

Routine antenatal HIV testing in Zimbabwe

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Routine offer of antenatal HIV testing (“opt-out” approach) to prevent mother-to-child transmission of HIV in urban Zimbabwe

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Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. المقالة هذهل الكامل النص ايةهن في الخلاصة هذهل العربية الترجمة.

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Objective To assess the impact of routine antenatal HIV testing for preventing mother-to-child transmission of HIV (PMTCT) in urban Zimbabwe.

Methods Community counsellors were trained in routine HIV testing policy using a specific training module from June 2005 through November 2005. Key outcomes during the first 6 months of routine testing were compared with the prior 6-month “opt-in” period, and clients were interviewed.

Findings Of the 4551 women presenting for antenatal care during the first 6 months of routine HIV testing, 4547 (99.9%) were tested for HIV compared with 3058 (65%) of 4700 women during the last 6 months of the opt-in testing ($P < 0.001$), with a corresponding increase in the numbers of HIV-infected women identified antenatally (926 compared with 513, $P < 0.001$). During routine testing, more HIV-infected women collected results compared to the opt-in testing (908 compared with 487, $P < 0.001$) resulting in a significant increase in deliveries by HIV-infected women (256 compared with 186, $P = 0.001$); more mother/infant pairs received antiretroviral prophylaxis ($n = 256$) compared to the opt-in testing ($n = 185$); and more mother/infant pairs followed up at clinics (105 compared with 49, $P = 0.002$). Women were satisfied with counselling services

and most (89%) stated that offering routine testing is helpful. HIV-infected women reported low levels of spousal abuse and other adverse social consequences.
Conclusion Routine antenatal HIV testing should be implemented at all sites in Zimbabwe to maximize the public health impact of PMTCT.

Introduction

The perinatal HIV epidemic remains a major public health problem in Zimbabwe.¹ Recent estimates indicate that over 20% of women aged 15–49 years presenting for antenatal care (ANC) are HIV-infected.¹ Several trials have reported the efficacy of simple, low-cost antiretroviral prophylactic regimens to reduce mother-to-child transmission of HIV in sub-Saharan Africa.^{2–4} Although prevention of mother-to-child transmission of HIV (PMTCT) interventions using single-dose nevirapine (sdNVP) have been implemented in many urban and rural clinics in Zimbabwe,⁵ uptake of these interventions remains low, primarily due to poor antenatal HIV testing rates.⁶

Detection of maternal infection early in pregnancy through voluntary counselling and HIV testing (VCT) is critical for PMTCT.⁷ In Zimbabwe, HIV testing is conducted after individual pre-test counselling, with clients actively choosing whether to be tested (i.e. an “opt-in” approach or client-initiated testing). The acceptance rate of VCT among our ANC clients has been low, ranging from 20% to 63%.^{6,8} Several reasons may account for poor antenatal VCT uptake among women in sub-Saharan Africa, including absence of prenatal care, fear of stigma and inadequate counselling experiences.^{9–11} Thus innovative approaches to antenatal HIV testing are urgently required.

Provider-initiated routine antenatal HIV testing (i.e. an “opt-out” approach) is the standard of care in the United States of America (USA) and other developed nations.^{12–16} Routine antenatal HIV testing policy is rare in sub-Saharan Africa.^{17,18} Recent data from the PMTCT programme in Botswana demonstrated that routine HIV testing led to a significant increase in HIV-test acceptance at ANC clinics, where HIV prevalence has been 40% since 1995.¹⁸ A recent study from rural Zimbabwe found that routine antenatal HIV testing is acceptable to both clients and health-care providers.¹⁹ The objective of this pilot study was to evaluate the impact of routine antenatal HIV testing in urban Zimbabwe.

Methods

Zimbabwe is a southern African country of approximately 12.5 million inhabitants whose capital city, Harare, has a population of 1.5 million. Antenatal HIV seroprevalence in urban clinics has been estimated to be around 21.3%.²⁰ Our study was conducted at four antenatal clinics in Chitungwiza, a socioeconomically disadvantaged community 25 km south of Harare.

Provider-initiated routine HIV testing with right of refusal was offered to all new ANC clients between June 2005 and November 2005. Before implementation of the routine HIV testing policy, a VCT site instrument was used to assess the adequacy of staffing levels, adherence to PMTCT protocols, availability of health education materials, availability of test kits and medical consumables, adherence to staff roles and responsibilities, and general aspects of site operations. A counsellor reflection form and a VCT client exit survey form were used to guide the implementation of the routine HIV testing policy.

