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ADHERENCE TO NATIONAL GUIDELINES IN PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV
A. W. Musalia, MBChB, MMed, Ministry of Medical services, P. O. Box 34349-00100, Nairobi, A. Mutungi, MBChB, MMed, MSc, MPH, O. Gachuno, MBChB, MMed, PGDRM and J. Kiarie, MBChB, MMed, MPH, Department of Obstetrics and Gynaecology, College of Health Sciences, University of Nairobi, P. O. Box 19676 - 00202 Nairobi, Kenya

Request for reprints: Dr. A. W. Musalia, P. O. Box 2677-00202, KNH, Nairobi, Kenya

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A. W. MUSALIA, A. MUTUNGI, O. GACHUNO and J. KIARIE

ABSTRACT

Background: Mother-to-child transmission (MTCT) of Human Immunodeficiency Virus (HIV) contributes to over 90% of the paediatric HIV infections. The national PMTCT guidelines make recommendations for specific interventions to reduce perinatal transmission. Data on adherence to the guidelines by caregivers and quality of PMTCT care is however limited.

objective: To evaluate the extent to which PMTCT care offered to HIV positive women admitted for delivery at Kenyatta National Hospital (KNH) and Pumwani Maternity Hospital (PMH) adheres to National Guidelines in order to reduce vertical transmission of HIV during labour and delivery.

Design: A cross-sectional study.

Setting: Kenyatta National Hospital and Pumwani Maternity Hospital from January to April 2009.

Subjects: All consenting HIV positive women admitted to the labour wards at the two facilities and planned for delivery.

Results: A total of 370 women were enrolled, 266 at Pumwani Maternity Hospital and 104 at Kenyatta National Hospital. Among the enrolled women 357 (96.4%) had been counselled on vertical transmission and 205 (55.4%) had HIV disease staging by CD4 cell count. There were no significant differences between the two study sites in the proportion of women counselled on MTCT ($p=0.398$) and receiving HIV disease staging by CD4 testing ($p=0.28$). Three hundred and forty nine (94.3%) women were offered varied ARV regimens for PMTCT. 101 (27.3%) received HAART, 94 (26.9%) were given single dose nevirapine and 130 (37%) received AZT+NVP combination prophylaxis. Twenty one women received no ARV prophylaxis. Overall, 268 women (72.5%) had spontaneous vertex delivery. An episiotomy rate of 7% was observed and no vacuum delivery was recorded. A Caesarean section rate of 27.5% was recorded with PMTCT as an indication in almost half of the cases. Women delivered at KNH were more likely to receive HAART ($p<0.001$) and to be delivered by elective caesarean ($p<0.001$).

Conclusion: A great majority of HIV positive women admitted for delivery received counseling on vertical transmission and were offered ARVs for PMTCT. Many women did not get CD4 measurement and clinical staging as recommended in the National guidelines.

INTRODUCTION

HIV / AIDS pandemic is one of the greatest challenges of this century and it threatens the health of mankind. In sub-Saharan Africa where HIV prevalence is highest, women are most affected with an average of 13 infected women for every ten infected men. This difference is more marked among young people aged 15-24 years with three out of four people living with HIV / AIDS being female (1,2). In Kenya there are currently an estimated 1.4 million people infected

with HIV and the prevalence of HIV among pregnant women attending antenatal care at various PMTCT sites is approximately 9% (2).

In 2005 alone there were 700,000 new cases of HIV infection in children under the age of 15 years worldwide (3). About 90% of HIV infected children acquire the virus from their mother during pregnancy and child birth (4). In Kenya an estimated 141,101 births occurred to HIV positive women in 2007. Approximately 45,640 of these babies could have acquired the virus assuming a transmission rate of

40% if there is no intervention (5). The long term care of these infants is not only a major burden to the health care system but also the affected families. Prevention of new infections is therefore one of the key strategies in the National HIV/AIDS Strategic Plan (6).

PMTCT Guidelines in Kenya: The Kenya National PMTCT guidelines issued in 2009 recommend a four-pronged approach termed PMTCT-plus (5). HIV disease staging of all positive pregnant women is recommended in order to provide comprehensive clinical care. If laboratory facilities are available or accessible, baseline CD4 cell count testing should be done. All pregnant women with WHO clinical stage I and II disease with CD4 cell count of 350 or lower should be started on treatment with HAART. All pregnant women with WHO clinical stage III or IV disease should be put on treatment irrespective of CD4 cell count. Combination ARV prophylaxis is recommended for women who do not need treatment as it has been shown to be superior to monotherapy.

