

Routine Intrapartum HIV Counseling and Testing for Prevention of Mother-to-Child Transmission of HIV in a Rural Ugandan Hospital

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(*J Acquir Immune Defic Syndr* 2006;42:149–154)

Objective: In Africa, prevention of mother-to-child HIV transmission (PMTCT) programs are hindered by limited uptake by women and their male partners. Routine HIV counseling and testing (HCT) during labor has been proposed as a way to increase PMTCT uptake, but little data exist on the impact of such intervention in a programmatic context in Africa.

Design and Methods: In May 2004, PMTCT services were established in the antenatal clinic (ANC) of a 200-bed hospital in rural Uganda; in December 2004, ANC PMTCT services became opt-out, and routine opt-out intrapartum HCT was established in the maternity ward. We compared acceptability, feasibility, and uptake of maternity and ANC PMTCT services between December 2004 and September 2005.

Results: HCT acceptance was 97% (3591/3696) among women and 97% (104/107) among accompanying men in the ANC and 86% (522/605) among women and 98% (176/180) among their male partners in the maternity. Thirty-four women were found to be HIV seropositive through intrapartum testing, representing an 12% (34/278) increase in HIV infection detection. Of these, 14 received their result and nevirapine before delivery. The percentage of women discharged from the maternity ward with documented HIV status increased from 39% (480/1235) to 88% (1395/1594) over the period. Only 2.8% of undocumented women had their male partners tested in the ANC in contrast to 25% in the maternity ward. Of all male partners who presented to either unit, only 48% (51/107) came together and were counseled with their wife in the ANC, as compared with 72% (130/180) in the maternity ward. Couples counseled together represented 2.8% of all persons tested in the ANC, as compared with 37% of all persons tested in the maternity ward.

Conclusion: Intrapartum HCT may be an acceptable and feasible way to increase individual and couple participation in PMTCT interventions.

Key Words: HIV/AIDS, Africa, mother-to-child transmission, intrapartum, HIV counseling and testing, couple counseling

Received for publication January 6, 2006; accepted April 10, 2006.

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Disclaimer: The findings and conclusions in this study are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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Although combined antenatal, perinatal, and neonatal interventions offer optimal protection from mother-to-child transmission (MTCT) of HIV, intrapartum regimens such as single-dose nevirapine¹ or zidovudine/lamivudine² for women in labor and their newborns remain the main strategy for the prevention of HIV MTCT (PMTCT) in the majority of sub-Saharan African countries. However, poor integration of the strategy in Mother and Child Health (MCH) services has curtailed its potential to become the cost-effective entry point for comprehensive HIV prevention and care it was envisioned to be for pregnant women, their babies, and families.^{3–7} The lack of participation of male partners in voluntary HIV counseling and testing (HCT) and subsequent PMTCT events is an important reason for this situation.^{8,9} PMTCT is a multiple-step intervention requiring serial decisions and actions on the part of women who, in the majority of sub-Saharan African cultures, defer to their male partners for reproductive choices and resource allocations within the family.¹⁰ Offering HCT at antenatal clinics (ANCs) has been the main entry point into PMTCT programs, thus, diverse strategies have been used to attract men to ANCs for HCT. However, the results have been disappointing^{11,12} (Uganda National PMTCT Program, unpublished data).

In resource-limited settings, substantial numbers of women present at delivery with undocumented HIV status.⁵ Rapid HIV testing technology has made real-time intrapartum HCT feasible,^{13–15} and in the studies in which it has been evaluated, this strategy has increased uptake of PMTCT services.^{5,13,16} However, uptake of intrapartum HCT in a programmatic setting, and its usefulness to counsel and test male partners either alone or together with their wives, have not been evaluated in Africa. We describe the acceptability, feasibility, and uptake of intrapartum HCT and PMTCT services by women, men, and couples in a rural Ugandan hospital.