Community mobilization activities for improving public awareness of the routine HIV testing policy were carried out by community outreach counsellors. A drama skit was developed and presented at health worker in-service training workshops and at the community advisory board meetings for critiques and comments before presentation. The community counsellors performed the skit on a rotational basis at the four clinics on Tuesday, Wednesday and Thursday mornings for new ANC clients and during the afternoons in the community and at colleges, churches and industrial facilities.

Before implementation of the routine HIV testing policy, clinic staff members at the four sites attended a two-day training session conducted by the PMTCT programme staff in which the new strategy was discussed in detail, including data collection and interview techniques. Fig. 1 depicts the routine HIV testing algorithm that was modified from the pilot project on routine HIV testing in Botswana¹⁸ and implemented for all new ANC clients.

Under the new system, existing PMTCT clinic counsellors held 15-minute group education and discussion sessions with pregnant women, using a structured flip chart as a discussion guide. The discussion focused on HIV transmission, PMTCT, sdNVP

prophylaxis and routine HIV testing for all mothers, specifying the right to refuse. Women who did not want any one of the routine antenatal tests were referred for individual pre-test counselling to discuss their concerns. Women who arrived for ANC when no group was conducted received the same education individually via pre-test counselling. Women who did not refuse and gave verbal informed consent individually had blood drawn for rapid HIV testing on-site by clinic nurses in addition to routine syphilis, blood group and haemoglobin level testing.

Maternal HIV status was determined on-site using two rapid tests in parallel (Uni-Gold Test, Trinity Biotech, USA; and Determine HIV1/2 test, Abott Laboratories, USA) on each blood sample, and a third test (OraQuick, Abott Laboratories, USA) as a tie-breaker. Women received their test results the same day during extensive individual post-test counselling, with a focus on PMTCT interventions for HIV-infected women, enrolment into support groups, counselling for exclusive breastfeeding for 6 months according to WHO and national guidelines, sdNVP prophylaxis and mother-infant follow-up.

To assess the acceptability of the routine HIV testing policy, a 15-item self-administered exit questionnaire was administered during the initial three months of implementation to women ($n = 2011$) in Shona, the local language, after completion of their first ANC visit. The questionnaire was adapted from the pilot project on routine HIV testing in Botswana.¹⁸

To determine if there were any negative effects related to the routine HIV testing policy, women ($n = 221$) attending the four antenatal and postnatal clinics who had participated in routine HIV testing were interviewed individually, regardless of HIV status, during the fifth month of study implementation. The standardized questionnaire was administered in Shona by four trained community counsellors who did not know the client's serostatus.

Data collection and analysis

Quantitative data regarding acceptance of HIV testing and PMTCT interventions were collected according to current programme guidelines. Data was entered and analysed using EpiInfo 2004 (Centers for Disease Control and Prevention, Atlanta, GA, USA).

Impact on HIV testing acceptance rates, post-test return rates, acceptance of PMTCT interventions and follow-up were determined by comparing data collected during the first 6 months of routine HIV testing (opt-out) with the prior 6 months opt-in period. A P -value of < 0.05 was considered statistically significant.

Ethical considerations

The Call-to-Action Project was approved by Zimbabwe Ministry of Health and Child Welfare, the Chitungwiza Health Department and Wake Forest University Health Sciences. Verbal informed consent was obtained individually from all participants after explaining the study protocol in detail. Strict confidentiality was maintained for all clients.

Results

Of the 4551 pregnant women presenting for ANC during the first 6 months (June 2005 to November 2005) of routine HIV testing, 4547 (99.9%) were tested for HIV compared with 3058 (65%) of 4700 pregnant women during the last 6 months (October 2004 to March 2005) of the opt-in testing period ($P < 0.001$), with a corresponding increase in the numbers of HIV-infected women identified antenatally ($n = 926$, 20.4% seroprevalence, as compared with 513, 16.8% seroprevalence, $P < 0.001$) (Table 1).

