

Opt-out provider-initiated HIV testing and counselling in primary care outpatient clinics in Zambia

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Objective To increase case-finding of infection with human immunodeficiency virus (HIV) in Zambia and their referral to HIV care and treatment by supplementing existing client-initiated voluntary counselling and testing (VCT), the dominant mode of HIV testing in the country.

Methods Lay counsellors offered provider-initiated HIV testing and counselling (PITC) to all outpatients who attended primary clinics and did not know their HIV serostatus. Data on counselling and testing were collected in registers. Outcomes of interest included HIV testing coverage, the acceptability of testing, the proportion testing HIV-positive (HIV+), the proportion enrolling in HIV care and treatment and the time between testing and enrolment.

Findings After the addition of PITC to VCT, the number tested for HIV infection in the nine clinics was twice the number undergoing VCT alone. Over 30 months, 44 420 patients were counselled under PITC and 31 197 patients, 44% of them men, accepted testing. Of those tested, 21% (6572) were HIV+; 38% of these HIV+ patients (2515) enrolled in HIV care and treatment. The median time between testing and enrolment was 6 days. The acceptability of testing rose over time.

Conclusion The introduction of routine PITC using lay counsellors into health-care clinics in Lusaka, Zambia, dramatically increased the uptake and acceptability of HIV testing. Moreover, PITC was incorporated rapidly into primary care outpatient departments. Maximizing the number of patients who proceed to HIV care and treatment remains a challenge and warrants further research.

Abstracts in **عربي**, **中文**, **Français**, **Русский** and **Español** at the end of each article.

Introduction

The World Health Organization (WHO), the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the United States Centers for Disease Control and Prevention (CDC) recommend provider-initiated testing and counselling (PITC) as a cost-effective and ethical way of improving access to HIV testing during general epidemics.^{1,2} Nevertheless, client-initiated, or opt-in, voluntary counselling and testing (VCT) remains the dominant form of testing in many sub-Saharan African countries, including Zambia.³ While VCT has been effective in identifying substantial numbers of HIV-positive (HIV+) individuals,^{4–16} in 2007 it was estimated that as many as 80% of HIV-infected adults in sub-Saharan Africa were unaware of their HIV serostatus and only 2.2% of all adults were tested annually.^{2,17} The introduction of routine opt-out PITC would offer an additional point of entry to HIV care and treatment for affected individuals.

In routine opt-out PITC, HIV testing and counselling are recommended as standard components of medical care at health-care facilities.¹⁸ The term “opt-out” means that patients must explicitly refuse an HIV test. Routine opt-out PITC encourages a streamlined approach to HIV testing that involves simplified pretest counselling and verbal rather than written consent.¹⁸ Despite lingering ethical concerns about patients feeling coerced into being tested,¹⁹ there is a burgeoning body of evidence suggesting that routine opt-out PITC can play an important part in scaling up access to HIV testing, care and treatment in places where infection is highly prevalent.^{3,20–25}

This paper describes findings obtained during the first 30 months of a programme designed to introduce PITC for

HIV infection into the outpatient departments of nine primary health-care clinics in Lusaka, Zambia, as part of an initiative to integrate primary care for patients with and without HIV infection. The programme had two primary objectives: (i) to improve uptake of HIV testing by offering an accessible and acceptable alternative to VCT and (ii) to improve HIV case-finding among patients attending outpatient departments who may be independently seeking outpatient medical care but not HIV care and treatment.

Methods

Setting

In April 2004, a large-scale public sector HIV care and treatment programme was established in Lusaka by the Zambian Ministry of Health with implementation assistance from the Centre for Infectious Disease Research in Zambia (CIDRZ) and funding from the President's Emergency Plan for AIDS Relief (PEPFAR). Details of the Lusaka programme have been described previously.^{26,27}

Between July 2008 and June 2010, an integrated approach to outpatient care for individuals with and without HIV infection was introduced in a staggered fashion into nine urban primary health-care clinics in Lusaka.^{28–30} Clinical and administrative services at each clinic were harmonized for patients with and without HIV infection in three key ways: (i) the physical space used by patients and patient flows were amalgamated; (ii) medical records were standardized and (iii) routine PITC was introduced. All patients attending outpatient departments were referred for

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pretest counselling under the PITC programme unless they were already receiving HIV care and treatment or had evidence of being tested for HIV within the last 6 months (e.g. the test was reported in medical records or a test slip was available from a recognized external test provider).

