

HIV-INFECTED WOMEN DELIVERING WITHOUT ANTENATAL CARE IN A LARGE BANGKOK HOSPITAL, 1997

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Abstract. The aim was to estimate the proportion of HIV-infected women giving birth at a large Bangkok hospital who had not received antenatal care (ANC) and to identify predictors of not receiving ANC. At Rajavithi Hospital, Bangkok, women with ANC are routinely tested for HIV at their first antenatal visit; women without ANC are routinely tested at delivery. Hospital staff interview all HIV-infected women and record sociodemographic and HIV risk factor information in a delivery room log book. We abstracted and analyzed data recorded in this log book for all HIV-infected women who gave birth at Rajavithi Hospital in 1997. Of 303 HIV-infected women who gave birth, 75% had received ANC at Rajavithi Hospital, 10% had received ANC at other locations, and 15% had not received ANC. On multivariate analysis, HIV-infected women who had received ANC were more likely to work or have partners who worked in construction (25% vs 11%; adjusted odds ratio [AOR]; 2.6; $p = 0.03$) or have a history of injection drug use (4% vs 0.4%; AOR = 20.8; $p = 0.02$) than those who had not received ANC, but were less likely to report their current partner as a risk factor for acquiring HIV infection (22% vs. 40%; AOR = 0.4; $p = 0.05$). Because a substantial number of HIV-infected women give birth in this large Bangkok hospital without receiving ANC, interventions are needed to increase the number of HIV-infected women who receive ANC and to prevent perinatal HIV transmission from HIV-infected pregnant women who have not received ANC.

INTRODUCTION

Antenatal care (ANC) has advantages for pregnant women and their children (World Health Organization, 1994; American Academy of Pediatrics, 1999) including lower rates of perinatal mortality (Blondel *et al*, 1993), lower rates of preterm delivery (Abotalib *et al*, 1998), and higher infant birth weight (Gortmaker, 1979; Showstack *et al*, 1984). Moreover, as HIV counseling and testing are becoming routine in some parts of the world, including Thailand, it is often during ANC that women learn their HIV status. For pregnant women found to be HIV-infected, ANC additionally allows use of interventions to prevent mother-to-infant HIV transmission, such as antenatal zidovudine, caesarean section, and formula feeding (Shaffer *et al*, 1999; World Health Organisation, 1998). Al-

though short antenatal zidovudine regimens are now being used to prevent perinatal HIV transmission in Thailand and other developing countries, a woman still must receive ANC to use them. Not receiving ANC has been identified as an important barrier to preventing perinatal HIV transmission in the United States (The Institute of Medicine, 1998) but has not been examined as a barrier in Thailand.

At Rajavithi Hospital, which has one of the largest maternity services in Bangkok, the prevalence of HIV infection among the 14,223 women who delivered in 1997 was 2.1%, and was substantially higher among the 1,182 women who had not received ANC at Rajavithi (6.2%) than among the 13,041 women who had (1.9%). To develop interventions to increase use of ANC and prevent mother-to-infant HIV transmission among women who have not received ANC, it is important to learn more about HIV-infected women who give birth without receiving ANC and factors associated with not receiving ANC. Our objective was to use existing records to identify factors associated with not receiving ANC among HIV-infected women who gave birth at Rajavithi Hospital.

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METHODS

Rajavithi Hospital is a centrally located, tertiary, government hospital that primarily serves a population with low socioeconomic status. At Rajavithi Hospital, women who attend the antenatal clinic are routinely tested for HIV infection, hepatitis B infection, and syphilis at their first visit. At that visit, each woman receives an antenatal card which indicates that she received ANC at Rajavithi. Upon admission for labor, women with no antenatal card are asked whether they received ANC elsewhere and whether they had an HIV test during ANC. Women in labor who did not receive ANC or who received ANC elsewhere and do not have a record of an antenatal HIV test are routinely tested during labor. Women whose HIV status is still unknown at delivery give birth in a special room in the regular labor ward. All births to women known to have HIV infection, other sexually transmitted infections, or other communicable diseases take place in a special ward; staff record information on the HIV-infected women in a separate delivery log book in this ward.