METHODS

Tororo District Hospital (TDH) is a 200-bed government referral hospital delivering primary and limited secondary care services to a catchment population of about 1 million people in Eastern Uganda. The main occupation of the people in this area is subsistence farming and/or being a house wife.¹⁷ The TDH PMTCT program was started as an “opt-in” service

in May 2004, with the aim of developing the capacity of a rural health facility to offer comprehensive HIV care to pregnant women, their babies, and families. The intervention was changed to an "opt-out" service in August 2004 when PMTCT education, testing, and counseling were routinely offered daily to all pregnant women and their accompanying partners unless they declined testing. The importance of male involvement was stressed in all information and counseling sessions, and women not accompanied by their partners were given a formal invitation letter signed by the hospital director and addressed to their partner asking them to visit the hospital's new Family Health Programme to help them and their wife to prevent infections in their unborn baby.

All pregnant women who tested HIV positive were offered a 200-mg nevirapine tablet, with instruction to self-administer at onset of labor, as well as counseling on infant feeding, HIV prevention, and family planning; daily cotrimoxazole after the first trimester of pregnancy; a care package for malaria and diarrhea prevention; condoms; and referral for evaluation of antiretroviral therapy eligibility. All HIV-positive women and their partners were encouraged to deliver at the hospital and, if delivering at home, to bring their newborn to the hospital within 72 hours of birth to be given nevirapine syrup.

Starting in October 2004, routine intrapartum HCT was introduced for women presenting with undocumented HIV status at the maternity ward. Women testing HIV positive before delivery were offered nevirapine when in labor, whereas those presenting in advanced labor received HCT after delivery. All women found HIV positive were offered nevirapine syrup for their baby. All HIV-positive women received the same counseling, care, and referral package as in the ANC. The service was piloted on a limited number of women for 2 months before being fully implemented as of December 2004.

In both the ANC and maternity wards, all undocumented male partners were offered routine HCT, and couple partners were offered to be post-test counseled together. Couples were counseled and received test results together or separately, depending on preference. Clients and partner were assured of confidentiality of individual test result. All tested women and their partners opting for individual counseling were counseled about serostatus disclosure. Counselors did not disclose results of one couple partner to the other unless specifically requested to do so by either partner.

HIV rapid testing was performed following Uganda's national guidelines. Testing in the ANC was performed on site by a hospital laboratory technician and in the maternity ward by one of six midwives trained and certified in rapid HIV testing by the AIDS Information Center, a national HIV testing and counseling organization. In brief, each sample was first tested using Determine Rapid test for HIV-1 (Abbott Laboratories, Abbott Park, IL). Nonreactive samples were considered HIV antibody (HIV-Ab) negative. Reactive samples were retested for confirmation using Stat-Pak rapid HIV test (ChemBio Diagnostics, Medford, NY).¹⁸ Samples reactive with both tests were considered HIV-Ab positive. Samples giving discordant results were tested a third time using Unigold rapid HIV test (Trinity Biotech,

Bray, Ireland), the result of which was considered final. Same-day results and post-test counseling were given to individual clients or couples by their midwife counselor. Quality control was ensured by sending aliquots of all blood samples testing HIV positive and 5% to 10% of all samples testing HIV negative to CDC-Uganda Central Laboratory for result confirmation.

For analysis, we compared the proportion of women, male partners, and couples counseled and tested in the ANC clinic and the maternity ward between December 2004 and September 2005.

RESULTS

Uptakes of ANC and intrapartum counseling and testing are shown in Figure 1. During the observation period, 96.0% (3591/3741) of undocumented pregnant women attending the ANC were tested for HIV. Only 1.2% (45/3741) of undocumented women were not counseled, and 2.8% of counseled women (105/3696) opted not to get tested, citing mainly the need to consult or be accompanied by their partner. Among women tested in the ANC, 7.7% (278/3591) tested positive, 80% of whom (223/278) were given nevirapine, with instructions to self-administer at onset of labor. Still in the ANC, 107 male partners of pregnant women were counseled, of whom 104 (97%) were tested. Twenty-one (20%) of these 104 men tested HIV seropositive, 16 of whom shared their result with their wife. Fourteen couples (13.5%, 14/104) had discordant HIV test results, and 51 couples were counseled together, representing only 2.8% (102/3695) of all persons tested in the ANC (Fig. 1).

