When Do HIV-Infected Women Disclose Their HIV Status to Their Male Partner and Why? A Study in a PMTCT Programme, Abidjan.

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Full Title

When do HIV Infected Women Disclose their HIV Status to their Male Partner and Why?

Experience from a Prevention of Mother-To-Child-Transmission Programme in Abidjan, Côte d'Ivoire

Short Title

Disclosure of Women's HIV-Status

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ABSTRACT

Background: In Africa, women tested for HIV during antenatal care are counselled to share with their partner their HIV-test result and to encourage partners to undertake HIV-testing. We investigate, among women tested for HIV within a prevention of mother-to-child transmission of HIV (PMTCT) programme, the keys moments for disclosure of their own HIV-status to their partner and the impact on partner HIV-testing.

Methods and findings: Within the Ditrame Plus PMTCT project in Abidjan, 546 HIV-infected and 393 HIV-negative women were tested during pregnancy and followed-up for two years after delivery. Circumstances, frequency and determinants of disclosure to the male partner were estimated according to HIV-status. The determinants of partner HIV-testing were identified according to women's HIV-status. During the two-year follow-up, disclosure to the partner was reported by 96.7% of the HIV-negative women, compared to 46.2% of HIV-infected women (χ^2=265.2, df=1, p<0.001). Among HIV-infected women, privileged circumstances for disclosure were just before delivery, during early weaning (at 4 months to prevent HIV postnatal transmission) or upon resumption of sexual activity. Formula feeding by HIV-infected women increased the probability of disclosure (adjusted odds ratio: 1.54, 95% confidence interval: 1.04-2.27, Wald test=4.649, df=1, p=0.031) whereas household factors such as having a co-spouse or living with family reduced the probability of disclosure. The proportion of male partners HIV-tested was 23.1% among HIV-infected women and 14.8% among HIV-negative women, respectively (χ^2=10.04, df=1, p=0.002). Partners of HIV-infected women who were informed of their wife's HIV-status were more likely to undertake HIV-testing than those not informed (37.7% versus 10.5%, χ^2=56.36, df=1, p<0.001).

Conclusions: In PMTCT programmes, specific psycho-social counselling and support should be provided to women during the key moments of disclosure of HIV-status to their partners (end of pregnancy, weaning, and resumption of sexual activity). This could contribute to improving compliance with the advice given to prevent postnatal and sexual HIV transmission.

Key words: Prenatal HIV-testing, Africa, women, disclosure, male partner HIV-testing.

Introduction

At the end of 2006, 63% of all people living with HIV/AIDS lived in sub-Saharan Africa [1]. Programmatic strategies for the prevention of sexual transmission of HIV need urgent development, assessment and scaling-up [2]. In sub-Saharan Africa, prevention should mainly take place within the couple. In African countries confronted with an HIV/AIDS pandemic, most cases of sexual transmission of HIV occur within stable relationships. In 2006, 59% of HIV-infected adults were women [1] and most of them had contracted HIV through sexual transmission from their stable partner [3].

Most studies available on sexual relations within the couple have shown lack of sexual prevention within stable relationships [4, 5]. The prevention of sexual transmission of HIV within the couple involves HIV-testing for each couple member and the systematic use of condoms if one of the couple members is HIV-infected or until both couple members have been tested HIV-negative and have adopted safe sex practices. Research studies exploring how the risk of sexual transmission of HIV infection is managed within couples in sub-Saharan Africa show that these simple principles are unfortunately rarely implemented [6-8]. Sexual relations with the regular partner are rarely protected, because they are perceived as risk-free sexual relations [4, 5]. Nevertheless, in populations with a high prevalence of HIV infection, those who engage in conjugal sexual relations are at risk of infection. HIV testing of each partner and conjugal exchange on serostatus remain the only way to evaluate the risk of HIV transmission in conjugal sexual relations. But HIV testing has remained infrequent in Africa [9].

