

## CHANGING TRENDS IN HIV SEROPREVALENCE AMONG PREGNANT WOMEN

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### ABSTRACT

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#### INTRODUCTION

Routine antenatal screening for HIV combined with advances in highly active antiretroviral therapy has led to increased detection and effective treatment in pregnancy.

#### AIM

To know effectiveness of screening in antenatal mother and their husband for HIV status, seroprevalence rate among them and among their infants from a tertiary care hospital. We aim to outline key interventions which can influence the rate of mother to child transmission and how these are best incorporated into care of pregnant women and her baby including antenatal testing use of antiretroviral medication, management of labour and of breast-feeding.

#### METHOD

Retrospective analysis of Data over a period of six years available in Integrated counselling and Testing centre attached to Tertiary Care Government Medical College and Hospital Trichy, from 1 Jan 2010 to 31 Dec 2015. Data of Antenatal mothers screened and diagnosed as HIV Seropositive and its various outcomes related to these pregnancies were analysed.

#### RESULTS

Among 29215 women who were screened, 104 were found to be HIV seropositive. Declining seroprevalence rate from 0.66% in 2010 to 0.16% in 2015 noted. Among seropositive mothers, majority were in 25-34 years of age. Maximum incidence was in second gravida during initial years followed by primigravida, In subsequent years, declining seroprevalence rate in spouse and declining mother to child transmission rate were analysed.

#### CONCLUSION

Decreasing seroprevalence rate indicates effective counselling and intensive screening of HIV status of Antenatal mothers and their Husbands & their infants with effective Implementation of prevention of mother to child transmission programme and also effective treatment with highly active antiretroviral therapy.

#### KEYWORDS

Highly Active Antiretroviral Therapy, Early Infant Diagnosis, Counselling, Exclusive Breast-feeding, National AIDS Control Programme.

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**INTRODUCTION:** Acquired immunodeficiency syndrome (AIDS) is caused by Human immunodeficiency virus, as such its occurrence in pregnancy has potential consequences if undiagnosed and untreated at an earlier stage.

**Global 2015 Statistics:** As of December 2015 statistics, 36.7 million people were living with HIV globally. 2.1 million people are being newly infected with HIV annually. 1.1 million people died from AIDS-related illnesses when compared to 2 million in 2005. 78 million people were infected with HIV totally since the start of the epidemic, 35 million people have died from AIDS-related illnesses since

the start of the epidemic. As of December 2015, 17 million people living with HIV were accessing antiretroviral therapy, it has gone up from 15.8 million in June 2015 and 7.5 million in 2010. As of 46% of all adults living with HIV were accessing treatment in 2015, it increased from 23% in 2010. And 49% of all children living with HIV were accessing treatment in 2015, which also showed improvement from 21% in 2010. As of current statistics, 77% of pregnant women living with HIV were accessing antiretroviral medicines to prevent transmission of HIV to their babies in 2015. New HIV infections have fallen by 6% since 2010. New HIV infections among children have declined by 50% since 2010. Worldwide, 150,000 children got infected newly with HIV in 2015, down from 290,000 in 2010.<sup>1</sup>

**India 2015 Statistics:** There are an estimated 21.17 lakh population living with HIV in India. Of which 40.5% are females and 6.5% are children, National adult (15–49 years)

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HIV prevalence is estimated to be 0.26% in 2015. India is estimated to have around 86,000 new HIV infections in 2015, showing 66% decline in new infection rate from 2000 and 32% decline rate from 2007. Children (<15 years) accounted for 12% of total new infections while the remaining new infections were among adults (15+years).<sup>2</sup> Routine antenatal screening for HIV combined with Highly active antiretroviral therapy has led to early detection and treatment in pregnancy. Screening of pregnant women in early trimester may help us to provide appropriate therapy at right time. This minimises the risk of mother to child transmission which is of major concern in this programme.<sup>3</sup> The predominant mode of transmission of HIV is through heterosexual contact, so screening of females who are sexually active and were at high risk of getting infected has to be done.<sup>4</sup> To measure the prevalence of HIV status in this age group, screening of antenatal mothers becomes the best sensitive marker. Monitoring of various outcomes in HIV seropositive antenatal mothers gives us changing trends in General population and prediction of prevalence among young children can also be assessed by monitoring mother to child transmission rate.<sup>5</sup> Aim of this study is to analyse the various outcomes of changing trends in HIV seroprevalence antenatal mothers who got registered in our antenatal clinic and screened for HIV status, spouse positivity rate among them and prediction of mother to child transmission rate in our center, CD4 status of positive mothers, followup of their treatment status.

