Asian Journal of Medical Sciences 1 (1): 1-11, 2009
ISSN: 2040-8773

Availability and Accessibility of HIV Counseling and Testing Services for Pregnant Women in Hanoi, Vietnam

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Abstract: In Hanoi, Vietnam, HIV counseling and testing is available but apparently still many HIV-positive women were either not detected or were identified too late for optimal PMTCT intervention. The study looked at how easily pregnant women could find out about and use HIV counseling and testing and whether their reproductive health-seeking behavior offers opportunities to ensure PMTCT choices. Data from a household survey among 670 randomly selected women who had given birth in the last year were combined with results of semi-structured interviews with 53 health staff and observations in health facilities. HIV counseling and testing for pregnant women is widely available in Hanoi, except at commune level where many peri-urban women go for ANC and delivery. Among the women interviewed, 85% reported having been tested; 65% of the tests were provider-initiated. Accessibility of counseling and testing as a basis for PMTCT choices would be greatly affected by the current late timing of the testing and the poor quantity and quality of counseling. Women's reproductive health care behavior suggested opportunities for interventions; more than 80% of them sought ANC in the first trimester and made more than three ANC visits. Most health care workers and 76% of women interviewed thought that all pregnant women should be tested for HIV. The main limitations to effective PMTCT for pregnant women were that HIV testing is not available at commune level or is offered too late in gestation and without adequate counseling.

Key Words: HIV testing, pregnant women, PMTCT, reproductive health, Vietnam

INTRODUCTION

Every year, more than two million HIV positive women around the world give birth (Piwoz and Preble, 2002), but only 9% of them have the benefit of therapy to reduce the risk of transmission of the infection to their child (UNAIDS and WHO, 2006). In Vietnam, with the HIV prevalence among pregnant women estimated at 0.4% in 2005 (VAAC, 2005), prevention of mother-to-child transmission is given high priority in HIV/AIDS policy and strategies, partly because it is an effective way to reduce the spread of infection in the population. However, the proportion of HIV-positive women who do not receive treatment to prevent viral transmission to the child is not known.

HIV testing in combination with good pre- and post-test counseling can be an entry point to the program on prevention of mother-to-child HIV transmission (PMTCT). HIV testing of pregnant women may be offered by the service provider (provider-initiated) or requested by the client (client-initiated), according to local policy and practice (WHO and UNAIDS, 2007). In vietnam, although testing has been advised for all pregnant women during antenatal care (ANC) since 2000 and although according to the AIDS Law, testing should be freely available since January 2007, in fact the provision of testing facilities and PMTCT are not yet widespread. A survey in 20 provinces revealed that only 22% of recently-delivered women reported being tested for HIV in the last pregnancy (MOH, 2005). The low detection rate of HIV-positive pregnant women limits the effectiveness of PMTCT intervention strategies.

An important function of HIV testing for pregnant women is to give them choices about how to proceed with their pregnancy. If a woman is tested early enough and found to be HIV positive, abortion may be an option. In Vietnam, legal abortion is widely available and according to Vietnamese policy, abortion is an option for PMTCT. If the woman prefers not to abort or if the positive test result becomes available only later in pregnancy, effective

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therapy with highly active anti-retroviral therapy (HAART) can prevent transmission to the child. Even the inexpensive and relatively easy to administer single-dose Nevirapine (SD NVP) can reduce MTCT to 13% among breast-fed infants during their first 14-16 weeks of life (Guay *et al*., 1999).

In Vietnam, HIV testing is not available at commune level where many women come for ANC and delivery. Even in the facilities where the service is available, HIV tests are often offered late, which restricts health staff from initiating the most effective PMTCT interventions. The lack of facilities and services means that women may not always be able to choose the best options. The study reported here was carried out in the capital city of Hanoi, where the facilities, personnel and drug supplies should make it possible to offer a comprehensive PMTCT service to pregnant women. We investigated both user and provider sides to answer the following questions:

- Are HIV counseling and testing services available to pregnant women in Hanoi?
- Are HIV counseling and testing service accessible for pregnant women in Hanoi?
- What choices do pregnant women make for reproductive health care that might offer opportunities for interventions to improve the weak areas identified in 1 and 2?

MATERIALS AND METHODS

We looked at the services available to all pregnant women in combination with specific questions aimed at the health staff who should provide the services. Observations were also made of service delivery. The first source of data was a household survey among women who had delivered recently in Hanoi, the second from semi-structured interviews with health care workers in the facilities that should provide the services and the third from unstructured observation in the same health facilities over a period two years. The study protocol was reviewed and approved by the Ethical Committee of Hanoi Medical University, which has responsibility for both scientific and ethical considerations of research conducted by university staff.

The household survey was carried out among 670 women who had given birth in the previous 12 months (between April 1, 2005 and March 31, 2006) in Dongda and Tuliem districts of Hanoi. Dongda, one of the largest districts of Hanoi, has a high poverty level and a variety of programs that provide services for people living with HIV/AIDS. Tuliem is a suburban district, also rather poor but undergoing a building boom with a resulting highly mobile population but with fewer services for PWA. For example, an ARV treatment program was only introduced in 2006. Dongda has 21 communes (lowest administrative level with a health facility; population approximately 15,000) and Tuliem has 16.

Sampling: In each district, a two-stage sampling method was used to select communes and then respondents. In the first stage, six communes per district were selected using a simple random sampling technique. Then, the list of 3,421 women who had given birth in the last 12 months was taken from the child immunization list, which is available at all commune health stations. In the second stage, every 5th woman on the list was selected for interviews. If a selected woman was not available, the sampling was repeated from the same list but with a shifted frame. Finally, 670 women agreed to participate in the face-to-face interview in their house, a response rate of 98%. The questions concerned socio-demographic data, ANC seeking behavior, experience with HIV testing and counseling during the last pregnancy, knowledge on HIV/AIDS, PMTCT and perceived risk of HIV transmission. The women were not tested for HIV, firstly because the study focused on access to services for all pregnant women. Secondly, the logistics and procedures necessary for such testing made it impractical. The interviewers were university students in medicine or sociology who were trained in interview skills and tools (questionnaires and checklists). Written informed consent was obtained from each respondent before each face-to-face interview. The interviews were conducted privately and recorded anonymously; completed questionnaires were identified only by number.

The data was screened and entered to into EPI INFO 6.04 then transferred to SPSS 12.0 for statistical analysis. Since the availability of HIV counseling and testing services and ANC seeking behavior might differ in some respects between women in the urban (Dongda) and peri-urban (Tuliem) districts, the data from the two districts are shown separately. The comparisons between the two were tested statistically using chi-square test (Pearson Chi-Square test for parametric test and Yates' Corrected Chi-Square test for non-parametric test) to compare proportions and using T-test to compare means.