Hospital nursing staff interview each HIV-infected woman upon admission in labor or after delivery and record information on her sociodemographic factors, husband or partner, pregnancy and delivery, and HIV risk factors in this log book. Information about HIV risk is elicited by asking, "Can you tell me how you think you were infected with HIV?" If a woman cannot answer this question, she is asked about a standard set of possible HIV risk factors: commercial sex work, injection drug use, whether her partner is HIV-infected, and whether any previous partner is HIV-infected. These responses are coded 1 through 4; an additional category (5) is entered if the woman reports no known risk factor. These procedures are overseen by the head nurse of the ward.

For this study, we audited the log book for the 1997 calendar year. Two research nurses transcribed the relevant information onto data collection forms, which included only the woman's hospital number as an identifier. To verify whether the woman had received ANC at Rajavithi and to determine whether the woman had registered for ANC but did not return after pretest or posttest HIV counseling, we cross-checked records with computerized information collected in the Rajavithi antenatal clinic. Data were double-entered in Epi Info, version 6 (Centers for Disease Control and Prevention, Atlanta, Georgia, USA) and analyzed

by using Statistical Analysis Software (SAS), version 6.12 (SAS Institute Inc, Cary, NC, USA).

We compared the variables collected from the log book for women who had received ANC and women who had not received ANC, by using the chi-square test or Fisher's exact test. All significant ($p < 0.1$) variables, except the HIV status of the husband (or current partner) which was missing for 148 women, were included in a multiple logistic regression model. Variables included in the model were whether either the woman or her husband was a construction worker, the husband's employment status and occupational skill level, whether the woman injected drugs, and whether the husband was HIV infected. Construction work was analyzed as a separate occupational category because construction workers have been found to use health care services relatively infrequently. Adjusted odds ratios and their 95% confidence intervals were calculated for the model.

RESULTS

Of the 303 HIV-infected women who gave birth at Rajavithi during 1997, 258 (85%) had received at least some ANC, and 45 (15%) had not received ANC. Of the 258 women who had received ANC, 30 had attended another hospital or clinic, 10 had come to Rajavithi for their first ANC visit (which includes pretest HIV counseling and testing) but failed to return for visits before delivery, and 9 had made two or three ANC visits to Rajavithi but had not returned after posttest counseling until delivery (Fig 1).

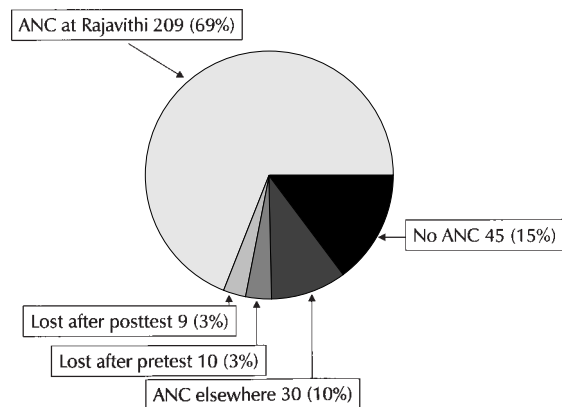


Fig 1—Antenatal care (ANC) among HIV-infected women who gave birth at Rajavithi Hospital, 1997 (N=303).

Table 1
 Characteristics of HIV-infected women
 delivering at Rajavithi Hospital, their partners,
 and their deliveries, Bangkok, 1997 (N=303)^a.