Counselling and testing at each clinic were provided by two lay counsellors who were trained in psychosocial and provider-initiated counselling techniques. They worked in 5-hour shifts. Counselling was carried out in accordance with WHO and Zambian national guidelines and the presence of HIV was initially detected using the rapid Determine HIV-1/2 test (Abbott Laboratories, Abbott Park, United States of America). Positive HIV test results were confirmed using the Uni-Gold HIV test (Trinity Biotech, Bray, Ireland) and any conflicting results were resolved using the Bioline test (Standard Diagnostics Incorporated, Suwon City, Republic of Korea). Patients underwent pretest counselling either individually or in groups. However, they were always seen in private when deciding whether to opt in or out of HIV testing, while undergoing testing and during post-test counselling. Patients who opted out continued to follow normal outpatient procedures. Those who opted in proceeded to testing and underwent post-test counselling, regardless of the test result. Patients found to be HIV+ could enrol in the HIV care and treatment programme immediately or on a predetermined date.

Lay counsellors were supervised by the individuals in charge of the health centres and received group mentoring at quarterly review meetings facilitated by a CIDRZ nurse. Lay counsellors at the five clinics first involved in the integrated primary care programme and the introduction of PITC were hired on yearly renewable contracts by the Lusaka District Health Management Team using funds from PEPFAR. Donor funding for these positions was being maintained in early 2011 but it was expected that counsellors would be transferred permanently onto the Zambian Ministry of Health payroll. Lay counsellors at clinics subsequently involved in the PITC programme were trained and hired by the Ministry of Health. Clinics that provided VCT continued to do so after the introduction of PITC. Community awareness programmes, which involved drama performances and door-to-door visits

by neighbourhood health committees, took place in clinic catchment areas 4–6 weeks before and after the implementation of PITC and provided information about the integration of care for patients with and without HIV infection and the introduction of PITC.

Data collection and analysis

Registers kept in counselling rooms were used to record patients' personal details, including gender and age, whether HIV testing was accepted or refused and, where appropriate, the reason for refusal. For patients who accepted, details of the test result, the date it was received and, for those who were HIV+, the date of enrolment in the HIV care and treatment programme were also recorded. The registers were reviewed each month by the individuals in charge of the clinics to evaluate how systems were functioning, to gauge counsellors' performances and to ensure that orders for test kits and reagents were accurate. The registers were stored in a locked drawer in a locked room when not in use.

For this study, anonymous data on the number of patients counselled, tested and found to be HIV+ were collated monthly and entered manually into an electronic database. Data were checked for accuracy and completeness by the CIDRZ project coordinator. Details of patients who tested HIV+ during PITC were cross-referenced with entries on the national SmartCare electronic medical database to track those who enrolled in HIV care and treatment. Operational constraints prevented patients' records being harmonized at two clinics, which meant that patients who tested HIV+ during PITC could not be tracked to determine if they enrolled in HIV care and treatment. The rate of enrolment in the HIV care and treatment programme was calculated by dividing the total number of patients who enrolled at the seven clinics with harmonized patient records by the total number of patients who tested HIV+ at all nine clinics taking part in the PITC programme. Consequently, the enrolment rate was probably underestimated.

The time to enrolment in the HIV care and treatment programme was defined as the number of days between the date of the patient's test recorded in the PITC register and the date of enrolment recorded in the patient's SmartCare electronic record. Although both mean and median times to enrolment were