Semi-structured interviews using check lists were conducted among 53 health care workers (doctors, nurses, midwives, counselors, researchers and managers) involved in the continuum of care from commune to national level in order to obtain information on the availability of HIV counseling and testing and to get the views of the service providers. At commune level, only one staff is responsible for HIV and that one individual was interviewed. At district level, only a few staff focus on HIV and these were all interviewed. At higher levels, either the department head or vice-head of the key departments (Infectious Diseases and ANC) responsible for HIV/AIDS care as well as nurses working with the patients were included. Most of these health workers were in the various hospitals in Hanoi, since Dongda and Tuliem have only commune and district level facilities. The transcripts of the semi-structured interviews bwere coded, entered and

analyzed using N-VIVO software, which can be used with Vietnamese script. The research team developed a code book that focused on key findings and terminologies.

Unstructured observations on HIV counseling and testing practice were conducted over a period of two years by researcher who worked with HIV positive mothers at the same eight facilities where the interviews took place. The observation was done by one person (TAN), who observed the conditions in the health care setting, especially the practice of HIV counseling and the communication between the health staff and their clients. The observations were recorded and used to triangulate the findings from the other two sources. The observed sites included the National Obstetric Hospital and Hanoi Obstetric Hospital, which provide PMTCT in Hanoi and two facilities that provide Anti-Retrovirus (ARV) and opportunistic infection (OI) treatment for adults and children in the city (Bachmai Hospital and National Pediatric Hospital). In Dongda, a well-resourced district with high HIV prevalence, observations were also made at four health facilities that provide ANC, care and treatment, including PMTCT services for people living with HIV.

RESULTS AND DISCUSSION

Availability of HIV counseling and testing services for pregnant women, in relation to potential need for PMTCT intervention: Interviews with health providers at all levels about the practice of counseling and testing for HIV and access to PMTCT for pregnant women revealed that only the higher levels could provide these services. Women delivering in Hanoi can choose from a variety of health facilities, for both ANC and delivery. The ANC system includes 228 commune health stations, 14 district maternity wards, 1 provincial obstetric hospital, 1 national obstetric hospital, as well as obstetrics and gynecology departments at several general and sector hospitals. At the district and higher levels, the rapid HIV test is offered by the providers at ANC sites and for pre-delivery testing, but according to Vietnamese regulations, the rapid test is not considered a confirmed positive result until additional testing is done. Only six laboratories can confirm a positive test result and they only provide the result later, within 1-7 days (see algorithm, Fig. 1). At commune level, HIV testing is not available, so if women choose to go the commune health center for both ANC and delivery, they will not be tested.

Besides the testing available within the ANC system, in Hanoi women can also be tested at independent Voluntary Counseling and Testing (VCT) centers, outside the ANC system. These HIV tests are offered free of charge, but are mainly aimed at the most-at-risk-populations (injecting drug users and commercial sex workers). The VCT centers use rapid tests, sending the positive samples out for confirmation and asking clients to return for their results within one week.

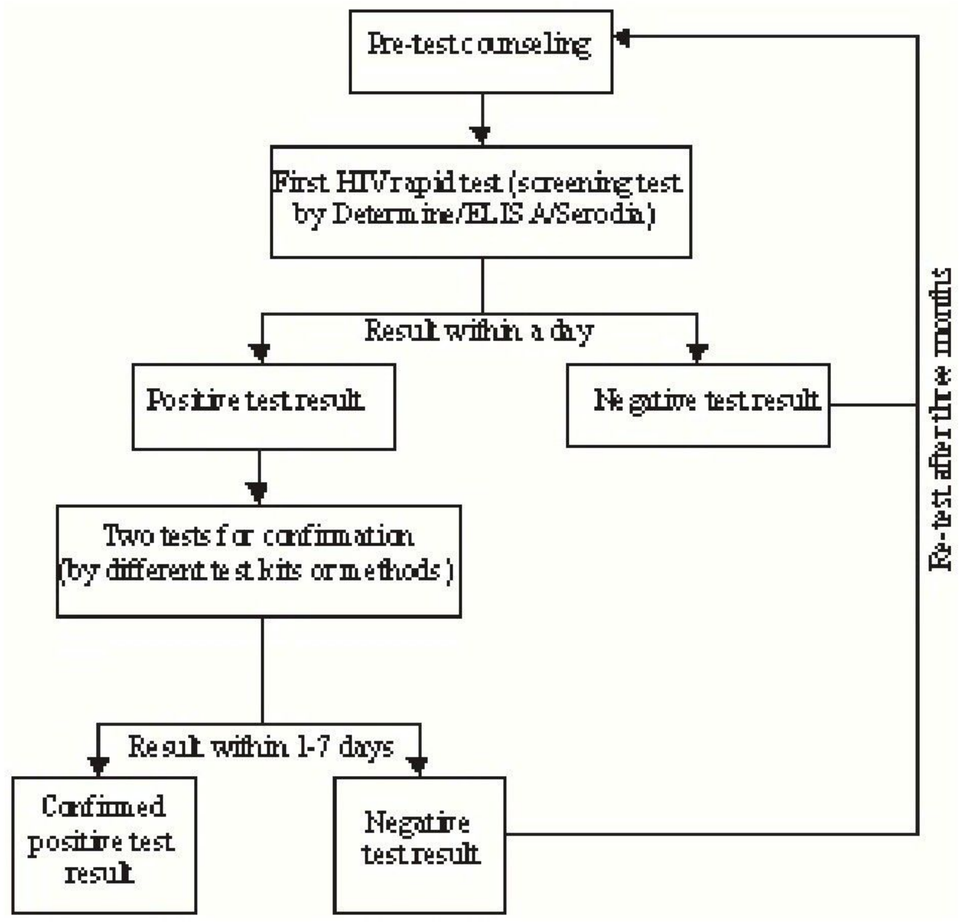

Fig. 1: Algorithm for confirmation of HIV test in Vietnam

Along with testing, pre- and post-test counseling should be available. Counseling on HIV testing is always given in the VCT centers but not routinely in the ANC system. Pregnant women will be given advice by the doctor or nurse who is assigned by the hospital to provide information to those being tested or who test positive for HIV. Some staff have been trained briefly on counseling skills but the training is not systematic and not sufficient for the needs of the women clients. There are no full-time trained counselors in the health facilities.

After testing, if a woman is HIV-positive, then ARV is recommended for treatment and/or PMTCT. ARV prophylaxis for PMTCT is available at one provincial and one national obstetrics hospital but not at district or in sector hospitals, where HIV counseling and testing are available. At commune health stations, neither HIV counseling and testing nor ARV prophylaxis are available. Women who test positive at district level should be referred to a higher level facility for PMTCT. The government program has provided a SD NVP regimen since 2002. In addition, since early 2005, the National Obstetrics Hospital has provided HAART for PMTCT starting from the 36th week of pregnancy. SD NVP is usually provided at the start of labor and is therefore given when a rapid test is positive at that time, but to enroll in a HAART program, a confirmed test is required. Both are provided free of charge for women who qualify. The health service has sufficient supplies of these medicines for the demand in Hanoi at present.