The National guidelines also recommend on modification of routine intrapartum obstetric care. Elective Caesarean delivery is recommended where feasible as it has shown to reduce MTCT independently of other interventions.

Adherence to national guidelines for PMTCT: One of the priority areas of the Kenya National AIDS Strategic plan (2000-2010) and National Health Strategic Plan II is adherence to set clinical and public health standards in order to provide quality care to those infected and affected; and to reduce the number of new infections. A study to determine the extent of adherence by caregivers to the national guidelines for PMTCT has not been undertaken before.

This study evaluated the PMTCT care offered at Kenyatta National Hospital and Pumwani Maternity Hospital in order to document the extent to which specific interventions are offered to reduce perinatal HIV transmission. Inferences are also made on the quality of PMTCT care and level of adherence to the National guidelines for PMTCT by caregivers at these facilities.

The two hospitals are leading model institutions for the PMTCT programme in Kenya. They were also among the first public health facilities to initiate PMTCT services based on the National Guidelines for PMTCT. Evaluation of PMTCT care offered to HIV positive women admitted for delivery at these facilities provided an opportunity to determine the impact of the programme at patient management level.

It is hoped that the results of this study and its recommendations will be used to formulate policies for improvement of PMTCT services at these facilities

and others in the country.

MATERIALS AND METHODS

This study was a cross sectional survey of HIV positive pregnant women admitted to the labour ward at Pumwani Maternity and Kenyatta National Hospital for delivery. HIV positive women who delivered before arriving to hospital or those admitted with other medical conditions and not planned for immediate delivery were excluded from the study. The targeted sample size was 369 parturients. To avoid bias, the sample was evenly distributed between the two facilities based on volume of deliveries. Enrollment was done simultaneously. A total 370 HIV-positive women were recruited into the study, 104 at KNH and 266 women at Pumwani Maternity.

Data collection procedure : Data were collected on 24-hour basis by four research assistants (two at KNH and two at Pumwani) under supervision of the principal researcher. Each day during the study period the research assistants reported to the labour ward at the study site.

A record of all HIV positive women admitted in labour ward each day and planned for delivery was maintained by the principal researcher or his assistant. HIV -positive pregnant women admitted for delivery, who met study criteria and gave an informed consent were enrolled into the study.

Each study participant was identified by a number corresponding to the serial number of the questionnaire. She was then interviewed by the principal researcher or the research assistant. Relevant demographic and antenatal care data including counselling on vertical transmission, mode of delivery and infant feeding was entered into the questionnaire.

Data on clinical staging of HIV disease by the primary care giver was obtained from the antenatal card and admission notes. Laboratory CD4 cell count if done was also documented. The ARV regimen taken was recorded.

All enrolled parturients were followed up through the labour monitoring period till delivery for direct observation of care given. No interventions were given or attempts made by the principal researcher or his assistants to influence the care given to the HIV positive parturient.

Where events occurred in the absence of the research assistant or the principal researcher; the partograph record, clinical notes and mid-wives' confirmation was sought.

This study continued at the two study sites till the sample size was attained to allow for data analysis.

Data management and analysis: Filled questionnaires were cross checked for completeness and any missing

entries corrected. The filled questionnaires were then kept in a safe place ready for data entry and confidentially of the patients' details.

A data base was designed in MS Access which allowed the research to set controls and validate the variables. On completion of the data entry exercise, the data were exported in a Statistical Package for Social Science research (SPSS - Version 12.0) and subsequently analysed.

The results are presented in tables and figures. Comparison between the two facilities is made using p-values. P-value of <0.05 is considered significant.

Ethical considerations: Permission to carry out the study was sought from the Kenyatta National Hospital Research and Ethical Committee as well as the Pumwani Maternity Hospital Ethical Committee. Written informed consent to participate in the study was obtained from all the study participants. The

interviews and observation of PMTCT care given were carried out in the privacy of the labour ward examination rooms. To maintain confidentiality, all the study participants were only identified by the assigned serial number and their names were not written on any of the research forms.