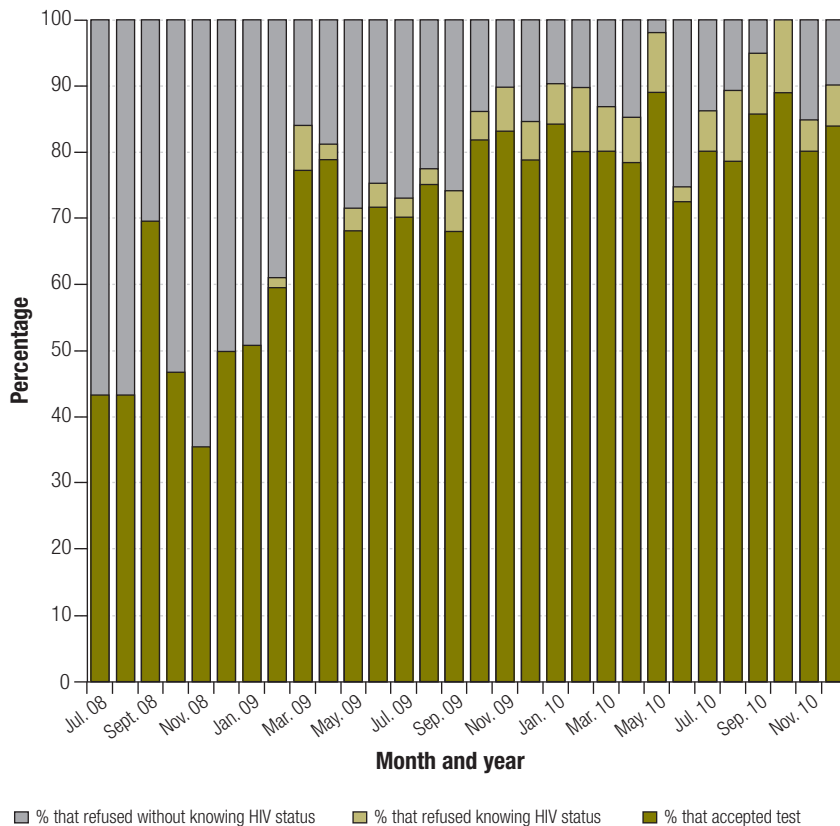
calculated, the median was considered the better measure because there was a small number of extreme outliers. Data analyses were performed using Microsoft Excel 2007 (Microsoft, Redmond, USA). The study protocol was approved by the institutional review boards of the University of Zambia in Lusaka, Zambia, and the University of Alabama at Birmingham, United States of America.

Results

Over 30 months, the staggered introduction of PITC at nine primary health-care clinics, as part of the programme to integrate care for patients with and without HIV infection, resulted in 44 420 patients receiving counselling. After subtracting patients who should not have undergone counselling because they knew and could prove their HIV status, the number counselled for the first time was 41 861. Of these patients, 31 197 (75%) agreed to be tested. Subsequently, 6572 (21% of those tested) were found to be HIV+ and 2515 (38% of HIV+ patients) enrolled in the HIV care and treatment programme. Overall, 44% of individuals who accepted testing were male, as were 41% of the HIV+ patients who enrolled in the care and treatment programme.

Over time, the percentage of individuals who accepted testing increased at all sites, as did the proportion who refused testing because their HIV status was known (Fig. 1). Fig. 1 shows that the overall rate of acceptance of HIV testing increased from 52% in the first 3 months of the programme (i.e. July to September 2008) to 83% in the last 3 months reported (i.e. October to December 2010). Full details of the number of patients who underwent counselling, accepted testing and were found to be HIV+ at the nine clinics in each month during the PITC programme are shown in Table 1 (available at: <http://www.who.int/bulletin/volumes/89/5/10-084442>). The clinics are numbered 1 to 9 according to the date of entry into the programme, such that Clinic 1 was involved first. The mean percentage of patients who accepted testing at individual clinics ranged from 47% in Clinic 9 to 99% in Clinic 8, while the mean percentage found to be HIV+ each month ranged from 13% to 26%. The rate of enrolment in the HIV care and treatment programme among HIV+ patients was low overall (38%), although it was higher in clinics with longer experience: Clinic 1: 47%; Clinic 2: 59%; Clinic 3:

Fig. 1. Proportion of individuals who accepted or refused testing for infection with human immunodeficiency virus (HIV) in provider-initiated testing and counselling programme, Lusaka, Zambia, 2008–2010



50%; Clinic 4: 44%; Clinic 5: 43%; Clinic 8: 14% and Clinic 9: 25%. As noted earlier, patients in Clinics 6 and Clinic 7 could not be tracked from PITC to HIV care and treatment.

Six of the nine clinics provided VCT for HIV infection before the introduction of PITC, while the other three (Clinics 5, 6 and 7) started VCT along with PITC using the same lay health-care workers. Across the six clinics that previously offered VCT, the mean uptake of VCT increased from 48 patients per month in July 2007 to 190 patients per month in December 2010. Across the three clinics without pre-existing VCT, the mean number of patients who received VCT reached 117 per month following the introduction of PITC. Fig. 2 plots the total number of clients at all nine clinics who received VCT and PITC each month before and after the introduction of PITC. The introduction of PITC directly increased the number of patients who underwent HIV testing by between 11% and 207% compared with the number tested under VCT in the same month. The mean monthly increase across all sites during the 30-month study period

was 97%, an almost twofold increase in clinic-based testing. At all clinics, the rate of case-finding of HIV+ individuals was consistently higher among VCT clients (mean: 33%) than PITC clients (mean: 22%), which suggests that VCT continued to be used by people who knew or suspected they had an HIV infection.