With the implementation of prevention of mother-to-child transmission of HIV (PMTCT) programmes in African countries, prenatal HIV counselling and testing is proposed to many pregnant women. Hence these women are often the first to be HIV-tested within couples [10]. These women are then counselled to share with their partner their own HIV-test result, and they become responsible for encouraging their partner to undertake HIV-testing. But the dialogue on sexual activity or HIV/AIDS within the couple is not easy, especially when women discover that they are HIV-infected [11-13]. Available studies have documented the experience of women's disclosure to their partner and reported

the barriers to disclosure, such as women's fears related to stigmatisation, to family rejection, to a breach of confidentiality or to accusations of infidelity [14]. But these studies did not explore the dynamic of the woman's decision when she informed her partner of her HIV status. Better understanding of the circumstances and events leading to women's disclosure to their partner is required, however, in order to better support them in this process. In this paper, we investigated which women who accepted HIV-testing within a PMTCT programme reported their HIV-status to their partner, and when they did so between HIV testing in pregnancy and 24 months after delivery. We also examined whether or not telling the partner had led to HIV testing of the partner.

Population and Methods

Ditrame Plus Research Programme

The ANRS 1201/1202/1253 Ditrame Plus programme was the PMTCT research implemented in Abidjan, Côte d'Ivoire in March 2001 [15-17]. HIV testing was systematically proposed at the first antenatal consultation (ANC) to all pregnant women aged 18 years or over who attended one of the seven antenatal clinics located in two poor, densely populated districts of Abidjan. After signing an informed consent form, women were regularly followed-up for two years after delivery, every three months during the first year and every six months during the second year.

Consenting HIV-infected women were systematically invited to be included in a cohort offering PMTCT interventions fully described elsewhere [16, 17]: short-course peri-partum antiretroviral regimens and exclusive formula feeding from birth until 9 months post-partum or exclusive breastfeeding with early cessation at 4 months. A sub-group of HIV-negative pregnant women were also included and followed-up in another cohort offering HIV counselling, contraception access and access to care. During pre- and post-test counselling and post-partum follow-up, all women were informed regarding Sexually Transmitted Infections (STIs) including HIV/AIDS, and the use of condom. After delivery, they were also offered postnatal contraception one month after delivery and free provision of contraceptives including condoms.

HIV-negative and HIV-infected women attended different clinics. During each follow-up visit, standardised questionnaires were administered to all women to document the disclosure of HIV-status to the partner, the resumption of sexual activity, and socio-demographic characteristics. The same standardised questionnaire was used in the two prospective cohorts of HIV-infected and HIV-negative women for comparative analysis.

Population

From March 2001 to June 2003, 980 pregnant women tested for HIV during ANC and having delivered were included within the Ditrame Plus programme. The average age of gestation of HIV-infected pregnant women was 36 weeks [range: 26-43] at enrolment. Twenty-three (2.3%) women lost to follow-up before the visit scheduled at one month after delivery and 18 (1.8%) women having remained without any partner during the follow-up period were excluded for this analysis. A total of 939 women, of whom 546 were HIV-infected and 393 HIV-negative, were included for this analysis. Ninety per cent of HIV-negative women and 85% of HIV-infected women remained in the study through the 18-month post-partum appointment (χ^2=6.603, df=1, p=0.010).

Disclosure of HIV-Status to Partner

We analysed when women disclosed their HIV status to their partner. As the exact date was not known, we estimated the disclosure date as the mid-period between the date of the previous follow-up visit and the date of the visit when the woman reported having disclosed her status. We then compared this period to specific events occurring between prenatal HIV-testing and at the time of resuming sexual activity. Specific questions were asked at each visit on the date of resumption of sexual activity and the date of cessation of breastfeeding. We analysed the distribution of the disclosure moment between HIV-testing and the end of the follow-up, in relation to the delivery, the resumption of sexual activity, and weaning by women who chose to breastfeed. Figure 1 illustrates the distribution of the time of disclosure, between HIV-testing and the end of the follow-up, in relation to delivery, the resumption of sexual activities, and weaning for breastfeeding women. (See appendix for details of how the curve was constructed.)

Partner's HIV-Testing

Only partners HIV-tested in the two years prior to the start of the Ditrame Plus programme or after the start of the programme, and whose HIV result was known, were taken into account in this analysis (15 partners tested for HIV before March 1999 were therefore excluded). The proportion of partners tested for HIV was described according to the socio-demographic characteristics of the women, of their partner, and of their couple.