RESULTS

A total of 370 HIV-positive women were recruited into the study, 104 at Kenyatta National Hospital (KNH) and 266 at Pumwani Maternity Hospital (PMH).

Social demographics: Approximately 80% of the women were aged between 20-35 years and married. 92% were of primary or secondary level of education. Majority (>60%) had no income of their own and thus were dependant on their partners (Table 1).

Table 1
Social demographic characteristics

Characteristic	KNH No.(%) N=104	Pumwani No.(%) N=266	Total No.(%) N= 370
Age			
- 15-19	2 (1.9)	26 (9.8)	28 (7.6)
- 20-24	24 (23.1)	76 (28.5)	100 (27.0)
- 25-29	37 (35.6)	87 (32.8)	124 (33.5)
- 30-34	24 (23.1)	52 (19.5)	76 (20.5)
- 35-39	14 (13.5)	20 (7.4)	34 (9.2)
- ≥ 40	3 (2.9)	5 (2.2)	8 (2.2)
Education			
- primary	35 (33.7)	160(60.3)	195 (52.6)
- Secondary	48 (46.2)	97(36.6)	145 (39.3)
- post secondary	21 (20.2)	9(3.1)	30 (8.0)
Marital status			
- monogamous	85 (81.7)	197 (73.9)	282 (76.2)
- polygamous	5 (4.8)	19 (7.0)	24 (6.4)
- single	12 (11.5)	45 (17.1)	57 (15.5)
- divorced/separated	2 (1.9)	5 (1.9)	7 (1.9)
Occupation			
- employed	21 (20.2)	36(13.6)	57 (15.5)
- self-employed	27 (26.0)	63 (23.7)	90 (24.3)
- housewife	52 (50.0)	156(58.4)	208 (56.2)
- unemployed	4 (3.8)	11(4.3)	15 (4.0)
Partners education level			
- Primary	11 (12.3)	71 (32.9)	82 (26.8)
- secondary	49 (54.4)	133 (61.5)	182 (59.5)
- post secondary	30 (33.3)	12 (5.6)	42 (13.7)
Partners occupation			
- employed	51 (57.0)	97 (45.0)	148 (48.4)
- self-employed	32 (35.5)	105 (48.8)	137 (44.7)
- unemployed	7 (7.5)	14 (6.2)	21 (6.9)

Antenatal care, HIV disease staging and counselling on vertical transmission: Three hundred and forty six (93.6%) of the HIV positive women admitted for delivery had received some antenatal care; 96.4% were counselled on MTCT, 55.4% had CD4 cell count done and only 1% had clinical staging. Majority 249 (64.6%) attended other facilities outside the two hospitals (data not shown). Compared to PMH more women in KNH had not received any antenatal care (4.5% vs. 11.5% $p=0.024$). There were no differences between the two hospitals in proportion of women

that had CD4 count done, received counselling on MTCT and had clinical staging ($p>0.5$)

A total of 344(92.9%) HIV positive women were counselled on mode of delivery. 304 (82.9%) had opted for vaginal delivery and 66(17.1%) for elective Caesarean delivery. Significantly more women at KNH opted for elective Cesarean delivery than at PMH ($p<0.001$). Although majority of the women opted to breast feed after counselling on infant feeding, more women counselled at KNH opted for replacement feeding ($p=0.034$) (Table 2)

Table 2
Antenatal care

Aspects of antenatal care	KNH No. (%) N=104	Pumwani No. (%) N=266	Total No. (%) N=370	p-value
Any ANC visit				
- Yes	92(88.5)	254 (95.5)	346(93.6)	
- No	12(11.5)	12 (4.5)	24 (6.4)	0.024
Counselled on MTCT				
- Yes	99(95.2)	257(96.6)	356(96.4)	0.398
- No	5(4.8)	9(3.4)	14(3.6)	
CD4 test done				
- Yes	53 (51.0)	153(57.2)	206 (55.4)	0.280
- No	51 (49.0)	113 (42.8)	164 (44.6)	
Clinical staging done				
- Yes	1 (1.0)	3 (.8)	4(.9)	0.750
- No	103(99.0)	263 (99.2)	366 (99.1)	
counselled on mode of delivery				
- yes	95(91.2)	249 (93.6)	344 (92.9)	0.416
- no	9 (8.8)	17(6.4)	26 (7.1)	
counselled on infant feeding				
- yes	103 (98.9)	259 (97.2)	361 (97.6)	0.377
- no	1 (1.1)	7 (2.8)	9(2.4)	
Opted for mode of delivery				
- Vaginal	59 (57.4)	245 (92.2)	304(82.9)	<0.001
- Elective CS	45 (42.6)	21 (7.8)	66 (17.1)	
Opted for feeding practise				
- exclusive breast feeding	78 (75.0)	225 (84.6)	303 (81.9)	0.034
- replacement	26 (25.0)	41(15.4)	67(18.1)	9