In the maternity ward, 721 women presented with undocumented HIV status, representing 45% (721/1594) of all admissions during the period. Of these, 34% (247/721) presented in early stages of labor, whereas 66% (474/721) arrived in advanced labor, 84% (605/721) were offered intrapartum testing, 5.6% of whom (34/605) opted out, 8.1% (49/605) did not opt out but were not tested, and 86% (522/605) were tested for HIV. Of 522 tested women, 34 (6.5%) were found HIV positive. Of these, 14 women were tested before or in early labor and received nevirapine. All 34 babies of intrapartum-tested seropositive women, as well as 94 babies of 90 women who delivered with previously documented HIV-positive status, received nevirapine. HCT coverage of women in labor with undocumented HIV status rose steadily from 42% (38/90) in December 2004 to 91% (58/64) in June 2005, and this rate was sustained or exceeded through September 2005 (Fig. 2). As a result, 88% (1395/1594) of all women presenting with undocumented HIV status at the maternity ward during the period were discharged knowing their HIV status, as compared with 39% (480/1235) during the 7-month period preceding the introduction of intrapartum CT. This represents a 125% increase using an opt-out intrapartum rapid testing strategy.

The major reasons given by maternity staff for not counseling women were staff shortages, work overload, and night or weekend admissions of clients. The major reason given for not testing women was unavailability of a laboratory technician before February 2005, after which