Statistical Tools

Statistical analyses were first performed on all women followed-up and then within each cohort of women according to their HIV status. Univariate analyses comprised: variables related to the woman (i.e. age, religion, education level, remunerated activity, parity, existence of a co-spouse, type of habitat, number of cohabiting family members, HIV status and clinical AIDS stage for HIV-infected women, according to the WHO Staging System of HIV Infection and Disease), variables related to the partner (i.e. age, education level and HIV status) and variables related to the infant followed-up within the project (i.e. infant feeding practice implemented at birth and child survival). Group comparisons used non-parametric Mann–Whitney U test for quantitative variables, and χ^2 or Fisher's exact tests for qualitative variables. Multivariate logistic regressions were performed and included all variables. All statistical analyses were conducted with SPSS for Windows (version 12.0; SPSS Inc.).

Results

Characteristics

Table 1 describes the socio-demographic characteristics of both cohorts of women and their partner. HIV-infected women were slightly older than their HIV-negative counterparts, and more often lived within a polygamous household (21.8% versus 12.5%, χ^2=13.53, df=1, p<0.0001). Male partners were on average more educated and older than their wives. All HIV-negative women who delivered live infants practiced breastfeeding. Among HIV-infected women, 243 (44.5%) breastfed their infant with early cessation at 17 weeks in median (IQR: 13-32), 283 (51.8%) practiced formula feeding, and for 18 (3.7%) the information was not reported. Among these women, 88.9% of HIV-infected women who practiced breastfeeding and 92.5% who practiced formula feeding complied with the choice expressed prior to delivery (χ^2=2.147, df=1, p=0.143).

Disclosure of Women's HIV-Status to their Partner

Most of the HIV-negative women (96.7%) disclosed their HIV-result to their partner, compared to 46.2% of HIV-infected women (χ^2=265.2, df=1, p<0.001). Among HIV-infected women who disclosed their HIV status, 82.1% declared that their partner had a "positive" reaction, i.e. was understanding and provided moral support. Among the women declaring "negative" reactions from their partner after disclosure, 10 (4%) were blamed for not discussing with him prior to HIV-testing, 1 (0.4%) experienced violence, 6 (2.4%) ended their relation with their partner and 5 (2%) declared their partner did not believe their wife's positive test result.

HIV-infected women were less likely to disclose their HIV status when they lived with their own family but without their partner, than when they lived with their partner only (adjusted odds ratio [OR]=0.29, confidence interval [95%CI]: 0.17-0.50, Wald test=20.68, df=1: p<0.001) and when they had a co-spouse, versus being the only wife (OR=0.51, 95%CI: 0.31-0.83, Wald test=7.19, df=1, p=0.007). The probability of disclosing to the partner was higher for HIV-infected women having chosen formula feeding compared to those initiating breastfeeding after birth (OR=1.54, 95%CI: 1.04-

2.27, Wald test=4.649, df=1: p=0.031) (Table 2). No significant correlation was found between disclosure and whether or not the woman was engaged in remunerated activity.

The majority of HIV-infected women disclosed their HIV-status to their partner before delivery. Among breastfeeding HIV-infected women having disclosed their HIV-status to their partner, 55.7% disclosed before delivery, 17% between delivery and the resumption of sexual activity, and 19% between delivery and weaning. Among HIV-infected women who did not breastfeed, 65.8% disclosed before delivery and 8% disclosed between delivery and resumption of sexual activity.

Disclosure before delivery was related to child feeding choice: among women having disclosed their HIV-status before delivery, 34.6% decided to breastfeed and 64.8% decided not to breastfeed prior to delivery (χ^2=12.35, df=1, p<0.001).

Among the women who disclosed after delivery, we observed peaks of disclosure just around the period of weaning and around the resumption of sexual activity (Fig. 1).

Partners' HIV-Testing

Overall, 184 (19.6%) partners were tested for HIV. Partners of HIV-infected women were more likely to be tested than partners of HIV-negative women (23.1% versus 14.8%, χ^2=10.04, df=1, p=0.002). Among the 184 couples HIV-tested, 54 (29.4%) were seroconcordant HIV-infected, 56 (30.4%) were seroconcordant HIV-negative and 74 (40.2%) were serodiscordant couples. In the serodiscordant couples, two women were HIV-negative and 72 women were HIV-infected.