Table1: Socio-demographic characteristics of respondents in household survey - women who had delivered during the previous 12 months in Hanoi

Characteristic	Urban (N=329)		Peri-urban (N=341)		Total (N=670)	
	Number	%	Number	%	Number	%
Mean age (years)	29.0±4.5	-	27.8±4.8	-	28.4±4.7	-
Marital status	-	-	-	-	-	-
Single	5	1.5	3	0.9	8	1.2
Married	317	96.4	333	97.7	650	97.0
Separated,	-	-	-	-	-	-
divorced, widowed	7	2.1	5	1.5	12	1.8
Educational level	-	-	-	-	-	-
Illiterate	2	0.6	1	0.3	3	0.4
Primary	7	2.1	18	5.3	25	3.7
Secondary*	41	12.5	108	31.7	149	22.2
High school	123	37.4	133	39.0	256	38.2
College or higher*	156	47.4	81	23.8	237	35.4
Occupation	-	-	-	-	-	-
Farmer*	11	3.3	66	19.4	77	11.5
Worker*	123	37.4	51	15.0	174	26.0
Small business	71	21.6	83	24.3	154	23.0
Housewife*	30	9.1	49	14.4	79	11.8
Student	76	23.1	69	20.2	145	21.6
Other	18	5.4	23	6.8	41	6.1
Number of children	-	-	-	-	-	-
1*	188	57.1	170	49.9	358	53.4
2	133	40.4	134	39.2	267	39.9
>2*	8	2.5	37	10.9	45	6.7

* Significant at 0.05 level

Table2: Proportion of pregnant women reporting they were tested for HIV during pregnancy and time of the test

Had HIV test during?	Urban		Peri urban		Total	
	Number	%	Number	%	Number	%
Reported on testing during pregnancy (n=670)						
-Tested**	301	91.5	267	78.3	568	84.8
-Not tested at all**	28	8.5	74	21.7	102	15.2
Time of HIV testing during pregnancy						
-<14th week	10	3.3	7	2.6	17	3.0
-14-27th week	34	11.3	19	7.1	53	9.3
-28-32nd week*	97	32.2	66	24.7	163	28.7
-33-36th week**	82	27.2	100	37.5	182	32.0
->36th week	8	25.9	75	28.1	153	26.9
Who initiated testing?						
-Client	114	37.9	83	31.1	197	34.7
-Provider	187	62.1	184	68.9	371	65.3
Total	301	100	267	100	568	100

*Significant at 0.05 level, **Significant at 0.01 level

Table 3: Counseling for HIV testing for pregnant women

Counseling for HIV test	Urban (N=301)		Peri-urban (N=267)		Total (N=568)	
	Number	%	Number	%	Number	%
Aware they were being tested for HIV before testing	139	46.2	104	39.0	243	42.8
Received pre-test	-	-	-	-	-	-
counseling**	53	17.6	23	8.6	76	13.4
Duration of pre-test	-	-	-	-	-	-
counseling (minutes)	8.5±9.6	-	7.4±5.1	-	8.2±8.5	-
Received post-test	-	-	-	-	-	-
counseling	62	20.6	45	16.9	107	18.8
Duration of post-test	-	-	-	-	-	-
counseling (minutes)**	6.3±3.9	-	5.2±2.7	-	5.8±3.5	-
Received both pre and	-	-	-	-	-	-
post-test counseling**	34	11.3	12	4.5	46	8.1

** Significant difference between urban and peri-urban women at 0.01 level

Socio-demographic characteristics of survey respondents: The socio-demographic characteristics of respondents are shown in Table 1. The mean age of respondents was 28.4 years; most were married and had one or two children. Nearly all had secondary or higher level education, although those in the peri-urban area often had a lower educational level. The women in the peri-urban district were also more likely to report their occupation as housewife or farmer. These characteristics could influence their use of health services and their opportunities to be tested and to receive PMTCT services when needed.

The accessibility of HIV testing and counseling services:

Access to testing for pregnant women: Considering its wide availability in Hanoi, all pregnant women should be able to access HIV counseling and testing. The data in Table 2 show that nearly 85% of the women interviewed reported that they had been tested for HIV during their pregnancy. Further, the interviews with health care workers revealed that in their experience, uptake of HIV testing among pregnant women who came for delivery to national and provincial hospitals was 100%.

Most of the testing was provider-initiated and it is important to note that in these hospitals, the provider-initiated HIV testing is a prerequisite to accessing delivery services. During ANC, HIV testing was done at the same time as other blood tests (whole blood count, blood type, liver and renal function and hepatitis B) to reduce costs; that is why it is usually offered at the 7th month of gestation. This approach has the advantage of making HIV testing routine and reducing the stigma of being tested.

Access to HIV testing in time to optimize choices: The routine testing for HIV in the 7th month of gestation is reflected in the results in Table 2, which show that very few of the women had been tested for HIV early in pregnancy. According to the guidelines on reproductive health care, abortion can only be offered for pregnant women at less than 22 weeks of gestation. Thus, if one of these pregnant women had received a positive HIV test result and wanted to have an abortion, for more than 90% it would have been too late.

In addition, almost 27% of the pregnant women were only tested for HIV after 36 weeks' gestation, which is too late to provide optimal protection through HAART prophylaxis for women who are HIV positive. Hence they would lose one potential option and instead would only be able to receive NVP SD at delivery to reduce the risk of viral transmission.

Access to adequate counseling on HIV testing and PMTCT: Counseling is an essential companion to HIV testing. The results in Table 3 reveal that only 42% of the respondents reported that they knew they would be tested for HIV. Only 13.4% of women received pre-test counseling and only 18.8% received post-test counseling; the proportion who received both was a mere 8%.

"I have no idea (about the test) as I delivered right after coming to the hospital. They said nothing when I finished, then I guessed it's OK." (Mother, 32 years old, HIV status unknown).

Standard national protocol requires that women receive information about HIV testing before being tested and receive pre- and post-test counseling. Our observations at national and provincial facilities suggested that pre-test counseling mainly consisted of providing information rather than counseling. A short movie related to HIV transmission and HIV testing was shown on video in the crowded waiting area, but it was observed that not many people followed the counseling film. In one hospital, leaflets and brochures on HIV were present, but in a locked bookcase. Repeated observations at a provincial hospital revealed that the television was present but seldom turned on. When programs were shown, they did not provide information that would help the women to understand their choices for HIV testing or for PMTCT.

For example, one woman contacted during observation in the waiting area said,

"Normally, we have to wait quite long time for our turn. We are not paying attention to the TV screen. Sometimes we cannot because the screen is only visible to one part of the waiting area." (Pregnant woman, 25 years old, HIV status unknown).

Observations of ANC facilities at district level revealed that there were very few pre-test counseling and IEC materials.

