

Improving the Uptake of Human Immunodeficiency Virus (HIV) Antenatal Screening in a Primary Healthcare Setting

E G Tay,*^{MBBS, M Med (FM)}, S C Emmanuel,**^{FAMS, MBBS, MSc (PH)}

Abstract

Introduction: It has been well established that proper treatment and management of human immunodeficiency virus (HIV)-infected mothers can decrease virus transmission to their fetuses. HIV screening of antenatal mothers attending government polyclinics was offered from 1998 at a subsidised cost of \$5 and given on a voluntary basis. The polyclinics provide antenatal care to approximately 12% of pregnant mothers in Singapore who belong mainly to the lower socio-economic group. The uptake of the HIV screening by these mothers has been poor. **Materials and Methods:** A one-month study was first undertaken in 1999 to determine the reasons for the poor uptake and to propose recommendations for improving the uptake. A second one-month study was undertaken in 2001 to evaluate the effect of the new strategies after implementation. **Findings:** This first study showed that refusal for the test was mainly due to poor perception of risk among the mothers. The HIV screening test was incorporated into an antenatal screening package and consent was obtained for this package. This was implemented on an opt-out basis. The second study done after implementation showed that the uptake of the HIV screening improved from 45% to 99%. **Conclusion:** The incorporation of the antenatal HIV screening into an antenatal screening package, and implementing this on an opt-out basis, improves uptake to almost a universal level.

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Key words: Antenatal screening package, Improved uptake, Opt-out policy, Poor uptake, Voluntary screening

Introduction

Since the acquired immunodeficiency syndrome (AIDS) was first diagnosed in Singapore in 1985, its incidence rose from 15 cases in 1988 to 226 in 2000. There has also been a change in the profile of AIDS patients over this period. In Singapore, while the disease affected homosexual males in the earlier years, the disease is now largely spread by the heterosexual route, as is the case in many developed countries. Mothers who are affected as a result of the heterosexual spread can in turn transmit the disease to their newborns through vertical transmission.

The first paediatric HIV positive patient in Singapore was diagnosed in 1991. It has now been established that the proper treatment and management of HIV infected mothers can decrease the transmission of the virus to their newborns. With the use of Zidovudine, the risk of transmission to the newborn can be reduced by 25%.^{1,2} Avoiding breastfeeding^{1,2} and delivering the baby by caesarean section have also been shown to reduce the risk of vertical transmission.^{1,2} Other obvious advantages of early diagnosis include early partner identification, giving the couple a choice to terminate the pregnancy and early monitoring and prophylactic treatment of the child.³

In line with this, the Ministry of Health in 1998 implemented an organised human immunodeficiency virus (HIV) screening programme for antenatal mothers attending public sector polyclinics. The test was optional and offered at a subsidised cost of S\$5; the actual cost being S\$10. This is in contrast to offering the tests only to those who are at high risk, which is practised in some countries. Polyclinics have been set up by the government to provide a good level of primary care to the population, especially to the needy. To ensure that the care is affordable, patients are subsidised at the polyclinics. The polyclinics, therefore, cater largely to Singaporeans in the lower socioeconomic group.

Routine monitoring of the uptake of HIV screening offered to antenatal mothers attending the polyclinics was found to be consistently low, at around 20%. Therefore, a study was undertaken to determine the reasons for this low uptake and to make recommendations for improvement in the uptake.

Materials and Methods

The first study on this subject (Study 1) was carried out over a one-month period from 3 April 1999 to 31 April 1999. All 16 government polyclinics were involved in the

* Director, Professional Development
Singhealth Polyclinics

** Chief Executive Officer
National Healthcare Group Polyclinics

Address for Reprints: Dr S C Emmanuel, National Healthcare Group Polyclinics, 11 Jalan Tan Tock Seng, Level 6, Singapore 308433.

study. The procedures during the study period were in accordance to prevailing procedures. They were as follows:

All antenatal women going to the clinic were interviewed by the polyclinics' midwives. Routine medical information and parameters relevant to assessment of the state of health of the antenatal mother and her unborn child were obtained. During the first visit, a standard antenatal screening blood test panel was carried out. At the same time, the midwife informed the patient that HIV screening for polyclinic antenatal patients was available at a subsidised rate of \$5 per test. She would then explain that the test was to screen for HIV/AIDS. For those who were agreeable to the test, the midwife would explain the significance of possible results. The midwife would not try to influence the patient in her decision-making. At the doctor's consultation, the doctor would ask those who did not want the test, the reason(s) for their refusal. All the information was recorded.

The completed questionnaires were returned and entered into a database using Microsoft Access. The required information was then extracted from the database and a chi-square test was performed to determine if the test results were significant.

The results of this study regarding the uptake of the HIV screening by antenatal mothers in government polyclinics were reviewed. After careful deliberation, it was decided that the antenatal HIV screening be incorporated into the antenatal screening package in the polyclinics and consent obtained from the mothers based on an opt-out policy.