For partners of HIV-negative women, demographic variables such as education and marital status (monogamous or polygamous) were not correlated with HIV-testing (Table 3). The only variable significantly associated to partner HIV-testing was previous HIV testing of the partner, (44.4% versus 14.1%, χ^2=6.452, df=1, p=0.011). For partners of HIV-infected women, on the other hand, partners were more likely to be tested if they were educated (46.3% versus 16.7%, χ^2=12.12, df=1, p<0.001), informed of their wife's infection (37.7% versus 10.5%, χ^2=56.36, df=1, p<0.001), in monogamous couples (27.6% versus 6.7%, χ^2=22.93, df=1, p<0.001), and if they had previous HIV-testing

experience (100% versus 22%, χ^2=20.22, df=1: p<0.001).

Discussion

In this study, almost all (96.7%) women who had been informed of their HIV-negative status notified their partner. Among HIV-infected women, less than half (46.2%) had disclosed to their partner at the end of the follow-up period. We have also highlighted the existence of three privileged moments for HIV-infected women's disclosure to their partner: before delivery, upon resumption of sexual activity, and around early weaning for breastfeeding women. For HIV-negative women, we had already described in a previous study that most of them informed their partner of their testing before delivery [7]. Only one in five male partners were tested for HIV. Partners informed of their wife's HIV-status were more likely to undertake HIV-testing, in particular among HIV-infected women.

This study was conducted within a population of women participating in a research programme proposing systematic prenatal HIV-testing and counselling but not in the operational context of PMTCT services delivery. The psychosocial support of women in our study may have been stronger than in an operational context. Hence the proportions of women who disclosed their HIV-status to their partner and the proportion of partners HIV-tested may be higher than those obtained in an operational context. Another weakness is that we did not study the partner's reaction over a long period of time. Hence the negative reactions of partners may be underestimated. However, two studies reported in Tanzania and Burkina Faso had previously showed that after sharing information, the male partners proved to be understanding and the majority of the couples remained stable [19, 20]. Despite these weaknesses, our prospective study design provides reliable and original information on the timing of when women disclose their HIV-status to their partner. Our timing data were very precise before delivery (66% of disclosure) because women were seen every other week. After delivery, women were only seen every three months and data were less precise, but even in this period we had precise information on the relative position of the different events: disclosure, resumption of sexual activity, and weaning.

Our results reveal that, in spite of the continuous counselling and psychosocial support provided within the Ditrame-Plus programme, the proportion of HIV-infected women having disclosed their

status to their partner is comparable to what had been observed in the context of a previous PMTCT research programme conducted on the same sites in Abidjan and with no specific support by the socio-medical team for notifying the partner [18]. This lack of evolution over time underlines the difficulties HIV-infected women encounter in discussing their own HIV-status within the couple and raises the persistent fear of social stigma associated with HIV in this context. Nevertheless, these HIV-infected women declared during qualitative interviews published elsewhere [8] that disclosing their status to their partner seemed essential to them, so the women could benefit from comfort and support to make important decisions for their infant and their couple. Most (82%) of the partners of HIV-infected women informed were understanding and provided their wife with moral support. Negative reactions of the male partner (violence, separation) existed but they were rare.

The analysis of disclosure over time showed that two-thirds of the HIV-infected women who disclosed their HIV-status to their partner reported they did so before delivery. This result may be related to the fact that during pregnancy, women were asked to say how they intended to feed the child they were carrying, i.e., formula feeding from birth or exclusive breastfeeding with early cessation at four months. Two thirds (64.8%) of women who had disclosed their HIV-status before delivery had opted for formula feeding, versus 50% among women who did not disclose before delivery. Indeed, in this context where breastfeeding is widely practiced and prolonged [21], it was important for HIV-infected women opting for formula feeding to receive their partner's support. Hence they were more likely to disclose their HIV-status before delivery, i.e. before implementation of the infant feeding choice. This is an important factor to take into account in the prevention of MTCT. Similarly, for women who breastfed their child at birth, the period around weaning appeared to be a critical moment for disclosure to the partner [22]. The median duration (4 months) of total breastfeeding among HIV-infected women in the Ditrame Plus study was considerably shorter than what was previously described in Abidjan where median duration was estimated to be around 17 months [21]. In the Ditrame Plus programme, we observed that failure of early weaning was linked to pressure from the woman's family-in-law. [17]. Breastfeeding HIV-infected women who had not disclosed their HIV-status before delivery may have chosen to do so at weaning time, in order to justify early weaning to