Post-test counseling can be carried out when women are given their test results. Almost all the women (93%) who knew they had been tested did find out the results of their test. No difference was identified between women who lived in the city and those who resided in a peri-urban district. However, fewer than half of the women had received their result from a health worker. This is especially surprising if we consider that the vast majority of the test results would have been negative and the health worker could have provided the result from the rapid testing while the woman was in the health facility and could have provided post-test counseling. Findings from the interviews with health staff revealed that counseling was focused on HIV-positive women only. Many health staff even were not aware of the importance of giving information on HIV/AIDS prevention for HIV negative women.

During observations in hospitals, health care workers were seen to give pregnant women an appointment for receiving their blood test results, including the HIV test. The test result documents (especially if HIV negative) were left in a box in the front of the laboratory and women were given an appointment to come to pick up the results, by themselves; they were offered no opportunity for talking with the health professionals.

The most common reason given by health staff for lack of counseling was that they were overworked; they gave priority to what they called 'professional' tasks rather than counseling. Some health staff even thought that not informing people about HIV testing made their work more convenient, because then people would not refuse the test and put them in a difficult situation.

"How can I counsel all the hundreds of women who come in a day?" (Counselor, physician in Examination Ward, Obstetrics and Gynecology Hospital).

"Everyone must take tests in advance here and they have no idea of the reason. That's it and how convenient it is for health staff, because they do not have to spend time to explain." (Counselor, physician in Department of Infectious Disease, Obstetrics and Gynecology Hospital).

In cases where counseling was provided, health care workers prioritized 'suspicious' pregnant women, which, according to their assessment, included drug users' wives, drug users, commercial sex workers and those who had recently left a rehabilitation center or had specific clinical syndromes such as genital warts or syphilis. However, many women who do not have one of these "markers" could also be HIV positive.

"Only drug users or those who have just left rehabilitation centers or clinically suspect women must take the tests. Otherwise, we don't allow them to deliver in this hospital." (Hospital manager, Obstetrics and Gynecology Hospital).

"Voluntary counseling and testing plays an important role in the prevention of HIV transmission by IDUs and sex workers. Pregnant women whose husband is an IDU are very vulnerable. I recommend compulsory tests for pregnant women." (Nurse, Department of Obstetrics, General Hospital).

Among the 670 women, there are likely to have been subpopulations with quite different needs for counseling and testing. Yet the proportion of women who received pre- and/or post-test counseling was the same for women who responded that they might have a risk of HIV infection and those who thought they did not. There were also no statistically significant differences in the socio-demographic characteristics of the women who had provider- and client-initiated tests. Although not all the women had known they would be tested for HIV, when they were asked whether or not it was important to receive counseling, more than two thirds responded that they thought both pre- and post-test counseling were very important. This proportion was similar in women from both urban and peri-urban areas.

In theory, all pregnant women should be counseled and tested for HIV, which would provide them with some level of knowledge about the infection. With that knowledge, they could choose the services they need at the level they need them. Almost all the women interviewed had heard of HIV/AIDS. However, only 60% knew that it was a virus that could be transmitted from mother to child. Many had incorrect ideas about HIV

transmission. For example, 20% responded that mosquitoes could transmit the infection. When asked about prevention, most women knew that HIV infection could be prevented, but only 43% of the women who knew that children could be infected through the mother were aware that the transmission from mother to child could also be prevented. Of these, most did not understand very clearly what form this prevention took. About one quarter knew more than one method to prevent MTCT. Very few respondents knew all three key PMTCT methods (ARV for mother, ARV for child and no breastfeeding). Their lack of correct and complete knowledge suggests that most of them did not receive good counseling when they were tested for HIV.

How do women's choices affect access to counseling, testing and PMTCT?

Choice of facility for ANC and delivery and accessibility to HIV testing: When the women were asked where they had gone for ANC (Table 4), it appeared that women in the peri-urban area were more likely to have gone to a commune health station, which cannot perform an HIV test, than were those in the urban area. Women in the urban area were more likely to have gone to national hospitals and private clinics. However, in both areas, very few pregnant women used the district hospitals for ANC. It was almost always the women themselves who chose where to go for ANC. Key factors determining the choice were the proximity to their residence (42.5%), opinion on the quality of the staff and facility (37.9 and 20.6%, respectively), short waiting time (10.3%) and reasonable cost (10.1%).

Women often made different choices for their delivery than for ANC. Most women selected the higher level facilities for delivery, especially the provincial hospitals, where more than half had their babies; few went to the district level. However, a quarter of pregnant women in the peri-urban area still went to commune health stations for delivery and therefore were not tested for HIV. The selection was made mainly by the women themselves and the reasons given were similar to those for the choice of ANC site. Health insurance played a role, for the women who had it: of the 233 women who had insurance, approximately one quarter chose where they would deliver based on allowable insurance payments.

Choice of time to come for ANC check up and opportunities for early HIV testing: Hanoi offers many ANC facilities. Most of the women interviewed (89.6%) took advantage of this to make more than three ANC visits during their pregnancy; 22.7% even made more than one visit per month (Table 5). The visits started early, usually before the 14th week, which would provide a very good opportunity for early HIV testing.

Choice of whether to be tested for HIV: When the women were asked whether or not all pregnant women should be tested for HIV, almost 76% thought that they should be (81% among urban women and 70% among peri-urban). The health care workers interviewed also thought that testing should be offered to all pregnant women.

Table 4: Choice of facility for ANC and delivery

Choice of facility	Urban (N=329)		Peri-urban (N=341)		Total (N=670)	
	Number	%	Number	%	Number	%
Preferred place for ANC						
-National hospital**	86	26.1	29	8.5	115	17.2
-Provincial/sector hospital	126	38.3	121	35.5	247	36.9
-District hospital*	17	5.2	7	2.1	24	3.6
-Commune health station**	5	1.5	140	41.1	145	21.6
-Private clinic**	92	28.0	42	12.3	134	20.0
-Other	3	0.9	2	0.6	5	0.7
Place selected for delivery						
-National hospital**	129	39.2	55	16.1	184	27.5
-Provincial/sector hospital	168	51.1	186	54.5	354	52.8
-District hospital*	25	7.6	10	2.9	35	5.2
-Commune health station*	6	1.8	89	26.1	95	14.2
-Other	1	0.3	1	0.3	2	0.2

* Difference between urban and peri-urban women significant at 0.05 level.
** Difference between urban and peri-urban women significant at 0.01 level.

Table 5: ANC seeking behavior among pregnant women

ANC seeking behavior	Urban (N=329)		Peri-urban (N=341)		Total (N=670)	
	Number	%	Number	%	Number	%
Number of ANC visits						
1-2	7	2.1	4	1.2	11	1.6
3*	8	2.4	19	5.6	27	4.0
4-9	218	66.3	230	67.4	448	66.9
>9*	86	26.1	66	19.4	152	22.7
Don't remember*	10	3.0	22	6.5	32	4.8
Time of first ANC visit						
< 14th week	278	84.5	273	80.1	551	82.2
14-27th week	44	13.4	58	17.0	102	15.2
28-32nd week	2	0.6	0	0.0	2	0.3
> 36th week	3	0.9	10	2.9	13	1.9
Don't remember	2	0.6	0	0.0	2	0.3

* Significant at 0.05 level

"Testing 100% in advance, voluntarily, is a part of the hospital requirements."(Counselor, physician in Department of Planning, Obstetrics and Gynecology Hospital).