A second study (Study 2) was then conducted to assess the impact of these recommendations. This second study was carried out in 9 of the polyclinics. This is because in October 2000, polyclinics were restructured into 2 groups – the National Healthcare Group Polyclinics and the Singhealth Polyclinics. This survey was done in all 9 polyclinics under the purview of the National Healthcare Group. There were 221 patients in the study group.

Results of Study 1

A total of 343 patients from 16 polyclinics were enrolled into the study. Data from one polyclinic ($n = 38$ patients) were, however, misplaced. There were therefore, in all, 305 patients from the other 15 polyclinics who formed the study group. In addition to the above, 14 questionnaires had at least 1 missing essential data item. They were also excluded from the study.

From the central polyclinic data registry, 427 patients attended the polyclinics in April 1999 for their first antenatal visit. This gave a sample response rate of 71.9% for the study.

Of the 305 patients who participated in the study, 137 patients were agreeable to the test. This gave an acceptance

rate of 44.6% to the HIV screening test during the study period.

A further 17 patients refused the test initially when they were interviewed by the midwife, but subsequently agreed to the test after seeing the doctor. This finding demonstrated that having a doctor explain the antenatal HIV test increased the take-up rate by 5.4%. The uptake at the various clinics ranged between 7.6% and 90.4%.

Patient-Profile

There were altogether 6900 antenatal patients seen in the government polyclinics in 1999. According to the Registry of Births and Deaths data, there were 43,336 babies born in Singapore in 1999. From this we estimated that the polyclinics see 15.9% of all antenatal patients in Singapore. An analysis of the patient profile showed that they are more likely to be Malay between the ages of 25 and 34 years. These women, on average had 2 children or less, belonged to the lower socio-economic status since they mostly stayed in 3 to 4 room flats, and were mainly in the first trimester of their pregnancy at their first antenatal visit.

Profile of Acceptors versus Refusals

The 1-month study showed that 170 out of the 305 antenatal mothers refused the HIV screening test.

The socio-economic profile of the study subjects is shown in Table I.

The only socio-economic characteristic among those who refused screening that was significant, was their parity. The chi-square test with Yate's continuity showed that women with 2 or more children were more likely to refuse the test ($P = 0.028$). The most probable reason for this was the low perception of risk among these multiparous mothers as their previous pregnancies were uneventful.

There was no significant association between the proportion of antenatal women who refused HIV screening and their age, race, period of gestation and housing type.

Reasons for Refusal

The reasons for refusal of these 170 patients were next analysed (Table II).

The most common reason for refusal of the HIV test was the low perception of risk either for themselves or their husbands. A group of patients who had their tests done previously, also did not see any reason to repeat the test again. Some of these tests, however, had been done a few years back. Ten patients were referred to the hospital at the first visit itself. The HIV test therefore was not carried out for these patients.

The other reasons were varied and of little significance. These included fear of too much blood being taken, not having time, having no problems with previous

TABLE I: SOCIO-ECONOMIC PROFILE OF THE ACCEPTORS AND REFUSERS OF HIV ANTENATAL SCREENING IN STUDY 1

Socio-economic attribute	Refused HIV Screening		Accepted HIV Screening	
	Number	%	Number	%
Race				
Chinese	53	49.5	54	50.5
Malays	80	61.5	50	38.5
Indians	25	48.0	27	52.0
Others	12	66.7	6	33.3
Parity				
0	39	50.0	39	50.0
1	57	50.4	56	44.6
2	41	57.6	30	41.25
3 or more	33	73.3	12	26.7
Gestation				
T1	123	55.2	100	44.8
T2	40	54.8	33	45.2
T3	7	70.0	3	30.0
NA	0	0	1	100.0
House type				
1-3 rooms	72	50.7	70	49.3
4 rooms or more	96	58.9	67	41.1
Private	1	100.0	0	0
Others	1	100.0	0	0
Age (y)				
<20	10	58.8	7	41.2
20-24	31	58.5	22	41.5
25-29	55	49.5	56	50.5
30-34	53	51.9	49	48.1
35 and above	21	87.5	3	12.5

pregnancies and simply not wanting the test.

What is of interest is that the cost of the test was the reason for refusal for only 4 patients (1.6% of the study sample). The S\$5 subsidised rate for the HIV test was therefore not an obstacle to the acceptability of the test.

Results of Study 2

Analysis of results from Study 2 showed that the overall uptake of HIV screening of antenatal mothers after implementation of the recommendation increased to 77.8%. The reasons for the test refusal among the remaining 22.8% included reasons such as patients who were referred to the hospitals at the first visit and those who had the tests done recently. The study showed that only 1% had refused the test outright.