the partner and get his support in front of the family and community. An earlier study conducted in Abidjan and Bobo-Dioulasso noted that the partner's opinion was the first obstacle to adoption of safe infant feeding practices to prevent HIV transmission through breastfeeding [23]. The implementation of alternatives to prolonged breastfeeding for PMTCT depends highly on the conjugal and social environment of each HIV-infected woman.

Finally, a third event appeared to be essential in the disclosure process, the resumption of sexual activity after delivery. When women were informed of their HIV infection, they received counselling on preventing transmission via sexual relations. When they resume sex, proposing the use of condoms to their partner is complex and arouses suspicion if the partner is unaware of his wife's HIV status. Disclosing her HIV infection may seem necessary to avoid HIV transmission within their couple.

At these key moments for disclosure that we identified, the psychosocial support for women may be intensified, in order to increase the proportion of women who manage to disclose their HIV-status to their partner. The women who would benefit from such support around disclosure are those who encounter difficulties in the present programme in talking with their partner, i.e., mainly the youngest women with less conjugal experience, and those whose living conditions are not suitable for conjugal confidentiality (shared housing, no co-residence with the male partner, or presence of a co-spouse).

Conjugal organisation seems to be an important determinant of disclosure. Women co-habiting with their partner were more likely to share their test result, regardless of their HIV status. Similar results were observed in a Zambian study on individual and couple HIV counselling and testing [24]. Cohabitation indeed provides more space and time for discussing such sensitive issues as HIV infection. By contrast, living in polygamous households or in shared housing reduces the likelihood of women's disclosure, probably due to reduced confidentiality. It seems that women who do not live with their partner and/or who have a co-spouse are less likely to trust their partner.

Only 19.6% of male partners were tested for HIV. The programme did not offer any couple HIV-counselling and testing, but free HIV counselling and testing were available to any willing partner. Three reasons may explain the small proportion of men tested for HIV [7]: the fear of discovering his HIV-positive status; the need for him to personally and actively request HIV-testing (unlike pregnant

women, who were offered HIV counselling and testing during antenatal care); and the belief that he had the same HIV-status as his wife. The third reason, i.e., the belief that couples cannot be serodiscordant, may explain why only 14.8% male partners of HIV-negative women were tested. A similar result was found in Tanzania: only 16% of partners informed of their wife's HIV-status said they would like to go for testing [11].

Partners' HIV-testing was significantly correlated to their previous HIV-testing experience, in addition to others factors such as education level and sharing of woman's HIV-test result. Earlier experience with HIV testing seems to diminish the fear associated with the test, so it would be valuable to multiply the occasions to be HIV-tested.

In conclusion, our study suggests that the implementation of specific psychosocial counselling and support for HIV-infected women at the end of pregnancy, the period of early weaning, and the resumption of sexual activity is important to help women to disclose their HIV-status to their partner. This disclosure is an important step which could contribute to improving women's compliance with the advice given to prevent postnatal and sexual HIV transmission.

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Appendix

1- Construction of curves of Figure 1

On these two curves we situated disclosure of the woman's HIV-status to her partner during the period between HIV-testing and the end of the follow-up. During this period the disclosure moment is related to the delivery, the resumption of sexual activity and the weaning of the child for breastfeeding women, in term of anteriority/posteriority and duration. On this time scale specific to each woman, the disclosure moment is located between HIV-testing and delivery, if disclosure occurred before delivery. If it occured between delivery and the end of follow-up, it is located in regard to weaning (Fig. 1a) or resumption of sexual activity (Fig. 1b). Resulting curves show frequencies of these relative moments. This graphical construction allows to characterise the distribution of the disclosure moments in relation with three key peri- or postpartum events: the delivery, the resumption of sexual activity and the weaning of the child for breastfeeding women.