Among all patients who enrolled in HIV care and treatment, the median time between HIV testing and enrolment was 6 days (interquartile range, IQR: 13). The median time between HIV testing and enrolment at the clinics individually was: Clinic 1: 4 days (IQR: 14); Clinic 2: 6 days (IQR: 6); Clinic 3: 1 day (IQR: 5); Clinic 4: 4 days (IQR: 8); Clinic 5: 15 days (IQR: 20); Clinic 8: 13 days (IQR: 32.5); and Clinic 9: 3 days (IQR: 5).

Discussion

In countries like Zambia where there is a general HIV epidemic, case-finding of HIV+ patients must be effective to ensure universal access to care and treatment. Yet the rate of HIV testing often remains far too low. One solution is to provide tests that are more read-

ily available and acceptable for specific population groups.

To date, evidence that PITC can improve case-finding of HIV+ patients and increase the number who proceed to HIV treatment and care has come primarily from controlled studies^{25,31,32} and from specific intervention programmes: for example, studies targeting patients with tuberculosis or sexually transmitted infections or programmes to prevent mother-to-child transmission of HIV.^{31–35} Although data from Botswana suggest that introducing PITC into primary care clinics increased the uptake of HIV testing,^{22,36–39} the country's small population and status as a middle-income country make the findings difficult to generalize. Additional supporting evidence for the effectiveness of PITC in outpatient settings in sub-Saharan Africa comes from experience in tertiary health-care in Uganda^{23,40} and South Africa.^{5,18}

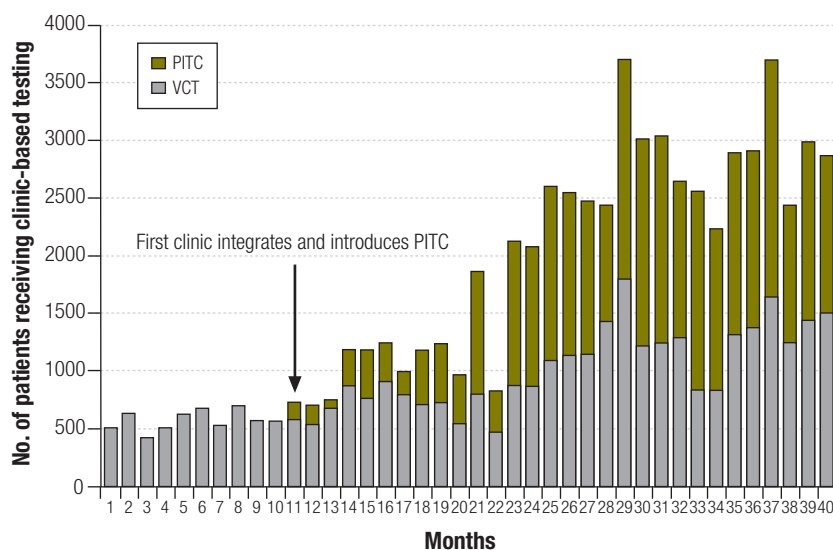
The present study adds to the literature on PITC in sub-Saharan Africa and provides support for WHO's recommendations on the routine use of PITC in primary care. The study demonstrates that access to and uptake of HIV testing were improved by incorporating routine PITC into a programme of integrated primary care in urban and periurban populations in a country with a high prevalence of HIV infection and limited resources.

Coverage of HIV testing

In the 30 months during which PITC was introduced into nine urban clinics in Zambia, an additional 31 197 individuals underwent HIV testing. This equates to 9% of the aggregate catchment population of the clinics (i.e. approximately 400 000) and 2.6% of the total population of Lusaka. With PITC and changes in the uptake of VCT taken into account but routine testing for the prevention of mother-to-child transmission excluded, the introduction of PITC resulted in a mean increase of 97% in monthly clinic-based HIV testing above that associated with VCT alone; the increases at the individual clinics ranged from 57% to 408%.