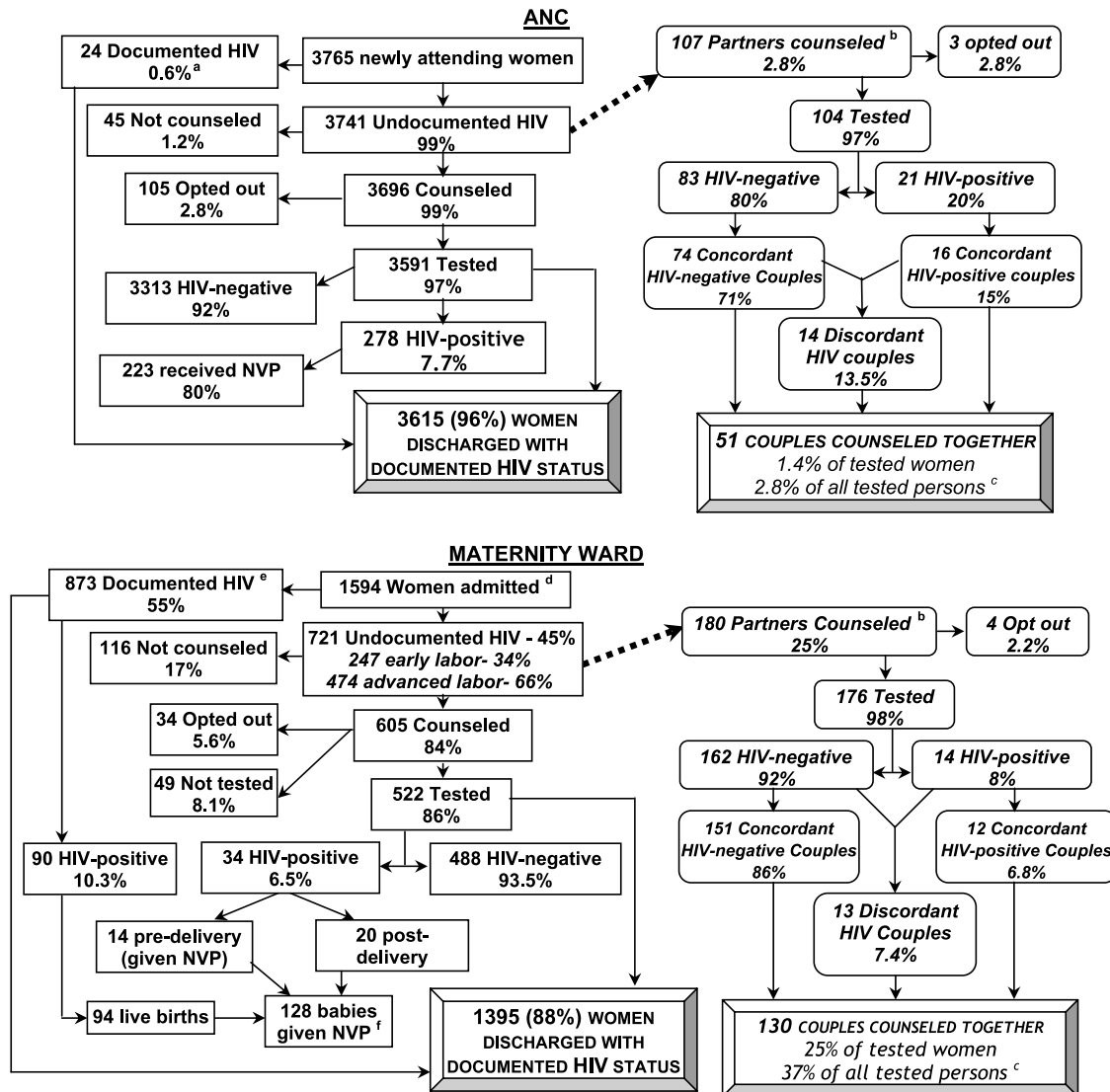


FIGURE 1. ANC and intrapartum HCT results, Tororo Hospital, Uganda, October 2004–September 2005. ^aPercentage denominators are the number of subjects identified in previous box. ^bThis figure represents all partners who accompanied undocumented HIV women to ANC or at delivery. ^cCalculated as twice the number of tested women who were post-test counseled together with their partner (eg, 51 × 2 in the ANC) divided by the total number of persons (women + men) tested (eg, 3591 women + 104 men in the ANC). ^dNumber of women admitted for delivery. ^e95% (831) of these women had previously tested in the ANC; 90 of them were HIV positive. The rest was tested from other HCT or PMTCT centers. ^fNot including 26 babies brought by documented HIV-positive women who delivered outside the hospital.

6 midwives were trained in rapid HIV testing. Consequently, the proportion of HIV-undocumented women counseled in the maternity rose from 66.6% (166/249) between December 2004 and February 2005 to 93% (439/472) between March and September 2005 (Fig. 2).

During the 10-month period, 25% (180/721) of undocumented HIV women presented at the maternity ward with their male partners. These men were all offered to be tested for HIV, 98% (176/180) of them accepted, and 8% (14/176) were HIV seropositive. Of the tested couples, 7.4% (13/176) had discordant HIV test results, and 6.8% (12/176) had concordant HIV positive results. In total, 72% (130/180) of these couples were counseled and tested together, represent-

ing 25% (130/522) of all tested women and 37% (260/698) of all persons tested in the maternity ward.

Quality control of HIV testing found 100% accuracy (no false HIV-positive or HIV-negative results) among HIV rapid tests performed by trained midwives during the period. However, 2 false HIV-positive results were obtained by laboratory technicians.

