

## Prevention of Parent to Child Transmission of HIV (PPTCT): An Effort of 4 Years in a Tertiary Centre

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Received: 6 May 2009 / Accepted: 19 April 2011 / Published online: 23 September 2011  
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### Abstract

**Objective** The aim of this study was to see the fetomaternal outcome of pregnancy in HIV positive mother.

**Methods** This study was conducted in the department of OBGYN Medical College Kolkata from 1st January 2004 to 31st December 2007, a period of 4 years since the establishment of PPTCT centre in our institution. All the pregnant women attending the antenatal clinic for consultation and those coming directly to labour room for delivery (unbooked cases) were counseled for HIV testing, informed consent was obtained and blood samples collected for HIV testing. Babies of HIV positive women delivered were followed up to 18 months for testing.

**Results** The no. of women detected positive were 28, 53, 69 and 98 (total 248) in the consecutive years. Therefore the seroprevalence of HIV was 0.41, 0.63, 0.67 and 0.76% in 2004, 2005, 2006 and 2007 respectively. Out of 248 women who were detected positive in the 3 years, only 103 (41.53%) delivered in our institution. 32 (12.90%) underwent MTP. But unfortunately 113 (i.e. 248 – (103 + 32) = 113) were lost to follow up during antenatal care. Out of the 95 live births, only 46 babies have been

tested so far out of which only one is reactive, 45 are non reactive.

**Conclusion** The main obstacle we faced was in following up the mother and the baby. To achieve a high success rate, PPTCT programmes must have well-trained, supportive staff who take great care to ensure confidentiality. They must be backed up by effective HIV testing and counseling programmes and by good quality HIV/AIDS education, which is essential to eliminate myths and misunderstandings among pregnant women, and to counter stigma and discrimination in the wider community.

**Keywords** Prevention of parent to child transmission · HIV

### Introduction

Over two and a half decades have passed since the first diagnosis of AIDS. While there were only a handful of women among the first cases, AIDS was thought to be primarily a disease affecting the homosexual men. As the

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years passed women began to emerge as the changing face of HIV infection. The proportion of HIV/AIDS among women has more than tripled from 7% in 1985 to an alarming 30% in 2005 [1].

The latest statistics on the world epidemic of HIV/AIDS published by UNAIDS/WHO in November 2007(updated in July 2008) indicate that the total no of people living with HIV/AIDS is 33.0 million out of which women accounted for 15.45 million (i.e. 45.5%) and children made up 2.0 million(i.e. 6.06%) [2].

A major implication of the rising trend of HIV infection in women is increasing the chance of mother to child transmission (MTCT) which accounts for 90% of the pediatric infection. Children newly infected in 2006 were 0.53 million and the death toll amongst the children due to HIV/AIDS rose to 0.38 million in 2006 [3].

In an attempt to give the world a HIV free generation the programme of Prevention of Parent To Child Transmission (PPTCT) has been taken up which aims at preventing the transmission of HIV infection from mother to child during antenatal, intranatal as well as postnatal period by various measures. With all the measures taken the rate of MTCT can be brought down from 15–30% to 2% [4]. The aim of this study was to see the fetomaternal outcome of pregnancy in HIV positive mother.

## Material & Method

This study was conducted in the department of OBGYN Medical College Kolkata from 1<sup>st</sup> January 2004 to 31st December 2007, a period of 4 years since the establishment of PPTCT centre in our institution. All the pregnant women attending the antenatal clinic for consultation and those coming directly to labour room for delivery (unbooked cases) were counseled for HIV testing, informed consent was obtained and blood samples collected for HIV testing. Samples were processed as per NACO guidelines. The first test was done by Comb Aids-RS(Span Diagnostics Ltd). If the sample tested positive then it was tested with HIV EIA Comb (J. Mitra & CO. Pvt Ltd.) If the sample tested positive in the second test then the third test was done by SD Bioline (Standard Diagnostics, INC). The samples which tested positive with all the above tests were considered to be HIV positive (WHO strategy III). Seropositive women were questioned regarding their awareness of AIDS, personal habits, blood transfusion, drug abuse & method of contraception. Spouse of the seropositive pregnant women were also counseled & tested for HIV antibodies as above after taking written consent. Post test counseling was done by the same post test counselor who did the pretest counseling and after maintaining strict confidentiality the reports were disclosed.