	No.	%
Women		
Under 20 years of age	37	12
Work status		
working: semiskilled	26	9
working: unskilled	177	58
unemployed	100	33
Construction worker	20	7
Resides in Bangkok	268	88
HIV risk ^b		
commercial sex work	34	11
injecting drug use	3	1
sex with current partner	112	37
sex with previous partner	181	60
none reported	39	13
Partner/husband		
Father of child absent (dead/separated)	24	8
Work status		
working: semi/skilled	57	20
working: unskilled	209	75
unemployed	13	5
Construction worker	30	11
Known to be HIV-infected	93	60
Pregnancy/delivery		
Primiparous	168	57
Vaginal delivery	265	88
Birth weight < 2,500 g	41	14

^aSome denominators are <303 because of missing data.

^bSelf-reported: more than one risk factor may be reported.

Characteristics of the HIV-infected women who delivered at Rajavithi in 1997 are shown in Table 1. Most women worked at unskilled jobs during their pregnancy, including 7% who were construction workers. Although injection drug use was rare, about 10% of the women had a history of commercial sex work and 60% reported that they thought they had acquired HIV through a previous partner.

In univariate analysis, several variables differed significantly for the 258 women who had received ANC and the 45 who had not (Table 2). Compared with women who had received ANC, more of the women who had not received ANC

worked as unskilled construction workers or had partners who were unskilled construction workers. Fewer of the women who had not received ANC reported that their partner had a semiskilled job. More of the women who had not received ANC had a partner who was not infected with HIV and more reported injection drug use. The woman's age, place of residence, parity, whether she was a commercial sex worker, presence or absence of her partner, and her baby's birthweight were not significantly associated with lack of ANC ($p > 0.10$).

In multivariate analysis, independent predictors of not receiving ANC were working in construction (woman or partner) [adjusted odds ratio (AOR) = 2.6, 95% confidence interval (CI) = 1.1 - 6.2] and injection drug use (AOR = 20.8, 95% CI = 1.6 - 263). In addition, women who had not received ANC were less likely to report their current partner as a risk factor for HIV infection (AOR = 0.4, 95% CI = 0.2 - 0.9).

DISCUSSION

In this urban Bangkok hospital, where a clinical trial of antenatal, short-course zidovudine was recently completed (Shaffer *et al*, 1999), women diagnosed with HIV infection during ANC and who consistently receive ANC now have access to this effective regimen. Our review of data from log books for HIV-infected women who gave birth in 1997, just before the completion of the clinical trial, shows that about 30% of the HIV-infected women who gave birth at the hospital could not feasibly receive the short-course zidovudine treatment--15% did not receive ANC before delivery and 16% were either lost to follow up or switched hospitals.

In countries such as Thailand which have well-developed ANC programs, failure to receive ANC may be an important barrier to the implementation of interventions administered late in pregnancy to reduce perinatal HIV transmission. In addition, lack of ANC or unavailability of records at delivery can cause a delay in postpartum HIV interventions such as avoiding breastfeeding. This problem has been observed in other countries with perinatal HIV prevention programs. For instance, in some parts of the United States, 20% of HIV-infected women give birth without having received antenatal care (Turner *et al*, 1995; CDC, 1998).

In our study, employment status, specifically construction work, was an important predictor of

Table 2

Univariate analysis: factors associated with lack of antenatal care among HIV-infected women who gave birth at Rajavithi Hospital, Bangkok, Thailand, 1997.

	No ANC	ANC	OR	95% CI	p-value
	n = 45 %	n = 258 %			
Woman					
injection drug use	4	0.4	12.0	1.1 - 134.7	0.06
Partner/husband					
work status					
working: semi/skilled	7	23	1.0		
working: unskilled	88	73	3.6	1.1 - 12.5	
unemployed	5	5	3.3	0.5 - 22.0	0.09
HIV-negative*	60	40	2.6	1.0 - 6.7	0.05
reported as woman's HIV risk factor	22	40	0.4	0.2 - 0.9	0.03
Construction work, woman or partner	25	11	2.7	1.2 - 6.2	0.01

* Data were missing for 148 women because data were available only for partners who were present at time of delivery or were present in the clinic before delivery and who consented to HIV testing. Therefore, these data are from 155 partners of women (did not receive ANC, n=20; received ANC, n=135).
ANC: antenatal care; OR: odds ratio; CI: confidence interval.

lack of ANC for HIV-infected women in Bangkok. In a study based on earlier ANC data from the same hospital (Siriwasin *et al*, 1998), construction work was not associated with HIV infection, although that study was limited to women who had registered for ANC. In Bangkok, construction work is widely available, and women often come (alone or with their families) from outside Bangkok to work in construction. Construction workers typically live onsite for several months at a time and move from site to site. As a transient resident of a given area, a pregnant woman working in construction may not be able to take time off from work or may not know where to go for ANC.