The demand for client-initiated VCT generally increased following the introduction of PITC, which suggests that PITC was providing an additional route to testing rather than replacing VCT. The increase in the uptake of VCT occurred partly because staff were guaranteed to be available for testing after the introduction of PITC. Previously, testing was carried out

Fig. 2. Number of individuals who underwent provider-initiated testing and counselling (PITC)^a or voluntary counselling and testing (VCT) for HIV infection each month at nine primary health-care clinics, Lusaka, Zambia, 2008–2010



HIV, human immunodeficiency virus.

^a PITC was introduced at the first clinic in July 2008.

only when staff were available. Increased community awareness of the potential benefits of testing may also have contributed.

Acceptability of HIV testing

The percentage of individuals who agreed to HIV testing was comparable to that reported in other controlled settings.^{32,33,35,41,42} The initially lower rates of acceptance seen in all but one clinic demonstrate that patients were able to exercise free choice. Thereafter, the rate of acceptance increased over time, supporting the view that routine PITC can help “normalize” HIV testing and remove a key structural barrier to accessing care and treatment.^{2,17} Patients at outpatient departments may have been willing to undergo HIV testing because they suspected that their presenting illness could be related to HIV infection but were afraid or unwilling to volunteer for testing.

In the past, opt-out testing has been criticized for being open to coercion by providers and because there is a risk that patients may not fully understand the purpose of testing. Consequently, monitoring whether patients have complete freedom to choose HIV testing is an ethical imperative. In the PITC programme, patient registers established at the inception of the study were reviewed each month to determine whether the rate of acceptance of HIV testing by patients seeing any individual counsellor was particularly high or low, and counsellors attended

refresher courses on informed consent and counselling.

HIV infection case-finding

More than one in five patients tested in the PITC programme were found to be HIV+. This figure is consistent with the known prevalence of HIV infection in Lusaka District at the time of writing.⁴³ Case-finding among VCT clients was higher (mean: 33%), which suggests that more of these individuals had symptoms that they themselves recognized as being related to HIV infection. Nonetheless, a preliminary analysis of HIV+ patients who proceeded to HIV care and treatment at the first four clinics that were involved in the integrated primary care programme and that incorporated PITC demonstrated that more than 50% had advanced-stage disease (i.e. CD4+ T-cell count: < 200/μL) and were eligible for antiretroviral therapy.²⁹ Consequently, although the case-finding rate was lower with PITC, the programme still provided an important point of entry to care for patients with advanced immune suppression who were either asymptomatic or unable or unwilling to seek care themselves. In high-prevalence settings, therefore, PITC can lead to additional case-finding and increase the chance that HIV infection can be identified and treated early. As a result, patients could start antiretroviral therapy with lower viral loads, with substantial benefits for clinical outcomes in

individuals and for disease prevention at the population level.^{44,45}

Sex differences

Due to constraints on data collection, the study findings could only be analysed partially by sex. Men made up 44% of those who accepted testing in the PITC programme and 41% of HIV+ patients who enrolled in HIV care and treatment. Although anecdotally more women than men attended outpatient departments, the study findings indicate that HIV testing in clinics in Lusaka may also have been more acceptable to women than men and that, in this setting, HIV+ women were more likely to access care and treatment. Consequently, while more research is needed, the indications are that strategies other than clinic programmes may be required to improve men’s access to HIV care and treatment.

Enrolment in treatment programmes

The median time between HIV testing and enrolment in the HIV care and treatment programme was 6 days, which we regarded as acceptable. The immediate enrolment of patients found to be HIV+, although ideal, is often impractical because of a shortage of health-care workers or because patients need to think about their situation since many will have attended the clinic for reasons other than HIV infection. However, the large number of patients who do not progress from HIV testing to HIV care and treatment poses a greater challenge. In this study, only 38% of HIV+ patients enrolled in the HIV care and treatment programme. Implementers of the PITC programme were able to work with clinic managers to improve the system for enrolment in HIV care and treatment, and this led to better average rates of enrolment at clinics that integrated primary care and initiated PITC services first. However, the pattern of enrolment was often erratic and the average enrolment rates at clinics that joined the PITC programme later were lower. The referral systems appeared to be weak and were affected disproportionately by changes in leadership, staff rosters and other unanticipated factors.