When asked the reasons for their opinion, 27% of the respondents said that health care workers could be protected if all women were tested for HIV. Only 12% of the women mentioned that early testing would give them the choice to have an abortion. Nearly half said that they accepted the HIV test because they wanted to have intervention for PMTCT if needed. However, only 16% thought that they might be at risk for HIV infection. The majority of respondents expressed concern about getting infected either through blood transfusion in hospital or through their husbands, whom they suspected of visiting sex workers.

During the interviews, health care workers suggested that abortion would be an option for women who tested positive early enough, or they could choose PMTCT if the family needed a child to carry on the lineage.

"An HIV test should be offered for the women before getting pregnant or early in pregnancy so they can get good counseling since they are at the 1st trimester. Then they have more choice. Either abortion or if they want to keep the baby for delivery, they can get ARV." (Midwife, Department of Obstetrics, General Hospital).

This study was undertaken to find out whether the existing health care facilities and networks offer sufficient opportunities for pregnant women to find out whether they are HIV-positive and to be provided with PMTCT if they need it. First, we investigated whether counseling and testing for HIV are available in the health facilities in Hanoi where pregnant women go for antenatal care and delivery, then whether and when pregnant women use these facilities and whether they do get counseled and tested. From the results, we can propose improvements to the existing system that could increase the proportion of women who get the services they need.

In Hanoi, HIV testing and PMTCT are widely available in the higher level hospitals, but not at commune level health centers. There is a high uptake of HIV testing, mostly provider-initiated, among pregnant women. However, the HIV test was offered too late for women to have the choice of abortion or early ARV prophylaxis with HAART. Counseling before and after testing was not always provided, or if it was provided, was often of low quality, which would result in poor access to PMTCT for women with a positive test result.

All ANC facilities except the lowest level commune health stations can test for HIV. Although only two hospitals had programs for PMTCT intervention, their services should be able to meet the needs of all HIV positive pregnant women in Hanoi. Other ANC facilities could refer HIV positive pregnant women to those facilities to register for PMTCT intervention. Additionally, antenatal care services are widely used in Vietnam; nationwide, 82% of all women who had delivered during the five years preceding a survey conducted by the MOH had made at least one ANC visit (90.4% urban; 79.9% rural) (MOH and GSO, 2003). More recent data in selected provinces suggest that this coverage has increased over the last few years (MOH UNFPA, 2006). If HIV testing were available everywhere that women go for ANC, then the coverage of HIV counseling and testing and therefore, also of PMTCT, would be expected to be high. In our study population, 85% said they had been tested, a relatively high proportion compared to other studies (Karamagi *et al*., 2006; Perez, 2006; Simpson *et al*., 1998) which should also open the door to good accessibility to PMTCT.

However, in spite of the wide availability of testing in this capital city setting, there appears to be considerable underutilization of PMTCT services, which suggests that there are gaps in the system that should be providing those services. Considering the population of 3,200,000 and the national crude birth rate of 17.4 per 1,000, an estimated 55,680 pregnant women might be expected to deliver annually in Hanoi. HIV sentinel surveillance among pregnant women attending ANC in Hanoi showed that the HIV prevalence among this group was 1.25% in 2005 (VAAC, 2005). Putting these figures together, it could be expected that approximately 700 HIV-positive pregnant women should have appeared in Hanoi in 2005, whereas only 67 were treated according to the reports from the facilities. If this reasoning is correct, then the system at present is serving only a fraction of all HIV-positive pregnant women. It is possible that the estimate of HIV-positive pregnant women is too high. For example, surveys in 2005 among women of reproductive age in three comparable cities, Hai Phong, Thai Binh and