No negative effects were noted on ANC attendance, collection of test results, post-test counselling rates or uptake of PMTCT interventions among HIV-infected women during the implementation of routine HIV testing. Overall, 4538 (99.8%) women returned to collect their test results during the routine antenatal HIV testing period compared to 2964 (96.7%) during opt-in testing period ($P < 0.001$) (Table 1). During the routine testing period, more HIV-infected women were identified antenatally (926 compared with 513, $P < 0.001$). Of these, significantly more HIV-infected women were post-test counselled and collected test results compared to the opt-in period (908 compared with 487, $P < 0.001$). Likewise, there was a corresponding increase in deliveries by known HIV-infected women in the four clinics (256 compared with 186, $P < 0.001$), resulting in higher numbers of mother/infant pairs receiving sdNVP prophylaxis during routine testing ($n = 256$) compared to the opt-in testing period

($n = 185$). In addition, more HIV-infected women during the routine testing period enrolled in the mentorship programme led by community counsellors (526 compared with 257, $P = 0.064$), joined psychosocial support groups (80 compared with 42, $P = 0.681$), and followed up with their babies at the clinics (105 compared with 49, $P = 0.002$) compared with women during the opt-in study period.

Of the 4547 women who underwent routine HIV testing and were encouraged to bring their partners for free VCT, only 308 men (6.8%) opted for HIV testing, and 307 (99.7%) returned to collect their results and received post-test counselling; of these, 49 (16%) were HIV-infected.

Client exit survey

Of the 2624 women who opted for routine HIV testing during the first 3 months of study and answered the questionnaire at the end of their first ANC visit, 2011 (76.6%) completed the exit survey. The overall response was positive, with clients generally satisfied with the quality of counselling. Overall, 98% of respondents said that the information they were given by community counsellors on routine HIV testing had adequately prepared them for the result, 99% of women said they understand why their blood was being drawn, 99% of women said they were better prepared to manage their health after learning their HIV status and 98% said they were ready to disclose their HIV status to their partners.

Follow-up survey

A total of 221 women attending antenatal and postnatal clinics who opted for routine testing were sampled and interviewed individually, regardless of their HIV status, to determine if there were any negative effects of routine HIV testing. The sample's sociodemographic characteristics are shown in Table 2. The mean age was 24 years, with most women married (90%), educated through secondary school (82%) and employed (67%). Of the 221 women interviewed, 219 (99%) were tested for HIV at the first antenatal visit; 109 women (49%) were HIV-infected. The most frequent reasons given for accepting the HIV test were to protect their children and concern for their own health.

All women found the information provided by community counsellors adequate to make informed decisions about routine HIV testing.

Of 221 women interviewed, 88% (194) had disclosed their serostatus to their husbands (Table 3). Among those women who disclosed their test results ($n = 197$), 181 (92%) did not experience violence and the relationship continued. However, only 7% of the partners were tested for HIV. Disclosure-related violence from their partners was experienced by 8% [16 (14 HIV-infected, 2 HIV-uninfected) women]. The patterns of physical abuse included pushing, slapping and kicking; no injuries related to firearms, knife or burns were reported. The relationship ended in 4 couples (2%) due to divorce (1), separation (1), and abandonment by the male partner (2). Of 221 women interviewed, 11% (24) had not disclosed their serostatus to anyone. The reasons given for non-disclosure included fear of violence, divorce and stigma.

Overall, 89% (197 of 221) women stated that offering routine HIV testing like other blood tests during pregnancy is helpful because it is an empowering tool for women to exercise their rights and responsibilities by accessing relevant information to make informed decisions about PMTCT and infant feeding.

Discussion

We found that routine antenatal HIV testing was feasible and acceptable for pregnant women in urban Zimbabwe, resulting in almost 100% of women opting for HIV testing, and overall significant improvement in quantitative PMTCT service statistics. Our data are consistent with recent reports from Africa, where routine antenatal HIV testing has been found to be acceptable and to significantly increase the HIV testing rates.^{17,18}

The significantly high uptake at our site with routine HIV testing could be related to multiple factors. Women were probably less fearful of participating in routine HIV testing because this approach would be perceived by her partner and family as “standard of care” offered to all ANC clients, thereby reducing the risk of stigma and other adverse social consequences when compared to the opt-in VCT policy. In addition, community sensitization, counselling sessions involving highly motivated community counsellors

and availability of on-site rapid HIV testing may also have contributed to significantly high HIV testing rates among women in our study.