DISCUSSION

Routine HCT using an opt-out strategy was well received and achieved high HCT coverage in this rural Ugandan hospital: 97% of women and 97% of men counseled in the ANC, and 86% of women and 98% of men counseled in

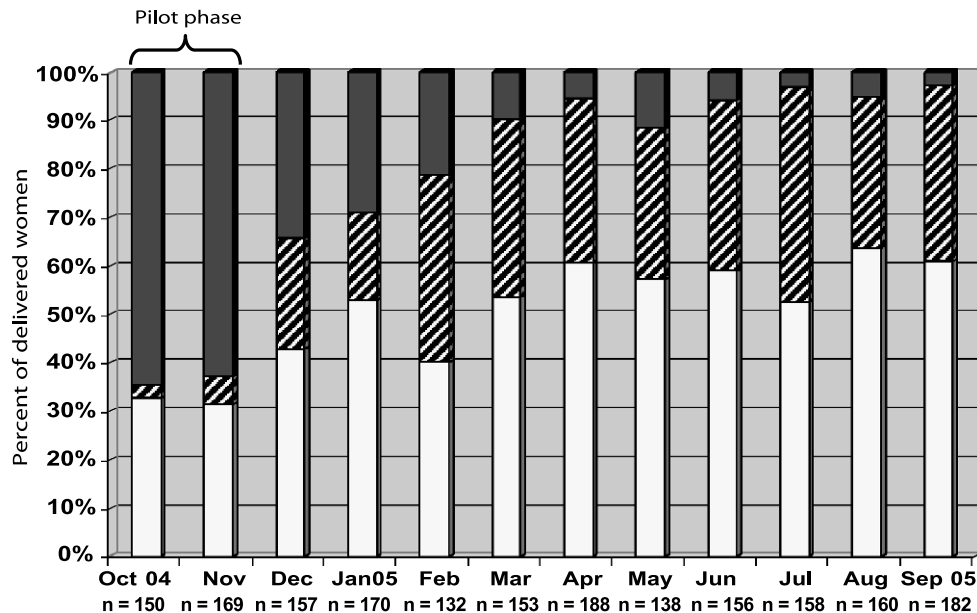


FIGURE 2. Proportion of women receiving intrapartum HCT in the maternity ward, Tororo Hospital, Uganda, October 2004 to September 2005. n Values below the horizontal axis represent monthly numbers of deliveries. Percent values represent the proportions of different categories of women who delivered during the month (N = 1913). □ women admitted with known HIV status; ▨, women admitted with unknown HIV status and received intrapartum HCT; ■, women discharged with unknown HIV status.

the maternity ward accepted HCT. These findings parallel those from North American and European settings using the opt-out approach.^{19,20} In the ANC, the nevirapine distribution rate was substantially lower than testing uptake mostly because initially, the national guidelines prescribed to wait until women reached the 28th week of their pregnancy to give them nevirapine and instruct them to self-administer at onset of labor. Once this limit was abrogated, the rate of nevirapine distribution approached 100%.

In the maternity ward, HCT coverage increased more than 2-fold after implementing an opt-out routine intrapartum rapid HIV testing strategy. The service enabled 33% (522/1594) more pregnant women to receive HIV testing, a quarter of them with their male partner, and 34 additional HIV-seropositive women and their babies to be identified and to receive PMTCT prophylaxis. These results confirm the importance of routine HCT in increasing access to, and uptake of, HIV PMTCT services not only at the prenatal stage, but before and after delivery as well.²¹

Only 41% (14/34) of HIV-positive women received nevirapine before delivery; the others were counseled and tested after delivery because of their arrival in advanced stages of labor and/or the unavailability of maternity staff for HCT. Although this evaluation did not differentiate between these possible causes, this finding is consistent with the fact that Tororo Hospital receives referrals from a large catchment area and deals with a significant proportion of late and complicated deliveries. In any case, this result shows that women presenting in advanced labor represent an important limitation to intrapartum HCT and points to the particular need to follow-up HIV-positive mothers tested after delivery and their babies to ensure their adequate care and support. This program's midwives-counselors have thus started

visiting consenting HIV-positive mothers in their homes to monitor them and their babies, and to offer HCT for their infants to consenting members of the household. However, data from these follow-up visits were not available at the time of this analysis.