All the women were counseled regarding the mode of delivery & the role of elective LSCS (lower segment Cesarean section) in PPTCT and those giving consent were taken up for LSCS. Those women having obstetric indication were also taken up for LSCS. Those who did not give consent for elective LSCS for the purpose of PPTCT only were delivered vaginally. Those who were unbooked and came for admission in labour were also delivered vaginally.

Tab Nevirapine 200 mg, single dose (supplied by Govt) was given to all the mothers, except in the cases of intra uterine fetal death IUFD(one in 2006 and five in 2007) and in six mothers who were already on Highly active anti-retroviral therapy(HAART), 4 h before LUCS or at the onset of labour (for those who delivered vaginally). Suspension Nevirapine 2 mg/Kg body weight (single dose) was given to all the live babies. The parents were counseled regarding the pros & cons of breast feeding and taking into consideration their social practices and socio-economic status the feeding option was decided. The babies were referred to the Pediatric HIV clinic of our institution for follow up and were tested for HIV status by ELISA at 18 months.

## Results

As is evident from Table 1, the total no of new antenatal registration (booked + unbooked) was 10469, 11422, and 13187, 15440 in the year 2004, 2005, 2006 & 2007 respectively. The no of women counseled (booked + unbooked) in 2004, 2005, 2006 and 2007 were 8408, 8871, 10654 and 13223 respectively. Out of those counseled no of women who accepted testing in the 3 years were 6826 (81.18%), 8357 (94.20%), 10259 (96.29%) and 12791 (96.73%) % obtained by (No. tested  $\times$  100)/No. counseled.

The no of women detected positive were 28, 53, 69 and 98 (total 248) in the consecutive years. Therefore the seroprevalence of HIV was 0.41, 0.63, 0.67 and 0.76% in 2004, 2005, 2006 and 2007 respectively. In spite of our whole hearted approach it was not possible to counsel all the antenatal women as counseling could not be done on Sundays & Govt. holidays and the women who were admitted on Saturday after 4 P.M. and delivered normally by Sunday were discharged before Monday morning.

Attempt was also made to determine the status of the spouse of the HIV positive women. In 2004 out of the spouse of 28 +ve women, 16 were counseled and tested out of which 15 were positive, one was negative hence the status of 12 remained unknown.

In 2005 out of the spouse of 52 +ve women, 34 were counseled and tested out of which 33 were positive, one was negative hence the status of 12 remained unknown.

**Table 1** Registration counseling & testing of antenatal mothers (booked and unbooked)

Year	ANC regn.	ANC counselled	ANC tested	ANC +ve	Unbooked regn.	Unbooked counselled	Unbooked tested	Unbooked +ve
2004	8163	8058	6518	27	2306	350	308	1
2005	8367	8221	7792	46	3055	650	565	7
2006	9154	8973	8791	64	4033	1681	1468	5
2007	10595	10483	10334	90	4845	2740	2457	8
Total	36279	35735	33435	227	14239	5421	4798	21

ANC antenatal clinic, Regn registration, +ve HIV positive

**Table 2** Course of pregnancy & mode of delivery

Year	Total HIV positive	HIV positive delivered	Elective LSCS	Vaginal delivery	MTP	Lost to follow up from ANC	Total delivery in hospital
2004	28	9	0	9	2	248 – (103 + 32)	8750
2005	53	21	9	12	10	= 113 (45.56%)	9126
2006	69	22	16	6	13		10220
2007	98	51	26	25	7		11949
Total in 4 years	248	103 (41.53%)	51 (49.51%)	52 (50.48%)	32 (12.90%)		40045

In 2006 out of the spouse of 69 +ve women, 54 were counseled and tested out of which 42 were positive, 12 were negative, hence the status of 15 remained unknown.

In 2007 out of the spouse of 98 +ve women, 65 were counseled but only 63 were tested (as two did not give consent for testing). Out of 63 tested 49 were positive, 14 were negative, hence the status of 35 (98–63) remained unknown.