Other factors associated with the lack of ANC were having an HIV-uninfected partner and injection drug use. That these women were infected outside the marriage could indicate less social support, less economic support, and less access to care. It is also possible that our finding that women who did not receive ANC are more likely to have HIV-uninfected partners is due to confounding with construction work. In our sample, more of the women who worked in construction (or whose partners worked in construction) had partners who were HIV-negative ($p = 0.02$). Women who work in construction or who are married to construction workers are more likely to have HIV-uninfected partners than are those who do not ($p = 0.02$). The low level of ANC among injecting drug users

(McCalla *et al*, 1991; Melnikow and Alemangno, 1993), including those who are HIV-infected (Turner *et al*, 1995), has been reported in the United States. However, the prevalence of injecting drug use (1%) in this sample was low, consistent with the low prevalence of injection drug use among women in Thailand: in drug-treatment clinics in Bangkok, 95% of the clients are men (Kitayaporn *et al*, 1998).

Our study did have limitations. Because the data were abstracted from existing records, the variables available for analysis were limited. In studies in other countries, the lack of ANC has been associated with low socio-economic status, living in the poorer part of a city, and distance from a hospital (Hamilton *et al*, 1987; Keeping *et al*, 1980), factors which we could not study. It is possible that some of the HIV-infected women in our study knew their HIV status, and that psychosocial reasons, which have been associated with failure to return for HIV test counseling in other countries (Ladner *et al*, 1996; Temmerman *et al*, 1995; Slutsker *et al*, 1992; Catania *et al*, 1990), were associated with their not starting ANC or their failure to return after HIV testing. Despite our inability to identify all the factors associated with lack of ANC, our study and others (Bunnell *et al*, 1999) illustrate that hospital records kept for other purposes can be valuable sources for determining gaps in service delivery, planning services and interventions, and improving practice. In the

future, such data sources may also be worthwhile for evaluating perinatal interventions. Our findings from this large centrally located Bangkok hospital may not be generally applicable to other settings in Thailand, particularly rural settings, but they may be representative of other urban settings in Southeast Asia.

Our findings can help guide interventions for increasing ANC use by pregnant HIV-infected women in Bangkok, and perhaps elsewhere. Creative measures, such as having health educators visit construction sites to speak with workers and employers about the importance of antenatal care and disease prevention may increase registration for ANC among construction workers who are pregnant or whose partners are pregnant. Adding messages about perinatal HIV prevention to mass media campaigns in Thailand could be beneficial. The World Health Organization recommends broadcasting messages through a variety of media -- radio, newspaper, television, plays, and school curricula, as well as directly through health care workers -- to encourage pregnant women to seek ANC (World Health Organization, 1994). These messages are recommended to be consistent and to encourage a minimum of four visits (beginning early in pregnancy) to an antenatal clinic.

In addition to increasing antenatal clinic attendance, interventions are needed for HIV-infected women who seek medical care only at the time of delivery. Recent data suggest that antiretroviral treatment started in labor or immediately after birth can also reduce transmission risk (Wade *et al*, 1998; Saba, 1998; Guay *et al*, 1999). However, developing such interventions will be challenging: to be effective, they require testing, counseling, and intervening during labor or immediately postpartum. As interventions with proven efficacy become more widely available for pregnant HIV-infected women worldwide, the importance of ANC, particularly for HIV-infected pregnant women and pregnant women who do not know their HIV status, will be heightened.

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