Figure 1a: For each woman, the follow-up is scaled according to four specific moments: $\mathbf{d_0}$ date of announcement of the HIV-test result to the woman; $\mathbf{d_1}$ date of delivery (or end of pregnancy); $\mathbf{d_2}$ date of weaning; $\mathbf{d_f}$ date of end of follow-up. The abscissa of the moment at which the woman disclosed her HIV-status to her partner (**d**) is estimated according to these moments, using a ratio **r** calculated as follows:

If disclosure before delivery: $r = (d- d_1) / (d_1 – d_0) \quad \Rightarrow -1 \leq r \leq 0.$

If disclosure after delivery: $r = (d - d_1) / (d_2 – d_1) \quad \Rightarrow 0 \leq r.$

Hence, for each woman: d_0 on abscissa (-1), d_1 on abscissa (0), d_2 on abscissa (1), the disclosure moment on abscissa (r), which can take values comprised between -1 (disclosure happened at the same time as announcement) and 90 (disclosure happened at the end of follow-up and weaning happened one week after delivery). On ordinate, we indicate the proportion of women having disclosed their status to their partners, calculated for each step of 0.2 until r = 2. After r = 2, the step is increased and the proportion of women having disclosed their status to their partners is adjusted according to the step. Then the slope was smoothed.

Figure 1b: same as above, with the date of resumption of sexual activity instead of the date of weaning.

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Table 1. Socio-demographics characteristics of women at enrolment according to their HIV-status (Ditrame Plus ANRS 1201-1202-1253, Abidjan, 2001-2005)

	HIV-infected women N=546	HIV-negative women N=393	p *	Overall N=939
Median age in years (IQR)	26 (23 - 30)	25 (22 - 29)	0.002 ¶	26 (22 - 30)
Median number of children alive at time of study (IQR)	2 (1 – 3)	2 (1 – 3)	0.371 ¶	2 (1 - 3)
Education level (%)				
No education	196 (35.9)	123 (31.3)	0.148	319 (34.0)
Primary	206 (37.7)	145 (36.9)		351 (37.4)
Secondary and above	144 (26.4)	125 (31.8)		269 (28.6)
Religion (%)				
Christian	303 (55.5)	241 (61.3)	0.025	544 (57.9)
Muslim	187 (34.2)	130 (33.1)		317 (33.8)
Animist or no religion	56 (10.3)	22 (5.6)		78 (8.3)
Cohabiting with (%)				
Partner only	210 (38.5)	123 (31.3)	0.001	333 (35.5)
Partner and family	166 (30.4)	147 (37.4)		313 (33.3)
Family or family-in-law	146 (26.7)	119 (30.3)		265 (28.2)
Other, no partner	24 (4.4)	4 (1.0)		28 (3.0)
Declaring at least one co-spouse (%)	119 (21.8)	49 (12.5)	<0.001	168 (17.9)
Having remunerated activity (%)	280 (51.2)	179 (45.5)	0.083	459 (48.9)
Living in shared housing † (%)	358 (65.6)	224 (57.0)	0.008	582 (62.0)
Choice of child feeding at birth prior delivery (%)				
Breast-feeding	241 (44.1)	NC	-	-
Formula feeding	300 (55.0)			
No choice	5 (0.90)			
Partner's age (%)	*n=194*	*n=367*		*n=561*
20 – 29 years	50 (25.8)	99 (27.0)	0.836	149 (26.6)
30 – 39 years	105 (54.1)	189 (51.5)		294 (52.4)
40 years and above	39 (20.1)	79 (21.5)		118 (21.0)
Partner's level of education (%)	*n=202*	*n=373*		*n=575*
No education	42 (20.8)	70 (18.8)	0.487	112 (19.5)
Primary	25 (12.4)	54 (14.5)		79 (13.7)
Secondary	100 (49.5)	199 (53.3)		299 (52.0)
Higher education	35 (17.3)	50 (13.4)		85 (14.8)