Limitations

The study was limited by being a non-randomized study of data collected routinely at nine urban clinics. Moreover, the analysis included data collected from clinics

that entered the primary care integration programme, including the introduction of PITC, at very different times because the programme had to be implemented according to a predetermined schedule. A further limitation is that the study was not designed to enable a rigorous comparison of VCT and PITC. Consequently, the study's findings on trends in HIV testing should be interpreted with caution. In addition, the study did not include a cost-effectiveness analysis, which would be important for a full assessment of the feasibility of scaling up HIV testing programmes. For these reasons, the study's results may not be generalizable beyond its particular setting.

Further research

The study's findings highlight gaps in our understanding of HIV testing in Zambia and the following could provide topics for future studies: (i) differences in the clinical and demographic characteristics of patients undergoing VCT and PITC; (ii) the

clinical and demographic characteristics of patients who refuse PITC; (iii) features of the clinic, community or culture that act as barriers to HIV testing and enrolment in care and treatment programmes; and (iv) whether undergoing PITC rather than VCT before enrolment in an HIV care and treatment programme influences clinical outcomes. Moreover, since patients undergoing PITC are less likely to be prepared for a positive HIV test result than those undergoing VCT, it would also be helpful to determine whether more extensive counselling or a different form of counselling about enrolment in HIV care and treatment would be beneficial.

Conclusion

Improving diagnosis and treatment for HIV+ individuals is an important public health goal. This study demonstrates that introducing PITC using lay health-care workers in busy urban primary health-care centres can double HIV testing and substantially increase case-finding of

HIV+ individuals, which is vital for those with advanced disease. Critically, these gains were achieved without disrupting existing HIV or other health-care services. Nonetheless, scaling up HIV testing and treatment has substantial foreseeable implications for the health-care system: more health-care workers and drugs will be needed and infrastructure must be improved. In this study, increasing HIV testing involved supervised lay health-care workers who transferred from short-term contracts to the Zambian Ministry of Health payroll and used general Ministry of Health funds to pay for the additional test kits required. This approach works over the short to medium term. Ultimately, however, universal access to HIV testing and treatment in Zambia and similar countries depends on real increases in funds and human resources and requires a higher level of commitment from both national governments and the international community. ■

Competing interests: None declared.

الملخص

مبادرة مقدمي الخدمة مع مراعاة حق الامتناع عن المشاركة في إجراء الاختبار والمشورة لفيروس الإيدز في عيادات الرعاية الأولية للمرضى الخارجيين في زامبيا

في تسع عيادات مقارنة بعدد من يتلقون المشورة والاختبار الطوعيين فقط. وطوال 30 شهراً، أجرى 44420 مريضاً مشورة ضمن مبادرة مقدمي الخدمة وقبل منهم 31197 إجراء الاختبار، كان 44% منهم من الذكور. وتبين أن 21% (6572 شخصاً) ممن أجري لهم الاختبار كانوا إيجابيين؛ واندراج 38% من هؤلاء المرضى المصابين بالفيروس (2515 شخصاً) في الرعاية والعلاج الخاصين بالفيروس. كان الوسيط الزمني بين إجراء الاختبار والاندراج في الرعاية والعلاج 6 أيام. وقد ارتفعت مقبولية إجراء الاختبار مع مرور الوقت. الاستنتاج إن الاستخدام الروتيني لمبادرة مقدمي الخدمة مع الاستفادة من المشاورين التقليديين في عيادات الرعاية الصحية في لوساكا في زامبيا قد أدى إلى زيادة هائلة في إدراك ومقبولية اختبار فحص فيروس الإيدز. وعلاوة على ذلك، فإن مبادرة مقدمي الخدمة قد اندرجت على نحو سريع ضمن أقسام الرعاية الأولية للمرضى الخارجيين. ولكن مازال عدد المرضى الذين يواصلون الرعاية والعلاج الخاصين بالفيروس الإيدز تحدياً ويتطلب المزيد من البحوث.