Discussion

The positive benefits of antenatal HIV screening of the mothers to the newborns have been demonstrated in several studies. The uptake of antenatal HIV testing has been variable in different countries, with uptake rates ranging from 5% to 99%.^{1,4} A universal approach in other studies

TABLE II: REASONS FOR REFUSAL OF HIV SCREENING OF MOTHERS IN STUDY 1

Reasons	Number	%
Does not think that husband practised high-risk behaviour	82	32.2
Does not practise high-risk behaviour herself	75	29.4
Does not understand the test *	26	8.8
Had already had the test done	18	7.1
Referred to hospital	10	3.9
Non-resident	9	3.5
Wished to discuss with husband	6	2.4
Test too expensive	4	1.6
There is no point in knowing	3	1.2
Does not want to know	2	0.8
Other reasons	20	7.8

* Refers to patients who did not understand the purpose of the test even after the visit to the midwife.

has shown a higher proportion of acceptance as compared to a selective approach.^{2,3} To the author's knowledge, there has not been any study on this subject done locally.

What is worth noting is that the overall uptake rate of HIV screening at government polyclinics during the period of the study rose to 44.6% from the normal 20%, with different polyclinics showing different response rates. It is reasonable to conclude that the setup during the study and the conscious interventions by the medical personnel involved, such as the midwife (as the direct frontline health worker), have an important influence in determining the uptake of the test. This has been studied by several authors and found to be true.^{2,5-7} Studies conducted overseas showed that the factors in the midwives that were associated with an improved uptake of the test by patients were the experience of the midwife (those less than 5 years vs those more than 10 years), time spent (more than 5 min spent with the patient) and the ethnicity of the midwife.

Carusi et al⁸ suggested that educating patients about vertical transmission of the disease and the promise of new therapies for HIV infection can increase test acceptance. Midwives should also be briefed on state-of-the-art findings on the benefits of early detection by HIV screening to antenatal mothers and their newborns.

In this study, the only factor of statistical significance in influencing the uptake of the test was parity. For women with 2 or more children, the take-up rate was low. This substantiates findings from 2 other studies.³ Many of these women feel that the risks are negligible since their last few pregnancies had not given them any problems. Ethnicity in this study did not appear to be a factor influencing the uptake of the test. Two studies in the United Kingdom^{2,4} showed that ethnicity is indeed a factor influencing the uptake of antenatal HIV screening test, with South Asians having the lowest take-up rate. An American study, on the other hand, did not show any difference.⁸ House type

and length of gestation have been shown not to affect the uptake.

For the mothers in this month-long study who did not want the tests, the most common reason given was that the patient or her spouse (as perceived by the pregnant women) did not practise high-risk sexual behaviour. This implied a low perception of risk. The actual problem might be higher because there were some patients who gave the reason for refusal as “not necessary”, which again can be interpreted as low perception of risk. This factor was also noted in a UK study.²

Two groups of patients who refused testing need further examination. The first group of patients are those who were referred to the hospital at the first visit. These are usually patients above 35 years of age who need early referral to the hospital for amniocentesis. To ensure coverage of such patients, hospitals should offer universal HIV screening to all antenatal mothers at their first visit. The other reason for hospitals to provide such a screening programme is to capture the majority of the antenatal patients, since government polyclinics cover only 12% of all antenatal mothers in Singapore.

The second group of patients are those who had the test done previously. Some of them had their test done in the previous pregnancy, some a few months ago and some even a few years ago.

This study has given us insight into useful programmes to improve the uptake of HIV screening of antenatal mothers in a primary healthcare setting. To address the problem of low perception of risk, educational programmes to the community should be stepped up, especially to reach out to the lower socio-economic and lower educated groups. One important message is that HIV-infected patients are often asymptomatic. Antenatal patients also need to know that the early management of HIV-positive women during the antenatal period greatly benefits the unborn child.

Another important pragmatic strategy to improve uptake is to package the antenatal HIV screening into the routine blood test panel for the routine antenatal health screening package. Patients may opt out of this if they so wish.

Education of the midwife is important. They have an important role in influencing the uptake of the test. Important objective information should be made known to the patient so that she can make an informed choice. The attitude of the midwife towards HIV screening and its important role in protecting the unborn child is also crucial. Midwives need to know the importance of the antenatal HIV screening test.

At the first antenatal visit, all patients would receive advice on the package of antenatal tests that would be performed. This includes a full blood count, hepatitis B

screening, the VDRL test and the HIV screening test. Consent should be obtained from the patients for this antenatal screening package and this should be implemented on an opting out basis.

This programme was implemented from January 2001.

Conclusion

The results of the first study and the subsequent follow-up action taken, show that drawing up an antenatal health screening package which includes HIV screening and implementing this package on an opt-out policy can improve the uptake of the HIV screening in a primary care setting. The uptake increased from 45% at the start to 99% after implementation of such a package. This is probably due to the removal of the stigma of identifying patients at risk to have the tests done and making opting out of the test, the exception rather than the rule.

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