Table 2 outlines the course of pregnancy in HIV +ve women. Out of 248 women who were detected positive in the 3 years, only 103 (41.53%) delivered in our institution. 32 (12.90%) underwent MTP. But unfortunately 113 (i.e.  $248 - (103 + 32) = 113$ ) were lost to follow up during antenatal care. Out of the 113 women 91 did not come back after they were detected positive and rest came for one or two more antenatal visits and never returned. Table 2 also reflects the mode of delivery. Out of the 103 positive women who delivered in our hospital in the 4 years, 51 delivered by elective LSCS and 52 vaginally. Indication of Elective LSCS was either an obstetric one or PPTCT. All the mothers who were booked in our ANC were counseled regarding the role of Elective LSCS in PPTCT and those giving consent were taken up for LSCS (i.e. for the purpose of PPTCT only). Those who did not give consent for El. LSCS for the purpose of PPTCT were delivered vaginally. Those who were unbooked and came for admission in labour were also delivered vaginally.

Table 3 gives an idea of the profile of the HIV +ve women delivered. Majority (42.71%) were of the age group of 25–30 years. Majority (55.33%) were multigravida.

**Table 3** Profile of HIV positive mothers delivered

	No.	%
Age group (years)		
15–20	18	17.47
20–25	32	31.06
25–30	44	42.71
30–35	6	5.82
35–40	3	2.91
Gravida		
Primi	46	44.66
Multi	57	55.33
Religion		
Hindu	74	71.84
Muslim	29	28.15
Family income (Rs/month)		
<1000	7	6.79
1000–2000	24	23.30
2000–5000	50	48.54
>5000	22	21.35

Maximum no (48.54%) hailed from the group with family income between Rs2000 and 5000/month.

Table 4 Single dose 200 mg Nevirapine (NVP) was given to all mothers except in the cases of intra uterine fetal death IUFD (one in 2006 and five in 2007) and in six mothers who were already on Highly active antiretroviral therapy (HAART). There were 103 deliveries but 104 births as there was a twin delivery in 2007. There were nine

**Table 4** ARV prophylaxis to mother & baby and feeding options

Year	HIV +ve women delivered	Total births	NVP to mother	NVP to baby (i.e. live born)	Breast feeding	Formula feeding
2004	9	9	9	9	0	9
2005	21	21	21	20 (one fresh stillborn)	5	15
2006	22	22	21 (one IUFD)	19 (one IUFD & 2 fresh stillborn)	2	17
2007	51	52 (one twin pregnancy)	40 (five IUFD & six mothers on HAART)	47 (five cases of IUFD)	21	26
Total	103	104	91	95	28	67

**Table 5** Follow up of babies at 18 months

Total live birth in 4 years	Tested	Reactive	Non reactive	Waiting to be tested (i.e. not yet attained 18 months)	Died before 18 months	Lost to follow up
95	46	1	45	5	8	36 (37.89%)

stillborn babies (including the IUFDs), so NVP was given to 95 babies.

Table 5 delineates the follow up of babies of the HIV positive mothers. Out of the 95 live births, only 46 babies have been tested so far out of which only one is reactive, 45 are non reactive. Five babies are waiting to be tested as they have not yet attained 18 months. Eight babies died before 18 months i.e. before the scheduled time of testing. Therefore 36[95 – (46 + 5 + 8)] i.e. 37.89% babies have been lost to follow up.

## Discussion

WHO promotes a comprehensive strategic approach for the prevention of HIV infection in infants and young children, consisting of four components [5]: (1) Primary prevention of HIV infection; (2) Prevention of unintended pregnancies among women living with HIV; (3) Prevention of HIV transmission from mothers living with HIV to their infants; (4) Care, treatment and support for mothers living with HIV, their children and families. The third component i.e. PPTCT can be achieved through the use of Anti retroviral (ARV) drugs in pregnancy, choosing safer interventions of delivery, neonatal ART and safer feeding practices. Women who have reached the advanced stages of HIV disease require a combination of ARV for their own health. This treatment, which must be taken every day for the rest of a woman's life, is also highly effective at reducing the risk of mother-to-child transmission. Pregnant women who do not yet need treatment for their own HIV infection can take a short course of drugs to help protect their unborn babies.

