

ORIGINAL ARTICLE

Awareness of Repeat Antenatal HIV Testing in Mothers Six Weeks Postnatal in Lusaka, Zambia

A. Mtaja, B. Amadi, & S. Wasomwe

Department of Paediatrics and Child Health
University Teaching Hospital Lusaka Zambia

ABSTRACT

Zambia national guidelines on the Prevention of Mother to Child Transmission (PMTCT) recommend that all pregnant women and breastfeeding mothers must have HIV tests every 3 months.¹ However, less than 10% of pregnant women in Lusaka District get retested.² Repeat HIV testing identifies women who seroconvert after the first test and allows measures to reduce mother to child transmission to be instituted.

Objectives: This cross-sectional survey aimed at investigating the effect of awareness of repeat testing on actual retesting in women attending the 6th week post-natal clinic at Chilenje Health Centre in Lusaka. The objectives of the study were to determine the proportion of women that were aware of the repeat antenatal HIV testing, the number of women that were retested later in pregnancy or labour, and the number of postnatal mothers who seroconverted during the study.

Methods: Questionnaires were used to assess awareness and mothers eligible for a repeat test were offered a repeat test. 404 mothers at the sixth week postnatal visit were recruited by convenient sampling. Only women that had proof of a negative HIV test result in pregnancy were included in the study. Data was stored on Epidata and analysed using stata. Chi squares were used to make associations between the categorical variables and the primary outcome, repeat testing. Multivariate logistic regressions were used to adjust for confounders.

Results: Seventy two percent of the women were aware of the importance of repeat testing but only 36% received a repeat test. None of the women seroconverted during the study. Awareness was significantly associated with repeat testing (Odds ratio 3.8; 95% CI 2.9 – 6.9).

Conclusion: Women that are aware of repeat antenatal HIV testing are four times more likely to receive a repeat test than those that are not. Booking in the first trimester increases the chance of being retested two fold. Women that have 5 or more ANC visits have a three-fold chance of being retested than those with fewer visits.

INTRODUCTION

Mother to child transmission of HIV is the major source of HIV infection in children.³ An HIV infected child represents a missed opportunity for prevention. The retesting rates of less than 10% noted in clinics in Lusaka District are too low to translate into an effective PMTCT programme that will ensure zero vertical transmission of HIV. With these low retesting rates, women that seroconvert will be missed and pose a high risk of infection to the unborn child. Barriers to uptake of PMTCT services were numerous in various studies.³⁻⁶ Of note were lack of discussion by antenatal care providers and lack of awareness of existing services by clients. It is important to investigate the effect of awareness on repeat testing as this will identify some of the issues related to non implementation of the National Guidelines and allow for appropriate intervention.

Methodology

Research Design : This was a cross-sectional study

Target Population: All postnatal mothers attending Maternal Child Health Clinic at Chilenje Clinic, Lusaka

Study Population: Postnatal mothers who previously tested negative for HIV, coming for the 6th week visit and have met the eligibility criteria.

Study Site: The study will be conducted at Chilenje Clinic, at its Maternal and Child Health department, in

Lusaka, Zambia. Chilenje Clinic is located in the South-eastern part of Lusaka. It covers a catchment area of about 77,142 residents. It offers out patient as well as in patient services (bed capacity is 30). It has the following clinics: Maternal and Child Health and Antiretroviral clinics. It also has several 'corners' that cater for patients with sexually transmitted diseases and Tuberculosis. It has a youth friendly corner to cater for the youth. It has a labour ward that has a capacity of 4 beds.

It has a basic laboratory and also has a pharmacy. It keeps its relevance in the community via the community health Workers who are community volunteers. It has an ambulance to facilitate transfer to higher level hospitals. Until now, Chilenje has operated as a Clinic, but is now earmarked for a first level Hospital where Caesarean Sections and other minor surgical operations will be done.⁷

Sample size and Sampling Procedure

404 mothers at the 6th week postnatal visit were recruited by convenient sampling. Only women that had proof of a negative HIV test result in pregnancy were included in the study.

Research Instruments

Questionnaires were used to assess awareness and mothers eligible for repeat testing were offered the test.

Research Methods

Mothers were invited to the study as they came for their 6th week post natal clinic visit. Consent was obtained and questionnaires administered to assess awareness and other parameters. Mothers eligible for repeat testing were counselled and tested. Testing was done as described in the Zambia HIV rapid test Algorithm. Post-test counselling was also done.