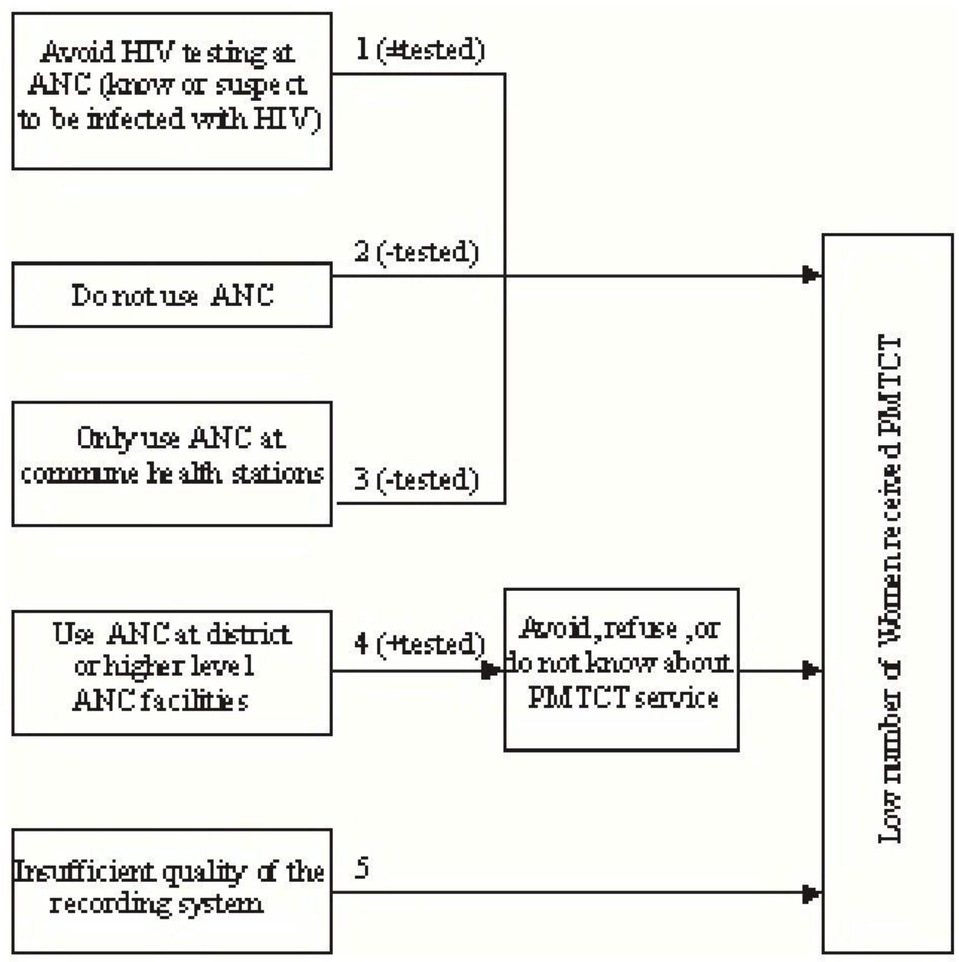

Fig. 2: Possibilities of missing of HIV-positive women for the PMTCT utilization

Ho Chi Minh City, produced a lower estimate of HIV prevalence-0.2, 0.1 and 0.6%, respectively (General Statistics Office, 2006; Tuan *et al*., 2005). It is also possible that the crude birth rate in Hanoi is lower than the national fig. But even if the rate of HIV positivity among sexually active women in Hanoi were half or a quarter of the above estimate and if the crude birth rate in Hanoi were several points lower, there would still be a significant gap between the services needed and those provided to HIV-positive women. In comparison, the number reported in Ho Chi Minh City in 2006 was 684, or approximately 88% of expected cases, which suggests a better performance of the system there (HCMC, 2006; VAAC, 2005). In this study, we looked at factors from both the service side and the perspective of the pregnant women in order to understand what factors could be affecting the numbers appearing in the hospital records as testing positive for HIV, as compared with the numbers of women receiving PMTCT.

How can we explain a high uptake of HIV testing among pregnant women but low utilization of PMTCT services? There are several possibilities as shown in the flow chart in Fig. 2.

First of all, those who know or suspect that they are HIV positive may either abort before being tested, or may go to a VCT center where they can be tested early and then decide to abort (arrow 1). These women would not enter the system on which the estimates in this paper are based. It would be difficult to determine those numbers. However, a national report on the utilization of VCT showed that the majority of VCT clients were drug users and sex workers (National Committee, 2006). Abortion is very common in Vietnam; 30% of the women in this survey had had one at some time in their lives. Since being HIV-positive is associated with a number of risk

behaviors, women may suspect their status and choose to have an abortion, reducing the number of HIV+ pregnant women coming for PMTCT. Another aspect of the HIV reporting system, the fact that the results may be provided to local authorities or family members (Thu Hong *et al*., 2004) may be a barrier limiting the use of HIV testing services. A Nigerian study found that uptake of HIV testing was affected very negatively by the involuntary disclosure of results (Akanem and Gbadefesin, 2004). Similarly, notification of HIV test results without attention to confidentiality could therefore result in low uptake of testing among high risk populations during pregnancy (Morch *et al*., 2006). Studies among HIV-infected women in Hanoi and Canada confirmed that finding (Jayaraman *et al*., 2003; Oosterhoff, 2008). Because few women are well-informed about PMTCT, those women may opt for abortion (Bedimo *et al*., 1997) and be excluded from these estimates.

Among the 15% of women in our study who did not report being tested, there may be a population with higher probability of HIV infection, who therefore either avoided ANC altogether (arrow 2) or avoided going for ANC at facilities where they would be detected (arrow 3). Studies in the United States and the United Kingdom noted that the population that does not take advantage of ANC services may be exactly the population at higher risk of HIV infections (Boxall and Smith, 2004; Lindau *et al*., 2006; Mofenson, 2000). In our survey, only 4.8% of the women could not give detailed information on their ANC use, which may indicate a reluctance to admit that they did not use it at all. Any women who did not use ANC were not tested during pregnancy, but might still be tested at the time of delivery, if they went to a higher level facility. These women especially need to be found and provided with care and support, so the systems should be strengthened to attract them.

Other women who may not suspect that they are HIV positive may have missed testing because they used the community level health centers where testing is not carried out. Among women in this study who sought ANC, many went to the commune level, especially in the peri-urban area (41%). Most of them, however, chose to deliver at a higher level facility, where they were often tested just before delivery. Still, 26% also delivered in the commune health station and would not have been tested at delivery. A 2003 estimate by the Ministry of Health indicated that nearly half of HIV-positive women would come from rural areas (MOH, 2004). This population might be at risk but not aware of their risk of HIV transmission and since they are not tested, do not enter the reporting system.

Most of the women in this study did have ANC and thought they had been tested for HIV. We do not know how many of the women in this study may have been HIV positive but we do know that the quantity and quality of the pre- and post-test counseling was not adequate to ensure that women who were positive could be given PMTCT (Ananworanich, *et al*., 2001; Dimbungu *et al*., 2004). Among these women, mobility could account for tested women being lost to the system; they may have left the city for reasons that may or may not be related to the test result (arrow 4 in Fig. 2). Results of another study showed that women who suspect or know they are HIV positive often go to another city or province to deliver, if they have enough money to do so (Morch *et al*., 2006). Another possibility is that although the women were selected from immunization lists, which included their home addresses, when they go for ANC or HIV testing they may give fake addresses, to avoid discrimination in their own communities (Oosterhoff, 2007) which would make it difficult for the health services to enroll them for PMTCT unless they themselves seek it. They may be unlikely to seek PMTCT because of the poor quality of the counseling, which does not provide enough information for them to choose PMTCT. Alternatively, more pregnant women may have been identified as HIV-positive, but did not reach the treatment registers at one of the two PMTCT providers because of the weaknesses in the referral system.

Finally, the record-keeping at any of the points in the system may not be of sufficient quality to register the women who have received care, including PMTCT, at any point in the system. The most likely explanation for the gap between the expected and observed women entering PMTCT programs is that many more women are tested, but even when they test positive they do not enter the reporting system. That can happen if they are not correctly referred to the department that can provide PMTCT, or if they are referred but do not, for reasons of their own, go to that department, or if, as sometimes happens, there are not enough drugs to enroll all the women in a treatment program. (Bedimo *et al*., 1997). The cases reported as HIV-positive pregnant women are based on the provision of ARV prophylaxis, so when women do not receive treatment, they may not enter the registers and are lost to the records.

Counseling plays an important role in the provision of information to all pregnant women, so that they can make a choice to enter the PMTCT program if they need it. However, we found that often counseling was not provided during ANC; one quarter of the respondents had been informed of their test results with no additional information. This observation has been reported previously in Vietnam and other Asian countries (Hyodo, 2000; Oosterhoff *et al*., 2008; Piwoz and Preble, 2002; WHO and UNAIDS, 2007). Most health care workers claimed lack of time and their need to focus on technical professional work, or that they focus counseling on women they consider to be at risk. Women might also get information about HIV and PMTCT from sources outside the counseling during ANC. However, by the year 2005, the government had very few IEC programs on PMTCT targeting women of reproductive age and their coverage was very low (National Committee, 2006). The focus of HIV control in Vietnam is neither on PMTCT nor on IEC: among eight international organizations providing support for PMTCT, only three focus on IEC and again only on a small scale (UNAIDS, 2006). As the epidemic moves into the general population, lack of knowledge on HIV and PMTCT may result in pregnant women not seeking the

interventions they need, even when these are available (Dimbungu *et al*., 2004; Ekanem and Gbadefesin, 2004).