Staffing shortages on weekends and at night can affect intrapartum HCT uptake, similar to findings in the US MIRIAD study¹³ that assessed the feasibility of rapid HIV testing in labor. HCT coverage of women with undocumented HIV status in the maternity rose consistently and substantially in the first 6 months of implementation and has remained above 90% since then. We believe this outcome resulted from increased staffing of the services as of February 2005, capacity building of from training 6 maternity ward midwives in rapid HIV testing, and from improved staff efficiency with experience.

Twenty-five percent of women with undocumented status had their partners tested in the maternity ward, whereas less than 3% did so in the ANC. The difference was similar for couple counseling in either ward. Yet, only partners of women with undocumented HIV status were targeted in this intervention. If the partners or spouses of all women presenting at the maternity ward were equally targeted, partner testing and couple counseling would likely increase.

The data presented do not allow to infer the rate of hospital delivery among ANC-tested HIV-positive women, given the limited 10-month period of follow-up. However, our data indicate that in 2005, 59% of HIV-positive women seen in the ANC came back to deliver in the maternity (by comparing the actual number of ANC-tested seropositive women who delivered in the hospital with the total number of women from the same group expected to deliver in the year

based on their due dates). This compares to a national figure of 25% of deliveries taking place in a healthy facility, independent of HIV status.²²

Although this evaluation cannot explain the difference in HIV prevalence among male partners in the ANC and maternity wards (20% vs 8%), the relatively small numbers involved and a possible selection bias of partners and couples may account at least in part for this outcome.

Despite continuous efforts to attract male partners of pregnant women to ANC, men and couple attendance to this unit has remained minimal. In Uganda, as in most other African countries, MCH clinics have been traditionally directed at women only. PMTCT programs are attempting to reverse this trend and open the services to men and couples, but as MCH service delivery structure has not changed, still very few men attend MCH clinics. Among the few men who did come to the ANC in this program, most wanted to test individually before deciding whether to share their HIV serostatus (ie, to get post-test counseled) with their wife. In contrast, many more men spontaneously accompanied their wife to deliver at the hospital and readily accepted to get tested for HIV and to share their results.

These encouraging findings on HCT uptake reflect the situation at Tororo hospital ANC and maternity units but cannot be necessarily generalized to all women eligible for PMTCT in the country. Nevertheless, the data support results from previous studies on the acceptability and feasibility of HCT^{8,13,16} and highlight couple counseling and testing as a potential added value of intrapartum HCT.^{23–33} Couple HCT has been shown to improve couple communication, increase utilization of services for HIV prevention, family planning, and care and support,^{11,23–32} and, when supporting consistent condom use, to reduce HIV transmission by 80%.³³ Moreover, HIV discordance among couples is widely prevalent in Uganda and Africa,^{34–36} and the risk of HIV acquisition appears to be elevated during pregnancy.³⁷ Consequently, in our program, discordant couples are given particular attention and additional counseling time to address their concerns and questions regarding sexual and reproductive issues and to reinforce prevention messages and condom use. Additionally, the program is expanding routine opt-out ANC and intrapartum HCT through peripheral health units and is piloting home-based HCT with the aim of increasing couples' uptake of HCT and PMTCT services.

In conclusion, this evaluation shows that the maternity ward setting may provide a unique opportunity to counsel and test both HIV-undocumented women and their accompanying male partners before and after labor and delivery. Given the critical importance of couple counseling and testing for sustained behavior change and utilization of HIV prevention and care services, PMTCT programs should promote routine opt-out counseling and testing for HIV in both ANC and maternity wards.

ACKNOWLEDGMENTS

The authors thank the clients, in-charges, and staff of Tororo Hospital Mother and Child Health Unit for their cooperation and commitment in implementing Tororo Hospital

Family-Focused PMTCT Program, as well as CDC Uganda Informatics Unit, which provided assistance for data collection and organization. We are indebted to Drs George Rutherford, Nathan Schaffer, and Mary-Glenn Fowler as well as Rachel King for their useful comments and edits on earlier drafts of the manuscript. This program is supported by CDC through the Emergency Plan for AIDS Relief.

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