**METHODS:** Retrospective analysis of data available in integrated counselling and testing center attached to a tertiary care centre, K.A.P.V. Government Medical College and Hospital, Trichy from 1 Jan 2010 to 31 Dec 2015 was studied. Antenatal mothers of around 29215 who got registered in antenatal clinic were screened for HIV seroprevalence after pretest counselling. We analysed the data of pregnant mothers who were diagnosed positive for seroprevalence over this period of six years. HIV antibodies were tested by rapid test as per WHO guidelines and government of India norms.<sup>6</sup> Sample considered positive when found reactive by all three different methods, antibodies to HIV (1 & 2) were tested initially with a SD BIOLINE HIV-1/2 3.0 Rapid Test & the samples tested positive in the first method were subjected to tests with two different rapid tests i.e. PAREEKSHAK HIV 1/2 Triline Card Test and PAREEKSHAK HIV 1/2 Rapid Test Kit (TRISPOT). All tests were done according to manufacturer’s instruction. Babies were tested twice, first test is early infant diagnosis with dried blood sample analysis on forty sixth day and second test done at 18 months by rapid kit test.

**RESULTS:** A total of 29,215 pregnant women who got registered in Antenatal clinic were screened for HIV seroprevalence during the period of 6 years. Among them, 104 were diagnosed to be seropositive for HIV 1 antibody. Overall, seroprevalence rate was 0.36%.

Most among the seropositive women were married, no history of high risk behaviour was noticed among them,

most of their husbands were migrate workers with h/o at least a High risk behaviour with weaker social control.<sup>7</sup> The number of Patients who were screened for HIV seroprevalence increased from 4485 in 2010 to 5369 in 2015. Whereas HIV seropositive rate decreased form 0.66% in 2010 to 0.16% in 2015.

Year	Total AN mothers Screened	HIV Sero-Positive mothers	Percentage
2010	4485	30	0.66%
2011	4093	21	0.51%
2012	5465	21	0.38%
2013	4707	12	0.25%
2014	5096	11	0.21%
2015	5369	9	0.16%
<b>Total</b>	<b>29215</b>	<b>104</b>	<b>0.36%</b>

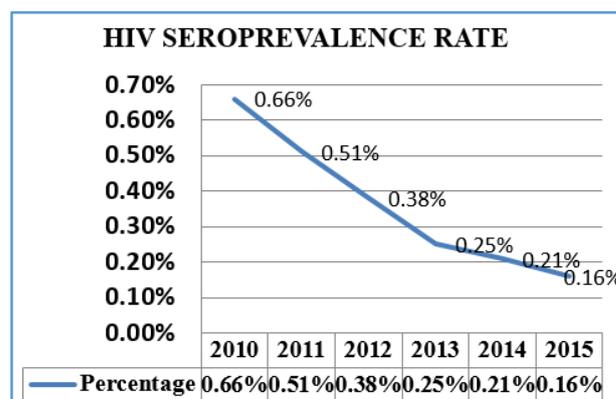
**Table 1: Details of Pregnant Women Counselling and Tested at a Tertiary Care Hospital KAPV Govt. Medical College and Hospital, Trichy, India for a Period of Six years from 1 Jan 2010- 31 Dec 2015**

Among Seropositive women, majority of them were in age group 25-34 yrs. which accounted for 38% followed by 20-24 yrs. which accounted for 36%, followed by 15-19 yrs. which accounted for 10.5% & above 34 yrs. by 14%. Youngest HIV positive pregnant mother in this study was 16 yrs. while the eldest one was 43 yrs. old.

