				
17. Weight of baby this month				
18. MUAC this month				
Community based Care				
19.Were you ever visited by VHW this current month? 1. Yes 2. No				
20. If yes, what service did you receive from VHW				

Questionnaire 2

Baby Details

1. Sex of baby 1. Male **2**. Date of birth of baby ……**3**. Birth weight ……
2. Female

Indicator	Month	Month	Month	Month
4. Marital Status 1. Married 2. Single 3. Divorced 4. Widowed				
5. Religion/Denomination				
6. Family planning . Are you currently using any family planning method? 3. Yes 4. No				
7. If no, why are you not using family planning?				
8. If yes, which method are you using? 1. Pill 2. Injectables 3. Implants 4. Natural 5. Condoms 6. Permanent				
If you are infected with HIV during this breastfeeding period your chances of infecting your baby with HIV are high. Use of Condoms during this breastfeeding period protects your baby from HIV infection. **9.**Did you use condoms at any time this month 1. Yes, female condoms 2. Yes, male condoms No				
10. Did you suffer any illness that needed medical attention in this current month? 1. Yes 2. No				

11. What foods (including liquids) did you give your baby yesterday?				
Breakfast				
Mid morning snack				
Lunch				
Afternoon snack				
Supper				
12. Weight of baby this month				

13. MUAC this month				
14. Did baby suffer any illness that needed medical attention in this current month? 1. Yes 2. No				
Follow up HIV counseling				
15. If HIV test is more than 3 months, counsel mother for HIV retest. HIV counseling given 1. Yes 2. No				
16. **Follow up Question (subsequent months after counseling)** Did you test for HIV recently, and what were the results? 1. No 2. Yes Negative 3. Yes Positive 4. Yes, don't want to disclose				
Community based care				
17. Were you ever visited by VHW this current month? 1. Yes 2. No				
18. If yes, what service did you receive from VHW				

Questionnaire 3

1. Sex of baby 1. Male 2. Female **2**. Date of birth of baby ……. **3**. Birth weight ……

Indicator	Month	Month	Month	Month
4. Marital Status 1. Married 2. Single 3. Divorced 4. Widowed				
5. Religion/Denomination				
6. Family planning Are you currently using any family planning method? 4. Yes 3. No				
7. If no, why are you not using family planning?				
8.If yes, which method are you using? 1. Pill 2. Injectables 3. Implants 4. Natural 5. Condoms 6. Permanent				
If you are infected with HIV during this breastfeeding period your chances of infecting your baby with HIV are high. Use of Condoms during this breastfeeding period protects your baby from HIV infection. **9.**Did you use condoms at any time this month 1. Yes, female condoms 2. Yes, male condoms 3. No				
Mother Care				
10. Did you suffer any illness that needed medical attention in this current month? 1. Yes 2. No				
Baby Details				
11. What foods (including liquids) did you give your baby yesterday?				
Breakfast				
Mid morning snack				
Lunch				
Afternoon snack				
Supper				
12. Weight of baby this month				
13. MUAC this month				
14. Did baby suffer any illness				

that needed medical attention in this current month? 1. Yes 2. No				
Follow up HIV counseling				
15. If mother did not test for HIV during pregnancy, counsel mother to get tested. HIV counseling given 3. Yes 4. No				
16. **Follow up Question (subsequent months after counseling)** Did you test for HIV recently, and what were the results? 5. No 6. Yes Negative 7. Yes Positive 8. Yes, don't want to disclose				
Community Care				
17. Were you ever visited by VHW this current month? 1. Yes 2. No				
18. If yes, what service did you receive from VHW				