However, in this relatively well-resourced setting with high ANC coverage, the findings also suggest feasible strategies to increase opportunities for women to enter PMTCT when they need it. First, around the world, provider-initiated HIV testing is increasingly offered with ANC services; many studies have demonstrated that it is acceptable and can increase the uptake of HIV testing (CDC, 2004; General Statistic Office, 2006; Kanshana and Simonds, 2002; Karamagi *et al*., 2006; Malyuta *et al*., 2006; Simpson *et al*., 1999; Walmsley, 2003). This survey revealed that among the 85% of pregnant women who reported being tested, two thirds of the tests were initiated by health staff. In fact, the majority of the women felt that HIV testing should be offered for all pregnant women. Acceptance of routine testing was high in other countries as well (75% of women accepted routine testing in one US study, 86% in another, 88% in Thailand, 71% in Zambia and slightly lower in India (59%) (Ananworanich *et al*., 2001; Fernandez *et al*., 2000; Stringer *et al*., 2005; Walter *et al*., 2001). An earlier study on acceptability of HIV testing in Vietnam, in Haiphong and Ho Chi Minh City, found that approximately 53 and 60% of antenatal attendees, respectively, considered routine testing for pregnant women acceptable (Dinh *et al*., 2005; Thu, 2002).

This study revealed that HIV testing was usually offered at the seventh to eighth month of gestation or at delivery, which is too late to offer the women the choice of abortion or to provide the optimal ARV prophylaxis regimen (HAART) (Bruyn, 2003; Oosterhoff *et al*., 2008; Stein *et al*., 2000). Our results suggest that many women seek ANC early in their pregnancy, which could make it possible for all pregnant women to be offered a provider-initiated HIV test early enough to provide HAART prophylaxis on time if the test were positive.

Limitations of the study: The 670 women in this study were not asked for the results of their HIV tests, nor tested separately, although that information could have added to the conclusions from the data. The existing record systems would also not make it possible to link the women and their test results. The focus of the study was on the availability and utilization of the counseling and testing services, not on the status of the respondents. We therefore preferred to maintain the confidentiality of HIV test results during the interviews. The women were asked to recall their use of HIV testing services and we have discussed the numbers who reported that they had been tested. However, it cannot be confirmed that they were, in fact, all tested for HIV; they may not have been clear on which tests were carried out, in the absence of good counseling before and after the testing. The interviews with the health staff confirmed, however, that pregnant women were usually tested for HIV before or at delivery.

The study population was obtained through sampling from a list of women who had delivered in the last 12 months, which means that women who chose to have abortions were excluded from the data. There are no records of women who have had abortions so this group would be difficult to capture for a study. The focus in the study was, however, on the system for HIV counseling and testing for pregnant women who want to deliver and might require PMTCT.

CONCLUSIONS

While, HIV testing services for pregnant women are integrated within existing ANC services, which have high coverage in Vietnam, there is still a significant gap between the services needed and those which are provided to HIV positive women. Not all women who visit lower level ANC facilities are, as of yet, offered HIV testing. Women who do get tested do not receive adequate counseling and may not be correctly referred to the service site that can best help them.

There is high acceptance of HIV testing among pregnant women, whether they consider themselves at risk or not. This finding, together with results from other studies reported in the literature, this suggests that the best solution for improved coverage of HIV testing for PMTCT would be to have the provider-initiated HIV test available at the commune level, where many women go for antenatal care. Additionally, in urban and peri-urban areas, the HIV test should be offered in the first trimester of gestation, because about 80% of pregnant women went for ANC in that period and that would give them more options for PMTCT if they tested HIV positive. At all levels, counseling needs to be greatly improved so that women can be guided to the services they need.

As a result of the evidence produced by this study, the guidelines now being developed for PMTCT in Vietnam will be modified to include the above recommendations, at least for geographical areas with a high number of mothers at risk.

ACKNOWLEDGEMENTS

Funding for the investigation described in the manuscript was provided by a research grant from the Directorate General of International Cooperation, Ministry of Foreign Affairs in the Hague, the Netherlands.

REFERENCES

Akanem, E.E. and A. Gbadefesin, 2004. Voluntary counseling and testing for HIV: A study on acceptablility by Nigerian women attending ANC clinics. Afr. J. Reprod. Hlth, 8: 91-100.

Ananworanich, J., P. Vannakit, U. Thisyakorn and P. Phanuphak, 2001. Prevention of mother-to-child transmission of HIV. Issues for South East Asia. Retrieved October 15, 2007, from http://www.hivpolicy.org/Library/HPP000815.pdf

Bedimo, A.L., R. Bessinger and P. Kissinger, 1997. Reproductive Choices among Hiv Positive Women (Abstract). Paper Presented at the National Conference Women Hiv Innovative Care Policy Prev, Los Angel Calif, May 4-7.

Boxall, E.H. and N. Smith, 2004. Antenatal screening for HIV are those who refuse testing at higher risk than those who accept testing? J. Public Hlth., 26: 285-287.

Bruyn, M., 2003. Safe Abortion for HIV-Positive Women with Unwanted Pregnancy: A Reproductive Right. Reproductive Health Matters, 11: 152-161.

CDC., 2004. Introduction of routine HIV testing in Prenatal care-Botswana. MMWR, 53: 1083-1086.

Dimbungu, R., D. Nduhura, A. Hadjipateras and E. Bajenja, 2004. Factors Inhibiting Access to Arvs Treatment and Pmtct Services: an Analysis of the Experience in North West Botswana (Abstract No. E12062). Paper Presented at the International Conference Aids, Bangkok.

Dinh, T.H., R. Detels and M.A. Nguyen, 2005. Factors associated with declining HIV testing and failure to return for results among pregnant women in Vietnam. AIDS and Behavior, 19: 1234-1236.

Ekanem, E.E. and A. Gbadefesin, 2004. Voluntary counseling and testing for HIV: A study on acceptability by Nigerian women attending ANC clinics. Afr. J. Reprod. Hlth., 8: 91-100.

Fernandez, M.I., T.F. Wilson, K.A. Fthier, F.B. Walter and C.l. Gay, 2000. Acceptance of HIV test during prenatal care. Public Health Reprod., 115: 460-468.

General Statistic Office, National Institute of Hygiene and Epidemiology and ORC Macro, 2006. Vietnam population and AIDS indicator survey in 2005. Retrieved October 20, 2007, from http://synergyaids.com/documents/VietNamPopandAIDSIndictorSurvey.pdf

General Statistics Office, NIHE and ORC Macro, 2006. Vietnam population and AIDS indicator survey in 2005. Retrieved July 27th 2007, from http://synergyaids.com/documents/VietNamPopandAIDSIndictorSurvey.pdf

Guay, L.A., P. Musoke, T. Fleming, D. Bagenda, M. Allen and C. Nakabiito *et al*., 1999. *Intrapartum* and neonatal single-dose *nevirapine* compared with *zidovudine* for prevention of mother-to-child transmission of HIV-1 in Kampala, Uganda. Lancet, 354: 795-802.