Data Analysis

Data was stored on Epidata v 3.1 and analysed using stata 11. Chi square tests were used to associate categorical variables with the primary outcome (repeat testing). Multivariate logistic regressions were used to adjust for confounders. Associations were considered significant at 95% confidence interval if $p < 0.05$. Effect size was measured using odds ratios.

Study area

The study was limited to Chilenje Health Centre due to logistic challenges.

RESULTS

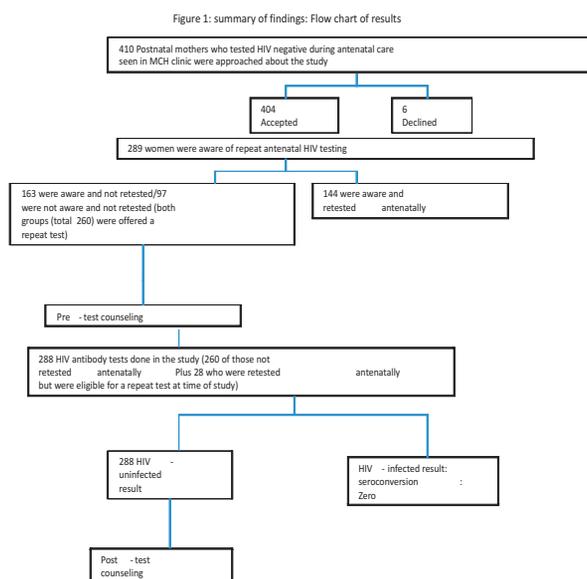


Table 1: Characteristics of study participants; n = 404

| Variable | Mean/percentage | | |
|----------------------|---------------------------------|---------------------------------|--------------------------------|
| Age | 26.3 years | | |
| Education | Secondary – 56% | Tertiary – 29% | |
| Employment | Unemployed – 63% | Formal – 25% | Self – 12% |
| Income | KR 2000 – 41% | KR 1000 – 32% | |
| Residence | Medium cost - 80% | High cost – 13% | |
| Marital status | Married – 82% | Single – 18% | |
| Parity | Multiparous – 59% | Uniparous – 35% | Grandmultiparous – 6% |
| Booking | 2 nd Trimester – 76% | 1 st Trimester – 16% | 3 rd Trimester – 8% |
| # routine ANC visits | 3 to 4 – 63% | 1 to 2 – 16% | 5 - 21% |
| Place of delivery | Clinic – 54% | Hospital – 41% | Home – 5% |

Table 2 – Outcomes

| Outcome | Frequency | Percentage (%) |
|-----------------------|-----------|----------------|
| Awareness | | |
| Aware | 289 | 72% |
| Not aware | 115 | 28% |
| Repeat testing | | |
| Received retest | 144 | 36% |
| No retest | 260 | 64% |
| Seroconversion | nil | Nil |

Table 3 shows how awareness of repeat testing was strongly associated with actual repeat testing

| Repeat HIV Test | Odds ratio | P value | 95% conf. Interval |
|-----------------|------------|---------|--------------------|
| awareness | 4.16 | <0.0001 | 2.39 – 7.25 |

repeat antenatal HIV testing while only 36% actually received a repeat test antenatally.

All women had received at least one HIV test during pregnancy, and are assumed to have been counselled prior to the test. Therefore, all women were expected to be aware of repeat HIV testing. The women that reported being unaware of the importance of repeat testing were women that probably received inadequate counseling as was seen in the study by Gita et al who found that lack of discussion by antenatal care providers was a major barrier to HIV testing during pregnancy.⁸ Unfortunately, not a single counseling session was listened to in order for the counseling to be assessed. However, it was observed that the PMTCT guidelines were present in the clinic and that all but 2 nurses were trained in PMTCT. Women who are aware were 4 times more likely to be retested than those who were not (p <0.0001, CI 2.39 – 7.25). It is possible that these women used the knowledge they had on the importance of repeat testing to request the HIV test.

The results show that an increase in education, five or more antenatal visits and booking in the first trimester are significantly associated with being aware of repeat HIV testing. This makes sense because more contact with a health care provider ensures reinforced information. A higher number of ANC visits increased the chances of being retested 3-fold. This is comparable to Rouzioux et al and Newell et al who found the converse that poor antenatal attendance translated into low rates of repeat testing.^{9,10}

After controlling for confounding factors, awareness still remained significantly associated with repeat HIV testing (OR 3.11; p<0.0001, CI 2.39 – 7.25). This is line with what Gita et al found where lack of awareness of services offered at the ANC contributed significantly to the low uptake of these services.⁸ Therefore the converse is true that awareness increases uptake as was found in this study.

