

# **Audit of Nevirapine use to prevent mother to child transmission of HIV at Lower Umfolozi District War Memorial Hospital - Empangeni**

**For any quarry/comments:**

**Dr. Hoque MSc (Epidemiology), DHSM, MBBS**

Medical Manager

Empangeni Hospital

Private Bag X20005

Empangeni, 3880

Tel : 035-9028577

Fax : 035-9028587

Cell : 0834698602

E-mail: [hoque@dohho.kzntl.gov.za](mailto:hoque@dohho.kzntl.gov.za)

## **Abstract**

This paper presents the findings of a questionnaire survey about the use of a prevention of mother-to-child HIV transmission (PMTCT) programme.

A sample of 153 HIV positive mothers was interviewed using a structured questionnaire to determine socio-demographics and PMTCT programme use. A high proportion of women (93%) had been offered Nevirapine (NVP); almost all of the respondents had taken NVP during labour (96%); 40% of NVP was self-administrated and 60% was given by health care workers; high percentages of the respondents received information on HIV transmission and NVP use (99% and 95%).

Information and education about HIV transmission and NVP benefits have shown to be correlated to taking NVP. Therefore, this study shows that participating women need to be well informed and educated for optimal NVP coverage. Further study is required to measure the effectiveness of the PMTCT programme (reduction of mother- to - child HIV transmission).

## Introduction

Just as South Africa was being reborn as a new democracy, HIV/AIDS exploded upon its population. In twelve years, HIV prevalence rose from less than one percent to more than twenty percent in the general population<sup>1</sup>.

In 2002, it was estimated for the province of KwaZulu Natal that 10,500 newborns were HIV positive at birth by vertical transmission of HIV, while 6,404 were later infected through breast-feeding. This makes KwaZulu Natal the province with the highest number of newly infected infants in South Africa<sup>2</sup>. HIV infection in women of childbearing age continues to fuel the HIV/AIDS epidemic. It is known that most of mother to child transmissions occur during labour, delivery, and breast-feeding<sup>3,4</sup>. Therefore, interventions are urgently needed to prevent mother to child HIV transmission (PMTCT), like easily deliverable, short course antiretroviral regimens. An ideal preventive intervention programme of HIV transmission should be cheap; nontoxic to mother and fetus; easy to administer; only to be given once or for a limited period of time; and it should have utility in preventing postpartum transmission. The antiretroviral Nevirapine (NVP) administered antenatally, used in the presented PMTCT programme, is thought to be such an intervention.

Evidence in favor of a short NVP programme is based on the results of the HIVNET012 study and the SAINT trial. In these studies a single dose of 200 mg NVP is administered to HIV positive women in labour, and 2 mg/kg is administered to the neonate within 72 h after birth, which reduced mother to child transmission risk of HIV by more than forty percent at the age of 18 months<sup>5,6,7,8</sup>. The NVP intervention has been shown to be safe, simple and affordable in most less-developed settings, although the development of viral resistance has been reported<sup>5,7,9</sup>.

By the end of 2000, a decision was taken by the government of South Africa to implement a pilot PMTCT programme<sup>10</sup>. In 2002, the interim findings of the national PMTCT programme recommended the following interventions: voluntary HIV testing for all pregnant women; a short course NVP regimen for HIV positive pregnant women at the time of delivery; a short course of NVP for the newborn; appropriate counseling and support for safe infant feeding practices; follow-up care for mother-child pairs after delivery. This South African PMTCT programme may be a cost-effective one with simplicity of implementation, and with great convenience for affected families<sup>11</sup>.

Despite simplicity and convenience, difficulties implementing the programme still exist. Patient attrition and non-adherence represent a major source of program inefficiency<sup>12</sup>. Different factors may contribute to low use of PMTCT programmes. These factors also have been described towards voluntary HIV counseling and testing<sup>13,14,15,16,17</sup>.

Participating in a programme depends on weighting advantages and disadvantages. Practical obstacles experienced by patients may exist, such as travel requirements and limited resources by

unemployment<sup>18</sup>. Education level and knowledge about HIV/AIDS can be another obstacle<sup>14,17</sup>. Also, barriers may include inadequacies in infrastructure of antenatal health care, and attitudes of health care workers<sup>14,18</sup>.