HCMC Provincial AIDS Standing Bureau, 2006. Evaluation of the prevention of mother-to-child transmission program in Ho Chi Minh City. Ho Chi Minh City: Health Department.

Hyodo, C., T. Tanaka and M. Kobayashi, 2000. Factors affecting attitudes toward mother-to-child transmission of HIV among pregnant women in a maternal and child hospital in Thailand. Int. J. STD. AIDS., 11: 406-409.

Jayaraman, G.C., J.K. Preiksaitis and B. Larke, 2003. Mandatory reporting of HIV infection and opt-out prenatal screening for HIV infection: Effect on testing rates. Canada Med. Assoc. J., 168: 679-682.

Kanshana, S. and R. Simonds, 2002. National program for preventing mother-child HIV transmission in Thailand: successful implementation and lessons learned. J. AIDS 16: 953-959.

Karamagi, C.A.S., J.K. Tumwine, T. Tylleskar and K. Heggenhougen, 2006. Antenatal HIV testing in rural eastern Uganda in 2003: Incomplete rollout of the prevention of mother-to-child transmission of HIV program? . BMC Int. Hlth. Hum. Rights, 6-6.

K. Thu Hong, Nguyen Thi Van Anh and J. Ogden, 2004. Understanding HIV and AIDS-related Stigma and Discrimination. Hanoi: ISDS.

Lindau, S.T., J. Jerome, K. Miller, E. Monk, P. Garcia and M. Cohen, 2006. Mothers on the margins: Implications for eradicating perinatal HIV. Soc. Sci. Med., 62: 59-69.

Malyuta, R., M.L. Newell, M. Ostergren, C. Thorne and N. Zhilka, 2006. Prevention of Mother-to-child Transmission of HIV Infection: Ukraine Experience to Date. European J. Public Hlth., 16: 123-127.

Mofenson, L.M., 2000. Technical Report: Perinatal Human Immunodeficiency virus testing and prevention of transmission. American Academy of Pediatrics, 106: E88.

MOH., 2004. HIV/AIDS Estimates and projections 2005-2010. Retrieved October 17, 2007, from http://unaids.org.vn/resource/topic/epidemiology/e%20and%20p_english_final.pdf

MOH. and GSO., 2003. Coverage of public health programs. National health survey 2001-2002. Hanoi: Medical Publishing House.

MOH, PMU-Project HIV/AIDS Global Fund and National Institute of Hygiene and Epidemiology. 2005. Baseline survey: The reality of care, counseling and support to people living with HIV/AIDS and community-based HIV interventions in Vietnam. Hanoi: Vietnam Ministry of Health.

MOH, UNFPA and Research Center for Rural Population and Health, 2006. Baseline Survey Report: Provision and Utilization of Reproductive Health Care Services in Seven UNFPA-supported Provinces in the 7th Country Programme. Hanoi: MOH.

Morch, E., Nguyen Thu Anh, Do Quan Ha and Nguyen Thi Thuy Hanh, 2006. Rapid assessment of the PMTCT program. Hanoi: Vietnam Ministry of Health.

National Committee for AIDS-Drug - Prostitution Control and MOH. 2006. Report 149/BC-BYT: Five-year review workshop on HIV/AIDS prevention and control in 2001-2005 and action plan for 2006-2010. Hanoi: Medical Publishing House.

Oosterhoff, P., Nguyen Thu Anh, Pham Ngoc Yen, A. Hardon and P. Wright, 2007. Dealing with a positive result: Risks and responses in routine HIV testing among pregnant women in Vietnam. AIDS Care (in press).

Oosterhoff, P., Nguyen Thu Anh, Pham Ngoc Yen, P. Wright and A. Hardon, 2008. Towards a continuum of care in prevention of mother to child transmission programs in northern Vietnam. Exploring prevention of mother to child transmission programs in Hanoi and Thai Nguyen. Hanoi: MCNV. Retrieved April 6, 2009, from http://www.mcnv.nl/uploads/media/BOOK_Care_for_Mother_and_Child.pdf

Perez, F., 2006. Acceptability of routine HIV testing ("opt-out") in antenatal services in two rural districts of Zimbabwe. J. Aquir. Immune. Defic. Syndr., 41: 514-520.

Piwoz, E.G. and E.A. Preble, 2002. Prevention of Mother-to-Child Transmission of HIV in Asia: Practical Guidance for Programs. Washington: The LINKAGES Project.

Simpson, W.M., F.D. Johnstone, F.M. Boyd, D.G. Goldberg, G.J. Hart and R.J. Prescott, 1998. Uptake and acceptability of antenatal HIV testing: Randomized controlled trial of different methods of offering the test. BMJ., 316: 262-267.

Simpson, W.M., F.D. Johnstone, D.J. Goldberg, S.M. Gormley and H.J. Graham, 1999. Antenatal HIV testing: Assessment of a routine voluntary approach. BMJ, 318: 1660-1661

Stein, E., E. Handelsman and R. Matthews, 2000. Reducing perinatal transmission of HIV: Early diagnosis and interventions during pregnancy. Journal of Midwifery and Women's Health, 45: 122-129.

Stringer, J.S.A., M. Sinkala, C.C. Maclean, J. Levy, C. Kankasa and A. DeGroot *et al*., 2005. Effectiveness of a city-wide program to prevent mother-to-child HIV transmission in Lusaka, Zambia. AIDS, 19: 1309-1315.

Thu, T.T.N., 2002. Acceptance of HIV screening test among pregnant women attending antenatal care unit, Tu Du hospital, Ho Chi Minh City, Vietnam. Abstract of Master Thesis. Mahidol University.

Tuan, N.A., N.T. Hien, T.Q. Huan, N.T. Long, T. Ha and V.T.B. Diep *et al*., 2005. HIV prevalence and AIDS indicators among general population aged 15-49 in urban and rural area in Vietnam. Practical Medicine, 528+529, 319-324.

UNAIDS., 2006. HIV intervention map for Vietnam. Retrieved October 26, 2007, from http://unaids.org.vn/facts/map/index.htm

UNAIDS. and WHO. 2006. AIDS epidemic update: December 2006. Retrieved October 17, 2007, from http://data.unaids.org/pub/EpiReport/2006/2006_EpiUpdate_en.pdf

VAAC., 2005. Report on HIV sentinel surveillance survey in 2005. Hanoi: Vietnam Ministry of Health.

Walmsley, S., 2003. Opt in or opt out: What is optimal for prenatal screening for HIV infection? CMAJ, 168: 707-708.

Walter, C.B., R.A. Royce, M.I. Fermandez, J. Dellovitz, J.R. Ickovics and M.A. Lampe, 2001. New mothers: Knowledge and attitudes about prenatal human immunodeficiency virus infection. Obstet. Gynecol. 97: 70-76.

WHO. and UNAIDS. 2007. Guidance on provider-initiated HIV testing and counseling in health facilities. Retrieved October 15, 2007, from http://whqlibdoc.who.int/publications/2007/9789241595568_eng.pdf