The study found that 36% of the women were retested during pregnancy. This is higher than the Lusaka district average of 10%. The data was collected over a period of six months and during this time the health care providers were sensitized to the study aim which was to actively repeat test the women. This result, therefore, could be a reflection of a ripple effect on other departments of the

Table 4 - Results after adjusting for confounders

| Variable | Odds ratio | P value | 95% confidence interval |
|--------------------------------------|------------|---------|-------------------------|
| Awareness | | | |
| Potential confounding variable | | | |
| 1) Education | | | |
| - Primary | 0.40 | | |
| - Secondary | 0.83 | | |
| - Tertiary | 2.11 | 0.001 | 1.34 – 3.34 |
| 2) Gestational age at booking | | | |
| - First trimester | 3.3 | <0.0001 | 1.87 – 5.81 |
| - Second trimester | 0.45 | | |
| - Third trimester | 0.7 | | |
| 3) Number of ANC visits | | | |
| - 1 to 2 visits | 0.53 | | |
| - 2 to 4 visits | 0.50 | <0.0001 | |
| - 5+ visits | 3.8 | | 2.29 – 6.33 |

Table 8 - Multivariate analysis

| rhiv | Odds Ratio | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------|------------|-----------|------|-------|----------------------|----------|
| aw | 3.890089 | 1.138353 | 4.64 | 0.000 | 2.192166 | 6.903126 |
| ft | 2.358182 | .7266536 | 2.78 | 0.005 | 1.2891 | 4.313877 |
| av5 | 3.110027 | .8428884 | 4.19 | 0.000 | 1.828391 | 5.290043 |

rhiv = repeat HIV testing; aw = awareness of repeat testing; ft = first trimester; av5 = 5+ ANC

After adjusting for confounders, awareness of repeat antenatal HIV testing remained significantly associated with repeat testing (OR 3.89, p<0.0001; CI 2.19 – 6.90).

Booking in the first trimester and having five and more ante natal clinic visits were independently significantly associated with repeat testing as shown above.

DISCUSSION

This study investigated the effect of awareness of repeat antenatal HIV testing on actual repeat testing. Seventy-two percent of women were aware of the importance of

clinic like the labour ward. A similar effect was seen by Keiffer et al who observed retesting at 45% in their intervention sites compared to 14% at the control sites.¹¹

In this study, the major reason (in 73% of the participants) for not retesting was that repeat testing was not offered to the women by the health care providers. This was a barrier to a successful PMTCT programme also found by Kinuthia et al, who cite a strain on an over-stretched human resource base.¹² Interestingly, unavailability of counsellors, counsellors being too busy, counsellors being rude, mothers being told to come back with partner and long queues at the ANC were not major issues in being reasons why mothers did not retest, with these parameters accounting for the 'other' category (7%) of the responses. It was observed, however, that there were at most 4 nurses in the maternal Child health clinic for the various activities offered at the Clinic, six short of the ideal.

The clinic receives about 40 antenatal and 60 post natal women daily. No posters on PMTCT and retesting were seen on the walls of the clinic. The posters on the walls were those concerning Child Health programmes.

None of the 292 mothers that were retested seroconverted. The study was not powered to detect seroconversion. Also of note is the low prevalence of HIV (12%) in antenatal mothers at Chilenje clinic.⁷ This is much lower than that found at other clinics where the prevalence of HIV in pregnant women ranges between 16 to 21%.

Nearly all (99%) of the women offered repeat testing during the study accepted the test. This shows that refusal of repeat testing does not contribute to its low levels. Once the test is offered, the probability that a woman will refuse the test is almost nil.

CONCLUSION

Women that are aware of repeat antenatal HIV testing are four times more likely to receive a repeat test than those that are not. Booking in the first trimester increases the chance of being retested two fold. Women that have 5 or more ANC visits have a three-fold chance of being retested than those with fewer visits.

LIMITATIONS

The results obtained from this study may not be generalizable to all clinics in Lusaka as there may be factors that are specific to Chilenje Clinic. For example, the study found that 29% of the study population attended tertiary education, 82% were married, 80% lived in 'middle class' housing and 95% delivered in a health centre. This is certainly not representative of the population in Lusaka.

Recall bias was the second limitation since mothers were asked about an event that had occurred in the past.