The simplest of all PPTCT drug regimens was tested in the HIVNET 012 trial, which took place in Uganda between 1997 and 1999 [6]. This study found that a single dose of Nevirapine given to the mother at the onset of labour and to the baby after delivery roughly halved the rate of HIV transmission. As it is given only once to the mother and baby, single dose Nevirapine is relatively cheap and easy to administer. Since 2000, thousands of babies in resource-poor countries have benefited from this simple intervention, which has been the mainstay of many PMTCT programmes. Colvin et al. [7], in their study in South Africa showed that rates of early transmission of HIV in an operational setting using single-dose nevirapine administered both to mother and child are similar to those obtained in clinical trials. Moodley et al. [8] also confirmed in their study the safety and efficacy of short course ARV regimens in reducing MTCT in developing countries.

A number of studies have shown that the protective benefit of drugs is diminished when babies continue to be exposed to HIV through breastfeeding. Mothers with HIV are advised not to breastfeed whenever the use of breast milk substitutes (formula) is acceptable, feasible, affordable, sustainable and safe. However if they live in resource constrained settings, where even safe water is not available & artificial feeds are expensive, then the risk of life-threatening conditions from formula feeding may be higher than the risk from breastfeeding. An HIV positive mother should be counseled on the risks and benefits of different infant feeding options and should be helped to select the most suitable option for her situation. In our study out of the 95 live babies 28 were breast fed and 67 were formula fed. Majority of the women who went for formula feeds

were either from the income group of >Rs5000/month or received funds from different NGOs.

When a mother is HIV positive an elective caesarean section may be done to protect the baby from direct contact with her blood and other body fluids. However, as with formula feeding, there is a need to weigh the risk of HIV transmission against the risk of morbidity due to the intervention. If the mother is taking combination antiretroviral therapy then a caesarean section will often not be recommended because the risk of HIV transmission will already be very low. Caesarean delivery may be recommended if the mother has a high level of HIV in her blood, but the procedure is seldom available and/or safe in resource poor settings. As our hospital is a tertiary care centre with all facilities available for operations throughout 24 h, we went for LSCS in 51 cases after counseling and discussing risks and benefits. Out of these 51 cases of LSCS, 33 were done for obstetric indications and 18 were done for PPTCT. Post operative period was uneventful.

As far as the fetal outcome was concerned, there were six cases of IUFD out of which one was a case of IUFD at 30 weeks (mother having severe Pregnancy induced Hypertension), another was a grossly malformed baby, four other cases of IUFD were in unbooked mothers who came directly into labour. There were three fresh still born all of which were preterm. Apart from the above mentioned case of grossly malformed baby which was an IUFD, only one more baby had a congenital malformation in the form of absent external pinna.

The main obstacle we faced was in following up the mother and the baby. Out of the 95 live births, only 46 babies have been tested so far. Five babies are waiting to be tested as they have not attained 18 months. Eight babies died before attaining the age of 18 months. The rest 36 babies i.e. 37.89% babies have been lost to follow up.

Out of the 36 babies who were lost to follow up, five women had their original residence outside West Bengal and were transferred after delivery. Three went to Bihar, one to Goa and two to Ahmadabad. They could not be contacted either through telephone or in the address which they had given. Sixteen locally residing women had either given us wrong address & phone number where they had never stayed or had changed their address without giving us any information. We realised this after trying to trace them through different NGOs. This reflects how much stigma is still associated with this infection that they did not want even the medical personnel to trace them, in fear that they would be exposed in their society and eventually face discrimination. One of the mothers was a commercial

sex worker who did not have a permanent residence and could not be traced for follow up. One mother stays in a remote village, in a severely impoverished situation and is not coming even after repeated letters and efforts by the NGOs. Four out of these babies who were lost to follow up were sold out by their parents who felt that there would be no one to take care of their babies in the event of their death.

To achieve a high success rate, PPTCT programmes must have well-trained, supportive staff who take great care to ensure confidentiality. They must be backed up by effective HIV testing and counseling programmes and by good quality HIV/AIDS education, which is essential to eliminate myths and misunderstandings among pregnant women, and to counter stigma and discrimination in the wider community.

**Acknowledgments** We are thankful to our Principal & Vice Principal for letting us publish the data. We are highly grateful to Dr. Sanjoy Kumar Sadhukhan, Assistant Professor, All India Institute of Hygiene and Public Health for helping us with the statistical analysis. Last but not the least we highly appreciate the endeavor of Mrs. Satarupa Datta, counselor, PPTCT, Medical College, Kolkata for maintenance of the data without which this work was impossible.

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