Years	15-19 yrs.	20-24 yrs.	25-34 yrs.	Above 34 yrs.
2010	4	12	12	2
2011	3	8	7	3
2012	3	6	8	4
2013	-	4	7	1
2014	-	4	3	4
2015	1	4	3	1
<b>Total</b>	<b>11</b>	<b>38</b>	<b>40</b>	<b>15</b>

**Table 2: Age wise Distribution among HIV Seropositive Mothers**

From our analysis, maximum prevalence was seen in second gravida followed by primigravida during period of initial 3 yrs. (2010-2012) of our study. In following years from 2013 to 2015, maximum prevalence was observed in primigravida.



Years	Primi	G2	G3	G4 & above
2010	8	15	5	2
2011	5	10	6	-
2012	7	13	1	-
2013	7	4	1	-
2014	5	4	1	1
2015	4	4	1	-

**Table 3: Parity wise Distribution of HIV Seropositive Mothers**

Among 104 spouses of HIV seropositive mothers, 100 spouses alone opted for testing, among the rest 2 of them were separated from the mother, two of them did not give consent for testing. Out of 100 who were tested, 75 were found to be positive.

Year	Spouse Positive	Spouse Negative	Spouse not tested
2010	23	7	-
2011	15	6	-
2012	16	5	-
2013	9	3	-
2014	6	1	4
2015	6	3	-

**Table 4: Spouse Status**

When mode of delivery of seropositive mothers were analysed, among them 57 mothers delivered by labour naturalis, 32 mothers delivered by LSCS, 13 mothers opted for Medical termination of pregnancy, whereas 2 gave history of spontaneous expulsion of dead foetus in second trimester.

Year	Normal Labour	LSCS	Mtp	Spontaneous abortion
2010	18	8	4	-
2011	12	6	3	-
2012	13	7	4	-
2013	6	6	-	-
2014	4	4	4	2
2015	4	4	1	-
<b>Total</b>	<b>57</b>	<b>32</b>	<b>13</b>	<b>2</b>

**Table 5: Mode of Delivery in HIV Seropositive Mothers**

When CD4 count of all these mothers were analysed, maximum of 35 had count in 400-500 range. As the years passed, CD4 counts were in better side of more than 500.

Year	100-200	200-300	300-400	400-500	500-600	>600
2010	4	2	9	11	1	3
2011	2	3	4	8	1	3
2012	1	6	5	5	2	2
2013	-	2	-	6	0	4
2014	-	1	-	3	6	1
2015	-	1	1	2	2	3
<b>Total</b>	<b>7</b>	<b>15</b>	<b>19</b>	<b>35</b>	<b>12</b>	<b>16</b>

**Table 6: CD4 Count Status of HIV Seropositive Mothers**

In earlier period of this study, single drug regime was followed & positivity rate among infants was around 26%, as such when antiretroviral therapy was started in all pregnant mothers in spite of whatever their CD4 status, then the incidence rate among the infants has gone to almost nil state. During this period, single drug regime was changed to antiretroviral therapy.

Almost all babies were screened by early infant diagnostic test and eighteen months test, only one mother alone was not willing for testing the baby. During initial period of study, there was gradual decline from 26% in 2010 to 23% in 2012 to a drastic shift of zero percent since 2013 to 2015.

Years	Early infant diagnostic test positive	18 months sample positive
2010	8	8
2011	6	6
2012	5	5
2013	-	-
2014	-	-
2015	-	-

**Table 7: Infant Status during early Infant Diagnosis and 18 months Screening of Infants of HIV Seropositive Mothers**

**DISCUSSION:** Antenatal HIV screening provides mother to know her HIV status and take her own decisions to prevent transmission to their children. HIV negative mothers were educated about how to remain negative irrespective of their sexual partner HIV status. Opt in and opt out approaches will be explained to all mothers during pre-test counselling in their booking visit.