Several factors can influence maternal awareness of repeat antenatal HIV testing. Both Maternal and Health facility based factors should have been explored. The study explored mostly maternal factors, and the data presented is mostly quantitative.

The omission of collecting data on health facility related issues e.g listening in to a counseling session by a PMTCT qualified counselor, interviews with health centre staff and the omission of qualitative data from the mothers e.g focus group discussions missed out on a richer data set that would have produced a more robust recommendations for policy and practice.

RECOMMENDATIONS

Counseling in the antenatal period must be strengthened to ensure that women are empowered to be able to ask for a repeat test when not offered. Campaigns that encourage early booking and a minimum of four ANC visits as recommended by MOH should be intensified and implemented in all health facilities.

PMTCT guidelines which emphasize repeat testing should be adhered to in all antenatal clinics to ensure full benefit of the programme whose aim among others is to reduce HIV infection in children.

The Ministry of Health should critically and periodically look at the staffing levels in the local clinics to ensure that the staff are not overwhelmed and stretched to the point where they compromise service delivery to the community, otherwise we will begin to see a reversal of the gains in PMTCT.

ACKNOWLEDGEMENTS

This research would not have been possible without the support of The Center for Infectious Disease Research in Zambia and the Vanderbilt Institute through the UNZA-VU Capacity Building Project.

I would like to thank my supervisors Dr S. Wa Somwe and Dr B. Amadi for their guidance. I am also indebted to Dr B. Andrews, Dr V. Mulenga and Dr C. Chabala for their invaluable help. Thank you for your patience and for allowing me to disturb your work at any time. I thank my hard working assistants Sr P. Sipatonyana and Sr C. Chipanda of Chilenje Clinic. I acknowledge all the faculty in the Department of Paediatrics and Child health as well as my colleagues for their input. Last but not least, a special thanks to all the study participants who made this research possible.

REFERENCES

1. Zambia National Protocol Guidelines for the Integrated Prevention of Mother-to-Child Transmission of HIV, 2010
2. Zambia Electronic Perinatal record system
3. Prevention of Mother-to-Child transmission of HIV: Expert Panel Report and recommendations to the US. Global AIDS Coordinator January 2010
4. Bwirire LD, Fitzgerald M, Zachariah R, et al. Reasons for loss to follow up among mothers registered in a Prevention-of-Mother-to-Child Transmission Program in Rural Malawi. *Trans R Soc Trop Med Hyg* 2008; 102: 1195–1200
5. Medley A, Garcia-Moreno C, McGill S, et al. Rates, Barriers and outcomes of HIV serostatus disclosure among women in developing countries; Implications for Prevention of Mother-to Child Transmission Programs. *Bull World Health Organ* 2004;82: 299 – 307.
6. Kebaabetswe PM. Barriers to Participation in the prevention of Mother-to-Child HIV transmission Program in Gaborone, Botswana, a qualitative approach. *AIDS Care*. 2007 Mar; 19 (3): 355–60.
7. Chilenje Clinic Records and Interview with Chilenje Clinic Sister-in-Charge.
8. Gita S, Ashock D, Manisha K. Low Utilization of HIV testing During Pregnancy: What Are the Barriers to HIV testing for women In Rural India? *Journal of Acquired Immune Deficiency Syndrome*. 1 February 2008 – Volume 47 – Issue 2 – pp 248–252.
9. Rouzioux C, Costagliola D, Burgard M *et al.*: Timing of mother-to-child HIV-1 transmission depends on maternal status. The HIV Infection in Newborns French Collaborative Study Group. *AIDS*7(Suppl. 2),S49-S52(1993).
10. Newell ML, Coovadia H, Cortina-Borja M, et al. Mortality of infected and uninfected infants born to HIV-infected mothers in Africa. A pooled analysis. *Lancet* 2004; 364:1236–43.
11. Kieffer M, Hoffman H, Nlabhats B, et al. Repeat HIV testing in labor and delivery as a standard of care increases ARV provision for women who seroconvert during pregnancy. Program and abstracts of the 17th Conference on Retroviruses and Opportunistic Infections (CROI); February 16-19, 2010; San Francisco, California.
12. Kinuthia J, Kiarie J, Farquhar C, et al. Co-factors for HIV incidence during pregnancy and the postpartum period. Program and abstracts of the 17th Conference on Retroviruses and Opportunistic Infections (CROI); February 16-19, 2010; San Francisco, California.