الغرض زيادة اكتشاف الحالات المصابة بفيروس العوز المناعي البشري (فيروس الإيدز) في زامبيا وإحالتها إلى الرعاية والعلاج عن طريق دعم نظام الاختبار والمشورة الطوعيين القائم على المبادرة من متلقي الخدمة، وهو النمط الشائع لاختبار فيروس الإيدز في زامبيا. الطريقة قَدَّم المشاورون التقليديون الاختبار والمشورة الطوعيين كمبادرة من مقدمي الخدمة لجميع المرضى الخارجيين الذين راجعوا عيادات الرعاية الأولية ولم يكونوا يعرفون حالتهم المصيبة من حيث فيروس الإيدز. وجمعت المعطيات عن المشورة والاختبار في سجلات. وشملت النتائج موضع الاهتمام التغطية باختبار فحص فيروس الإيدز، ومقبولية إجراء الاختبار، ونسبة النتائج الإيجابية للإصابة بفيروس الإيدز، ونسبة المندرجين في الرعاية والعلاج الخاصين بفيروس الإيدز، والوقت المنقضي بين الاختبار والاندراج في الرعاية والعلاج. النتائج بعد إضافة مبادرة مقدمي الخدمة إلى فعاليات المشورة والاختبار الطوعيين تضاعف عدد من أجري لهم الاختبار لفحص إصابتهم بالفيروس

摘要

赞比亚初级卫生保健诊所开展医务人员建议门诊病人进行艾滋病检测和咨询服务

目的 旨在通过补充现有的患者自愿咨询和检测艾滋病病毒 (VCT) 方式，提高赞比亚发现感染艾滋病病毒 (HIV) 的病例数并进行 HIV 护理和治疗。

方法 为所有前往诊所且不知道自己艾滋病病毒血清状况的门诊病人提供医务人员建议病人进行艾滋病检测和咨询 (PITC) 服务。咨询和检测数据从登记簿收集。所关心的结果包括艾滋病检测覆盖率、检测的可接受性、艾滋病病

毒检测阳性 (HIV+) 比例、进行艾滋病护理和治疗的比率以及检测和治理之间的时间间隔。

结果 在艾滋病自愿咨询和检测 (VCT) 的基础上增加医务人员建议门诊病人进行艾滋病检测和咨询 (PITC) 服务之后，在 9 间诊所检测出的艾滋病病毒感染数量是只进行艾滋病自愿检测 (VCT) 得出数量的两倍。30 个月中，44,420 名患者接受了医务人员建议做的艾滋病检测和

咨询 (PITC), 其中31,197名患者 (44%为男性) 接受了检测。所检测的人中, 21% (6572) 的患者艾滋病病毒测试呈阳性; 这些测试呈阳性的患者中38% (2515名) 进行艾滋病护理和治疗。接受检测和进行治疗之间的平均间隔时间为6天。检测的可接受性随着时间的推移逐步上升。

结论 在赞比亚卢萨卡通过常规的医务人员建议门诊病人进行艾滋病检测和咨询 (PITC) 服务显著地提高了对艾滋病

检测的理解以及可接受性。此外, 医务人员建议门诊病人进行艾滋病检测和咨询 (PITC) 被迅速纳入基础医疗门诊部门的工作。扩大接受艾滋病护理和治疗的病人人数仍是一个挑战, 需要进一步研究。

Résumé

Conseils et dépistage du VIH engagés par des professionnels de la santé dans les principales cliniques pour patients en consultation externe en Zambie

Objectif Augmenter l'identification de cas d'infection par le virus de l'immunodéficience humaine (VIH) en Zambie et leur orientation vers des soins et des traitements du VIH, en complétant les conseils et le dépistage volontaires (CDV) existants et engagés par le client, le mode dominant du dépistage du VIH dans le pays.

Méthodes Des conseillers laïcs ont offert des conseils et un dépistage du VIH engagés par des professionnels de la santé (CDPS) à tous les patients en consultation externe des principales cliniques, qui n'étaient pas conscients de leur état sérologique VIH. Les données sur les conseils et le dépistage ont été recueillies dans des registres. Les résultats intéressants comprenaient la couverture du dépistage du VIH, l'acceptabilité dudit dépistage, la proportion des dépistages de la séropositivité (VIH+), la proportion des patients qui se sont inscrits dans des soins et des traitements du VIH et la durée entre le dépistage et l'inscription.

Résultats Après l'ajout des CDPS aux CDV, le nombre de personnes dépistées pour l'infection au VIH dans les neuf cliniques était deux fois

plus important que le nombre de personnes qui suivaient uniquement les CDV. Sur 30 mois, ce sont 44 420 patients qui ont été conseillés au titre des CDPS, et 31 197 patients ont accepté d'être dépistés, dont 44% d'hommes. Sur ces personnes testées, 21% (6 572) étaient VIH+; 38% de ces patients HIV+ (2 515) se sont inscrits aux soins et traitements du VIH. La durée moyenne entre le dépistage et l'inscription était de 6 jours. Au fil du temps, le dépistage a été de plus en plus accepté.