Use of anti-retroviral as prophylaxis/treatment: Three hundred and forty nine (94%) HIV positive women received ARVs for PMTCT. One hundred and one (29.6%) were on HAART while the rest received

varied short course regimens. Twenty one women (6%) received no ARV prophylaxis. Women in KNH were more likely to be on HAART and less likely to be on NVP plus AZT ($p<0.001$) (Table 3).

Table 3
Extent to which ARVs were used for PMTCT

ARV regimen received	KNH No. (%) N=104	Pumwani No. (%) N=266	Total No. (%) N=370	p-value
Any ARV Regimen				
- Yes	96 (92.3)	253 (95.1)	349 (94.3)	0.304
- No	8 (7.7)	13 (4.9)	21 (5.7)	
Specific ARV regimen				
- HAART	45(43.3)	56(21.0)	101(27.3)	
- NVP+AZT	19(19.8)	111(43.9)	130(37)	<0.001
- SD-NVP	25(26)	69(27.3)	94(26.9)	
- AZT only	7(7.3)	17(6.6)	25(7.1)	

Obstetric management: Two hundred and sixty right (72.5%) women had a vaginal delivery while 102(27.5%) had Cesarean delivery. There was no difference in the mean duration of labour with ruptured membranes before delivery for women

admitted at the two Hospitals (p=0.41). Use of partograph for labour monitoring was observed more at KNH than Pumwani. Twenty six (7%) women had an episiotomy and there was no vacuum assisted delivery (Table4).

Table 4
Obstetric management and delivery care

Aspects of care	KNH N(%) N=104	Pumwani N(%) N=266	Total N(%) N=370	p-value
Use of Partograph				
- Yes	81(80.2)	97(37.9)	178(49.9)	<0.001
- No	20(19.8)	159(62.1)	179(50.1)	
Vaginal delivery				
- Vertex	62 (59.7)	205 (77.7)	267(72.2)	0.584
- Breech	0(0)	1 (0.4)	1 (0.3)	
Duration of ruptured membranes(hours)	3.99(2.61,5.37)	4.80(3.82,5.79)	4.62(3.80,5.43)	0.41
Caesarean delivery	42 (40.3)	60 (22.5)	102(27.5)	0.028
Caesarean for PMTCT	32(30.8)	17(6.4)	49(13.2%)	<0.001
Episiotomy given				
- Yes	0(0.0)	26(9.8)	26(7.0)	0.004
- No	104(100.0)	240(90.2)	344(93.0)	
Cord milking				
- Yes	0(0)	1 (.4)	1 (.3)	0.588
- No	104(100.0)	265 (99.6)	369(99.7)	
Infant suction				
-without meconium	5 (4.8)	0(0)	5 (1.3)	<0.001
-with meconium	6 (5.7)	82 (100.0)	88 (23.8)	
Wiping				
- Yes	97 (99.0)	242 (98.8)	339 (98.8)	0.874
- No	1 (1.0)	3 (1.2)	4 (1.2)	
Maternal outcome				
- No complication	97(93.3)	236(88.7)	333(90.0)	0.110
- Genital injury	5(4.8)	30(11.3)	35(9.5)	
- Death	2(1.9)	0(0.0)	2(0.5)	0.11

DISCUSSION

One of the priority areas of the Kenya National AIDS Strategic plan (2000-2010) is adherence to set clinical and public health standards in order to provide quality care to those infected and affected; and to reduce the number of new infections. This study evaluated the PMTCT care offered to HIV positive women admitted for delivery at KNH and Pumwani Maternity Hospital so as to determine quality of care offered and the level of adherence and compliance to the national guidelines for PMTCT.