IQR, interquartile range. *Comparison HIV-infected /HIV-negative, χ^2 test or ¶Mann Whitney U-test. †Typical housing in Abidjan with several houses organized around a yard, where inhabitants share kitchen and restroom and live in crowded accommodations. NC, not

concerned

Table 2. Determinants of women's HIV-status disclosure to partners, among HIV-infected women. Univariate analysis and multivariate logistic regression. (Ditrame Plus ANRS 1201-1202-1253, Abidjan, 2001-2005)

Variables	N = 546	Women having disclosed their status to partners		Multivariate analysis [§]		
	n	%	p[*]	aOR[#]	95% CI	p[**]
Age (years)			0.015			0.110
18-19	31	22.6		1	-	
20-24	167	41.9		1.62	0.61-4.31	0.331
25-29	193	47.7		2.03	0.75-5.46	0.162
30-34	106	55.7		3.09	1.07-8.90	0.036
35 and above	49	49.0		2.94	0.93-9.32	0.066
Education level			0.308			0.810
No education	196	42.3		1	-	
Primary	206	46.6		1.06	0.67 – 1.68	0.800
Secondary and above	144	50.7		1.19	0.70 – 2.02	0.520
Religion			0.659			0.799
Christian	303	47.9		1	-	
Muslim	187	44.4		1.16	0.74 – 1.82	0.515
Animist or no religion	56	42.9		1.10	0.58 – 2.08	0.765
Cohabiting with			<0.001			<0.001
Partner only	210	55.2		1	-	
Partner and family	166	51.8		0.89	0.57-1.40	0.637
Family or family-in-law	146	26.7		0.29	0.17-0.50	<0.001
Other	24	45.8		0.64	0.25-1.64	0.355
Declaring at least one co-spouse			<0.001			
No	427	50.1		1	-	
Yes	119	31.9		0.51	0.31-0.83	0.007
Living in shared housing [†]			0.010			
No	188	53.7		1	-	
Yes	358	46.0		0.67	0.44-1.02	0.067
Having remunerated activity			0.968			
No	266	46.2		1	-	
Yes	280	46.1		1.15	0.78 – 1.69	0.471
Number of infants alive			0.955			
≤ 1	177	46.3		1	-	
> 1	369	46.1		0.67	0.42 – 1.06	0.086
Clinical AIDS stage			0.756			0.763

Stage 1	189	47.6		1	-	
Stage 2	215	44.2		0.867	0.56 – 1.34	0.520
Stage 3 or 4	142	47.2		0.855	0.52 – 1.40	0.534
Infant feeding mode at birth of index infant [§]			0.005			
Breastfeeding	243	39.1		1	-	
Formula feeding	283	51.2		1.54	1.04-2.27	0.031
Death of index infant			0.625			
No	487	45.8		1	-	
Yes	59	49.2		1.13	0.55 – 2.29	0.727

[*] χ^2 test. [§] 20 women whose data are not available were excluded for analysis. [#] aOR, adjusted odds ratio. CI, confidence interval. [**] Wald test. [†] Typical housing in Abidjan with several houses organized around a yard, where inhabitants share kitchen and restroom and live in crowded accommodations.

Table 3. Proportions of male partners tested for HIV according to women's HIV-status (Ditrame Plus ANRS 1201-1202-1253, Abidjan, 2001-2005)

Variables	HIV-infected women			HIV-negative women		
	Partner tested			Partner tested		
	N = 546	(%)	p *	N = 393	(%)	p *
Woman's education level						
No education	196	16.3	0.003	123	13.0	0.235
Primary	206	23.3		145	12.4	
Secondary and above	144	31.9		125	19.2	
Woman has a co-spouse						
No	427	27.6	<0.001	344	14.8	0.921
Yes	119	6.7		49	14.3	
Woman lives with her partner						
No	170	13.5	<0.001	123	12.2	0.334
Yes	376	27.4		270	15.9	
Partner's education level †						
No education	42	16.7	<0.001	70	8.6	0.074
Primary and above	160	46.3		303	17.2	
Partner knows woman's HIV status						
No	294	10.5	<0.001	13	0	-
Yes	252	37.7		380	15.3	
Woman's partner previously tested for HIV						
No	540	22.0	<0.001	384	14.1	0.030
Yes	6	100		9	44.4	

† Data are not available for 344 HIV-infected women and 20 HIV-negative women. N, number. * χ^2 or Fisher's exact tests.