Factors associated with women's expressed willingness to participate may also be related to factors associated with voluntary HIV counseling and testing, for example HIV/AIDS related stigmas<sup>12,13,14,15,,16,17</sup>. Other factors associated with non-compliance of intervention programmes might be related to side effects, unclear benefits, or misplaced medicine<sup>12,15</sup>.

Improved understanding of use of the PMTCT programme can facilitate efforts to make the programme work with a higher efficiency. This paper evaluated the local experience with the South African PMTCT programme in a local referral hospital of KwaZulu Natal, and it made suggestions on how improvements in this programme can be made.

The objectives of this study were to examine PMTCT programme use and its efficiency. Proportions of HIV positive pregnant women were offered and actually taking NVP, as well as of self-administration and hospital administration of NVP.

## **Methods And Materials**

The study was conducted at the Lower Umfolozi District War Memorial Maternity Hospital (LUDWMH), Empangeni. Participating women were randomly selected from the list of all HIV positive mothers who delivered babies after 28 weeks of pregnancy at the LUDWMH between April and June 2004. These women were participating in the PMTCT programme antenatally. All of the women consented to take part in this study. Data were collected by interviewing women using a structured questionnaire consisting of 13 questions, which addressed socio- demographics and the use of the PMTCT programme. The NVP protocol was based on the HIVNET012 and SAINT trials. Accordingly, a single dose of NVP was distributed to HIV positive pregnant women at 28 weeks or more gestation to self-administer in the event of going into labour. Enquiry about taking NVP was done at labour ward and if not taken, a dose would be administrated at the onset of labour in labour ward.

## Results

The mean age of the respondents participated in the study was 27.7 years (table 1). Most of the participants were single (84%), unemployed (82%) and literate (96%). Almost a quarter of the respondents (22.9%) had one delivery and equally (22.9%) had more than 3 previous delivery. More than half (54%) of the respondents had between 2-3 deliveries.

**Table 1.**  
**Socio-demographic Characteristics of respondents**

Description of variables	Percentage or mean
Maternal age (n=153)	
Mean	27.7 years
Median	28.0 years
<21	9.2
21-25	32
26-30	29.4
31-35	18.3
>35	11.1
Parity (n=153)	
1	22.9
2-3	54.2
>3	22.9
Education (n=151)	
No education	4.0
Primary	35.8
Secondary	60.3
Tertiary	0
Employment (n=152)	
Unemployed	82.2
Employed	17.8
Marital status (n=152)	
Single	84.2
Married	15.8

**Table 2.****Distributions of PMTCT programme variables.**

<b>Variables</b>	<b>Percentages</b>
Known HIV+ (n=149)	
<1 year	97.3
1-2 years	2.7
Known HIV+ children (n=146)	
No	24.0
Yes	2.7
Unknown	73.3
Transportation problem (n=152)	
No	80.3
Yes	19.7
Information HIV transmission (n=150)	
No	0.7
Verbal	99.3
NVP explanation (n=149)	
No	4.0
Yes	95.3
Not sure	0.7
More info wanted (n=149)	
No	42.3
Yes	53.7
Not sure	4.0
NVP taken (n=145)	
No	4.1
Yes	95.9
Self administration	42.0
Hospital administration	58.0
Number of tablets NVP taken (n=139)	100.0
One	0.0
Two	

Significant correlation was found between “taking NVP” and being offered NVP, being informed about HIV transmission, and explanation of NVP benefits (table 3).

**Table 3.****Correlation of taking NVP by HIV positive pregnant mothers.**

<b>Variables</b>	<b>Correlation coefficient</b>	<b>Level of significance</b>
Information on medication given	0.40	0.000
Medication given to mothers	0.29	0.000
NVP explanation given	0.37	0.000

Binary logistic regression was carried out with the above significant variables to develop a model. The model was found to be fitted adequately as Nagelkerke R Square is close to 1 (0.95).

## Discussion

This study was limited to those women who delivered at LUDWMH. In KwaZulu- Natal it has been estimated that over 95% of women in childbearing age attend at least one occasion of antenatal care facilities<sup>19,20</sup>. According to the PMTCT programme policy, the referring health clinics of Empangeni health district were encouraged to refer HIV positive pregnant women to LUDWMH for delivery. Therefore, the assumption has been made that the respondents of this study belong to this part of the population.