Another important finding in this study was that the introduction of routine HIV testing did not lead to reductions in the number of women attending ANC or those receiving test results compared to the opt-in period. In our study, 98% of HIV-infected women returned for test results. Improved community awareness and group education about the importance of routine antenatal HIV testing and availability of on-site rapid testing with same-day results may explain the above findings. In contrast, a recent study in Botswana showed that a significant proportion of pregnant women (29%) who opted for routine HIV testing did not return to the clinic to collect their test results because HIV testing was conducted off-site and results were not immediately available.¹⁸ Likewise, in the Kenya study where routine antenatal HIV testing was offered, 31% of women (including 44% of HIV-infected women) did not return to obtain their test results.¹⁷

Policies to encourage early detection of HIV infection during pregnancy through routine testing have raised several ethical concerns regarding the definition and implementation of routine universal testing, especially in settings marked by poverty, illiteracy, gender inequalities, weak health-care infrastructure and poor access to antiretroviral treatment.^{21,22} Recently, a population-based survey from Botswana found that routine HIV testing was widely supported and reduced barriers to HIV testing.²³ In the present study, the overall response to routine HIV testing was positive, with relatively low levels of miscomprehension and partner violence, which is often a major concern for HIV-infected women when they disclose their infection status.^{9,24} Furthermore, more than two-thirds of newly HIV-infected women at our site joined support groups, a vital component for any successful PMTCT programme.

Several challenges were identified during the implementation of this routine antenatal HIV testing project. First, the clinics are severely understaffed with regard to nurses. Nurses are often trained in counselling, but the increased clinic workload due to staff shortage has resulted in reluctance among staff members to take on the additional task of counselling. In addition, there are no funds to employ and train a new cadre of full-time professional counsellors to deliver VCT. Therefore, HIV counselling has been

conducted by community counsellors at our site since 1998, a solution that has been replicated at many antenatal clinics in Zimbabwe.⁶ This focus on group talk and discussion both reduces the pre-test counselling burden on health-care workers and facilitates individual post-test counselling for both HIV-negative and HIV-positive women. Second, the current economic hardships in Zimbabwe and high levels of midwife staff turnover requires more resources to be made available for training, especially to effectively communicate the new routine HIV testing approach and dispel the misconception that it is mandatory testing. Intensive standardized health worker training at all levels of health service delivery is warranted. It is important to ensure proper logistic support and availability of laboratory supplies before the routine testing policy is implemented all over the country. Finally, countrywide public awareness campaigns through print and electronic media before the implementation of the routine antenatal HIV testing are critical.

The low rate of HIV testing among male partners remains a major challenge for the PMTCT programme in Zimbabwe. Innovative approaches to promote male involvement are urgently needed. PMTCT programmes should address gender-based issues, make ANC clinics more male-friendly, promote couple counselling and HIV testing, and enhance community mobilization and IEC activities to promote VCT among men.⁷

Significant advances have occurred in PMTCT.²⁴ In resource-rich settings, perinatal HIV transmission rates are less than 2% due to widespread implementation of prenatal HIV-1 testing, combination antiretroviral treatment during pregnancy, elective caesarean section and avoidance of breastfeeding.²⁵ Therefore, routine HIV testing has become the standard of care for pregnant women in resource-rich countries.¹²⁻¹⁶ In contrast, routine HIV testing approach is unusual in sub-Saharan Africa,^{17,18} where HIV infection rates are very high and HIV testing faces considerable barriers, including the fear of stigma and discrimination.^{9,10} Although there has been scale-up of PMTCT in many resource-poor settings, ARV treatment programmes have only recently started to become available. In 2004, to increase access to PMTCT and ARV therapy in resource-limited countries, the UNAIDS/WHO recommended routine HIV testing of pregnant women with the right to refuse.²⁶

Our study has certain limitations. The almost 100% antenatal HIV testing acceptance rate at our clinics could be attributed to the highly motivated clinic staff. The community counsellors are people living with HIV/AIDS who have participated in previous PMTCT clinical trials at our site. This may not be the case at other antenatal clinics in Zimbabwe. The study findings are limited in terms of overall generalization and impact since only 25% of HIV-infected women identified in the city of Chitungwiza actually deliver in the clinics; most women deliver in other urban or rural facilities or at home. Despite these limitations, we believe that our pilot data provide useful information for implementing routine antenatal HIV testing policy in Zimbabwe.