With regard to antenatal care, 346(93.6%) of the HIV positive women admitted for delivery reported having received antenatal care of at least one visit during the current pregnancy. More than 90% of them had received counselling on vertical transmission, mode of delivery and safe infant feeding irrespective of facility attended. Significantly more women admitted at KNH had opted for elective Caesarean delivery than PMH ($p < 0.001$). Overall (80%) had opted for vaginal delivery and exclusive breastfeeding. Previous studies have also reported a similar high uptake of counselling services (8). The adherence by caregivers to the recommendation for universal counselling and testing is thus commendable and may be attributed to rapid scale up of PMTCT services that has resulted in increased access to basic care including counselling and testing (2).

HIV disease staging is an important step in the comprehensive care and clinical management of the infected client. In this study only 55% of the HIV positive mothers admitted for delivery had a CD4 cell count. Less than 1 % of them had been staged clinically by the WHO clinical staging system either at admission or antenatally. There was no significant variation in extent of HIV disease staging between the two study sites ($p = 0.28$ for CD4 test and $p = 0.75$ for clinical staging). The Kenya Aids Indicator Survey also reported similar low levels of disease staging (2). Adherence to the PMTCT recommendation on HIV disease staging is therefore not satisfactory. This ultimately leads to sub-optimal care as it is possible that some of those given ARV prophylaxis would have benefited from use of HAART for their own health and for effective PMTCT.

Use of anti-retroviral drugs as prophylaxis or treatment has been shown to be the most effective intervention for PMTCT (9).

In this study three hundred and forty nine HIV -positive women (94.3%) were put on anti-retroviral drugs either as prophylaxis or treatment. HAART was offered to 101 (27.3%) of the HIV positive mothers. Significantly more women delivered at KNH were on HAART than at Pumwani Maternity Hospital ($p < 0.001$). Nevirapine and Zidovudine monotherapy was observed in 30% of the cases. These findings correlate with the other studies done

before which showed that although there has been progressive improvement in ARV uptake, use of HAART or efficacious combination prophylaxis is still low (10). Many women are still put on single dose nevirapine despite the availability of more superior ARV regimens. Further research should be done to determine the possible barriers to access to HAART and combination prophylaxis.

With regard to mode of delivery, forty eight women (13%) opting for vaginal delivery had active rupture of membranes at less than seven centimetres cervical dilatation. Most of the women were however allowed to labour with intact membranes up to the second stage when spontaneous rupture occurred or ARM was done to facilitate expulsion of the baby. Use of partograph was poor, particularly at Pumwani Maternity Hospital where only 37.8% of the women were monitored with this tool.

No vacuum delivery either by rubber or metal cup was observed. The episiotomy rate in this study was 7% which is four times less than that reported by Guled in his study (11). No significant differences were observed between the two study sites with regard to mean total duration of labour before delivery ($p = 0.092$) and maternal outcomes including genital tract injury ($p = 0.110$). Overall only forty nine HIV positive women (13.1%) had Caesarean delivery for PMTCT. Significantly more women delivered at KNH had Caesarean delivery for PMTCT ($p < 0.001$).

The results of this study thus indicate that though there are efforts by care givers to adhere to the recommended practice of modified intrapartum care, more still needs to be done especially on partograph use at PMH.

The findings of this study and results from previous studies thus indicate that though a great majority of women delivered at the two facilities are able to access the basic care including counselling, only a small percentage of HIV positive women receive optimal care with a complete package of interventions that have been shown to effectively reduce the vertical transmission of HIV. Majority of the women are offered sub-optimal care with varied levels of limited interventions thus still at risk of perinatal transmission. This is particularly so for the hard-to-reach women who receive antenatal care in peripheral facilities with limited capacities for CD4 testing and provision of HAART. Ironically these are usually poor women and other vulnerable groups who are most affected by this pandemic. The PMTCT programme therefore still has a long way to go in offering optimal PMTCT care to every HIV positive woman (12). More efforts and focus should therefore be put into increasing not only the number of PMTCT sites but also their capacities to offer comprehensive care. Innovative collaborative approaches should be devised between the more established sites and the peripheral facilities. This will ensure there is a

continuum of care from the hospital to the community for greater impact.

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