HIV prevalence among pregnant women in 2003 was observed 37.5% in the province of KwaZulu Natal<sup>21</sup>. The women who participated in this study are assumed to belong to this 37.5%. The highest HIV prevalence rates have been observed in the age group of 20 to 30 years, which is also the group where most of the women of this study belong to (65.4%)<sup>9</sup>. Therefore, this study has observed a relevant population of HIV positive women in childbearing age.

Socio-demographics of the respondents show that most of the women had already given birth to two or three children (55%). Sixty percent of the women were educated, but no tertiary education was reported. The unemployment rate was very high (82%). Most women were single instead of being married (84%). The demographics of the respondents seem to be in concordance with the demographics of this part of KwaZulu Natal, which shows poor, low-educated communities with a high prevalence of unemployment<sup>19</sup>. Almost twenty percent of the women notified that traveling to the hospital or clinic was a problem. Probably, this can be related to the poor financial situation of most of them, since KwaZulu Natal's health services are thought to have a high utilization rate, implying to have enough clinics<sup>19</sup>. Therefore, the barrier factor transportation, maybe related to low income, might be of influence in PMTCT attendance<sup>18</sup>.

Although most of the women were educated and had given birth before, 97% of them only knew to be HIV positive for less than one year. Also, it is unknown in most of the cases (73%) if there were any HIV positive children. Therefore, information and education about HIV/AIDS related topics, still need further improvement for possible benefits for mother and children<sup>14,17</sup>.

The high percentages of the respondents (99% versus 95%) acknowledged the receipt of verbal information about HIV transmission and NVP benefits. Thus this suggests that health care workers did inform the women sufficiently. However, more information still has been requested especially about

the prescribed medication. Also, a high percentage of respondents (93%) were offered NVP during antenatal care. Therefore, it is likely that health care workers promoted the programme sufficiently, although full coverage can be achieved <sup>14,18</sup>.

Although information given about NVP was not optimal (95%), a lot of women (96%) did take NVP during labour. This is due to the high percentage of NVP distributed to HIV positive pregnant women. The percentage of self-administered NVP was low (42%) compared to hospital administration (58%). Although all women were encouraged to self-administer NVP at the onset of labour at home or on the way to hospital, hospital administration was high. Therefore, the level of understanding on the use of NVP needs to be increased. In this study, information and education about HIV transmission and NVP benefits have shown to be correlated to taking NVP medicine. Therefore, this study shows PMTCT participating women need to be well informed and educated in order to get optimal NVP coverage.

Generally, we can conclude from the present survey that the South African PMTCT programme is working sufficiently in the studied hospital. The acceptability of the NVP by women in this study has been demonstrated to be very high. Reasons for not taking medication did not related to the medicine itself. To increase NVP use further, focus needs to be directed at information and education of the women, since these factors have been shown to be positively related to taking NVP. Health education should cover vertical transmission of HIV and implementation of NVP. But also HIV testing and counseling remain an important issue, since the number of women who had only known their HIV status for less than one year and did not know it of their children has been shown to be very high.

The choice of an efficient antiretroviral regimen rests on assessment of the advantages and shortcomings of a regimen, and on the appropriateness for a particular population and country. The HIVNET012 and SAINT trials have shown the advantages of the presently used PMTCT programme<sup>5,6,7,8</sup>. From the results of the present study, it has been shown that for participating women only minor obstacles existed. However, it was impossible to calculate the population coverage rate of the PMTCT programme. Further studies are needed to focus on this topic.

## **Study Limitations**

Retrospective studies of local use of prevention programmes provide important information on the quality of these programmes, although they can be limited by information bias of the participants. Our questionnaire study on local practice with the PMTCT programme was a hospital-based study in which consenting women were interviewed to evaluate the efficiency of this programme in a rural area in a short period of time. We are aware that the results of this study may not be representative for many other settings. The efficacy rate of the PMTCT programme cannot be calculated from this study.

However, it is hypothesised that it is within the ranges of the HIVNET012 and SAINT trials. Further research will be necessary to calculate the true efficacy of the presently used programme.

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