In our study, HIV screening rate was 100%. Whereas Parameshwari et al and Chaudhari et al reported HIV screening in antenatal mothers as 100% and 96% respectively.<sup>8,9</sup> This emphasis best counselling skills and active motivation of the mothers by our counsellors to achieve this 100% screening rate.

Most of HIV seropositive women were in low socio-economic status, with low literacy level, married, no history of high risk behaviour was noticed among them. Increasing the literacy status and increasing use of barrier contraceptives<sup>10</sup> by awareness programs have reduced the incidence level. Overall seropositive rate was found to be 0.36%. This study showed a steady fall in seroprevalence rate, from 0.66% in 2010 to 0.16% in 2015. This could be result of effective awareness regarding HIV in young adults, increase in education status.

Infection rate was high among 25-34 yrs. of age followed by 20-25 yrs. of age.<sup>11</sup> It is because of fact that most of them were in sexually active age group. Among them, most of their spouses were migrant workers. Migration enhances commercial sexual contacts, because of spousal separation and weaker social control by linking networks from different locations.<sup>12</sup>

Most of the women with higher order of birth opted for medical termination of pregnancy. So that unwanted

pregnancies are decided at an earlier period with good outcomes and less risk to mother. Since highly active antiretroviral therapy is followed now-a-days in spite of whatever may be the CD4 count status of mother, positivity rate has declined drastically among the infants.

Intervention programmes such as HIV awareness and safer sex education focused on young adults has got good impact on prevention campaigns.

Highly Active Anti-Retroviral Therapy has dramatically reduced mother to child transmission rate. Females on Antiretroviral therapy if conceive should be asked to continue same regimen whatever she is taking. Efavirenz should be avoided in first trimester of pregnancy because of teratogenicity. Effective combination drug regime suppresses viral replication rate, so that viral load can be reduced with very minimal adverse effects when compared with Nevirapine single drug related adverse effects.

Avoidance of breast-feeding is a definitive way to prevent HIV transmission via breast milk during the postnatal period. But replacement feeding in developing countries is associated with greater infant morbidity and mortality from diarrheal disease, pneumonia and other infections. Hence, feeding should be either exclusive breast-feeding or exclusive replacement feeding for first six months.

HIV 2015 NACO estimation reaffirms countries success story, that India had successfully achieved the 6th Millennium Development Goal of halting and reversing the HIV epidemic of decreasing the incidence of new cases. Between 2000 and 2015, there was great reduction of new cases from 2.51 lakhs to 86 thousand, a reduction of 66% against a global average of 35%. While reduction of new cases is the goal of prevention programmes, India has also demonstrated progress in halting and reversing the number of AIDS-related deaths by expanding care, support and treatment services of all seropositive ones. The results of this new 2015 NACO estimation presented us a new number of challenges which remained ahead of us. The pace of reduction in all aspects indicates us still more-greater prevention efforts will be required to change current trends.

**CONCLUSION:** HIV screening has become an integral part of our routine antenatal clinic screening. Acceptance rate of HIV testing by women is satisfactory. Male partner involvement in Antenatal screening has to be empowered. High prevalence in sexually active age group can be considered as financial burden as well as loss of youth for the nation. Declining seroprevalence rate indicates that prevention campaigns such as condom usage and preventive sexual behaviour has increased. Psychological and social problems faced by HIV positive children and financial burden faced by society and parents can be avoided by preventing mother to child transmission. How long exclusive breast-feeding is given and when additional feedings are started, all these data should be made available in all centres, strict surveillance of all babies of seropositive mothers should be done for period of at least three years. NACP-IV prevention

targets has to be achieved by 2017. Therefore, trends and patterns in epidemic needs to be investigated at state and district level, by analysing all new estimates along with data from programmes and researches. Analysis of data from different sources, at state and district level, will allow us to draw useful lessons on what level do we work in these programmes and at what level we need to improve has to be analysed. Understanding the local level trends will provide us useful insights on what essential things has to be done to achieve and accelerate progress towards the elimination of new infections and achieve our goal.

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