To our knowledge, this study was the first to evaluate routine HIV testing in a large urban PMTCT programme in Zimbabwe. Although implementation was challenging given the scarcity of human and financial resources, we observed that routine HIV testing was operationally feasible and acceptable to all women, with significant improvement in quantitative PMTCT service statistics. In addition, HIV-infected women who participated in routine testing reported relatively low levels of spousal abuse and other adverse social consequences. High-quality post-test counselling and adequate staffing are critical before widespread implementation of routine HIV testing. We believe that routine antenatal HIV testing should become the standard of care and be urgently implemented at all antenatal sites in Zimbabwe. Given the high antenatal HIV prevalence, implementing routine HIV testing would have a significant public health impact on the perinatal HIV epidemic in Zimbabwe and other resource-limited countries.

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Fig. 1. Provider-initiated routine HIV counselling and testing algorithm

ANC, antenatal care; Hb, haemoglobin; PMTCT, prevention of mother-to-child transmission of HIV; RPR, rapid plasma regain.

Table 1. Selected indicators of the prevention of mother-to-child HIV transmission in four urban antenatal clinics included in the Call-to-Action programme in urban Zimbabwe

Indicator	October 2004 March 2005 ("Opt-in" VCT approach or client- initiated testing)	June 2005 November 2005 ("Opt-out" VCT approach or routine testing)	P-value
	<i>Number (%)</i>	<i>Number (%)</i>	
VCT			
ANC bookings	4872	4551	–
Pre-test counselled/ group education	4872 (100%)	4551 (100%)	–
Tested for HIV	3058 (65.1%)	4547 (99.9%) ^a	< 0.001
Women HIV-infected	513 (16.8%)	926 (20.4%) ^a	< 0.001
Post-test counselled	2964 (96.9%)	4538 (99.8%) ^a	< 0.001
Partners tested for HIV	196 (6.4%)	308 (6.8%)	0.531
Partners post-test counselled	196 (100%)	307 (99.7%)	–
Partners HIV-infected	44 (22.4%)	49 (15.9%)	0.065
HIV-infected women			
Post-test counselled and collected test results	487 (95%)	908 (98%) ^a	< 0.001
Given sdNVP to take home at	372 (76.3)	663 (71.6%)	0.711

≥ 28 weeks of gestation			
Known to have delivered in the four antenatal clinics	186 (38.1%)	256 (27.6%) ^a	≤0.001
Total infants receiving sdNVP	185 (36%)	257 ^b (28%)	–
Mothers and infants receiving sdNVP	185 (36%)	256 (28%)	–
Care, support and follow-up			
Mothers enrolled in mentorship programme	257 (52.7%)	526 (57.9%)	0.064
Mothers joining PSS group	42 (16.3%)	80 (15.2%)	0.681
Mother-infant pairs seen at the 6-week visit	49 (26.3%)	105 (41%) ^a	0.002

ANC, antenatal care; PSS, psychosocial support; sdNVP, single-dose nevirapine; VCT, voluntary counselling and HIV testing.

^a Statistically significant.

^b Twin gestation.

Table 2. Sociodemographic characteristics of women who participated in a follow-up interview during the routine HIV testing pilot project (*n* = 221)

Characteristics	Number	%
15–25	151	68.4
26–35	54	24.4
36–45	16	7.2
Marital status		
Single	10	4.5
Married	199	90.0
Divorced	1	0.5
Living with partner	11	5.0
Parity		
0	53	24.0
1	88	39.8
2	53	24.0
3	19	8.6
4 or more	8	3.6

Level of education

Primary	38	17.1
Secondary	181	82.0
Tertiary	2	0.9

Employment

Employed	147	66.5
Unemployed	74	33.5

Table 3. Disclosure of HIV serostatus among women participating in “opt-out” HIV testing (*n* = 221)

Response	Frequency	%
Person informed		
Husband	197	89.1
Relative	33	14.9
Friend	5	2.3
None	24	10.9
Reason for non-disclosure (<i>n</i> = 24)		
Afraid of violence	8	33.3
Afraid of divorce	6	25.0
Afraid of stigma	5	20.8
Thought not useful	2	8.3
No response	7	29.2
Partners’ response (<i>n</i> = 197)		
No violence/relationship continued	181	91.8
Violence	16	8.1
Relationship stopped	4	2.0
Partner tested	13	6.6

Opinion of women on routine antenatal HIV testing (*n* = 221)

Helpful	197	89.1
Not helpful	24	10.9

^a This was a multiple response question and hence the percentages add up to more than 100%