Conclusion L'introduction de CDPS de routine, faisant appel à des conseillers laïcs dans les cliniques de soins de Lusaka, en Zambie, a considérablement augmenté l'intérêt et l'acceptabilité du dépistage du VIH. De plus, les CDPS ont été rapidement intégrés dans les services de santé des patients en consultation externe. L'augmentation du nombre de patients qui suivent des soins et des traitements du VIH reste un défi et légitime des recherches supplémentaires.

Резюме

Добровольное тестирование и консультирование амбулаторных больных по поводу ВИЧ, проводимое по инициативе поставщиков услуг в учреждениях первичной медико-санитарной помощи в Замбии

Цель Повысить число диагностируемых случаев заражения вирусом иммунодефицита человека (ВИЧ) в Замбии и количество больных, направляемых к врачам-специалистам для получения медицинской помощи и лечения по поводу ВИЧ, благодаря дополнению существующей системы добровольного консультирования и тестирования (ДКТ) по инициативе пациента (основного механизма тестирования на ВИЧ в этой стране).

Методы Общественные (непрофессиональные) консультанты предложили проводить тестирование и консультирование по инициативе медицинского учреждения (ТКИМУ) для всех амбулаторных пациентов, которые посещали клиники первичной медицинской помощи, но не знали своего серостатуса по ВИЧ-инфекции. Данные о консультировании и тестировании фиксировались в реестре. Исходы, представлявшие интерес, включали в себя: охват тестированием на ВИЧ; согласие на тестирование; доля ВИЧ-положительных (ВИЧ+) результатов тестирования, доля больных, охваченных медицинской помощью и лечением, и время между тестированием и обращением к специалисту.

Результаты После того, как система ДКТ была дополнена ТКИМУ, количество больных, прошедших тестирование

на ВИЧ-инфекцию, в девяти клиниках превысило вдвое численность охваченных системой ДКТ. В течение 30 месяцев 44 420 больных получили консультации в рамках ТКИМУ, а 31 197 больных (из них 44% – мужчины) согласились пройти тест. Из общего количества прошедших тестирование 21% (6572) были ВИЧ-положительными; из этого числа 38% ВИЧ-положительных больных (2515) получили медицинскую помощь и лечение по поводу ВИЧ. Медианное время между тестированием и обращением к специалисту составило шесть дней. Доля больных, согласившихся на прохождение тестирования, со временем возрастала.

Вывод Рутинное внедрение системы ТКИМУ с использованием услуг непрофессиональных консультантов в медицинских клиниках Лусаки (Замбия) привело к резкому повышению отклика больных и увеличению численности согласившихся на прохождение теста на ВИЧ. Более того, система ТКИМУ была быстро освоена подразделениями первичной амбулаторной медицинской помощи. Максимальное повышение числа больных, направляемых к специалистам для получения медицинской помощи и лечения по поводу ВИЧ, продолжает оставаться важной задачей и требует проведения дальнейших исследований.

Resumen

Realización de pruebas para el VIH y asesoramiento iniciados por el proveedor y con exclusión voluntaria en las clínicas ambulatorias de atención primaria en Zambia

Objetivo Aumentar la detección de casos de infección por el virus de la inmunodeficiencia humana (VIH) en Zambia y su remisión para la asistencia y el tratamiento del VIH complementando la realización de pruebas y asesoramiento voluntarios iniciados por el paciente (AVP), con pruebas para el modo de VIH dominante en el país.

Métodos Los asesores no científicos ofrecieron la realización de pruebas para el VIH y asesoramiento iniciados por el proveedor (PITC) a todos los pacientes ambulatorios que acudieron al centro de atención primaria y desconocían su seroestado de VIH. Los datos sobre asesoramiento y pruebas se obtuvieron de los registros. Los resultados de interés incluyeron la cobertura de las pruebas del VIH, la aceptabilidad de las pruebas, la proporción de pruebas VIH-positivas (VIH+), la proporción de inscritos en la asistencia y el tratamiento del VIH y el período de tiempo entre las pruebas y la inscripción.

Resultados Tras la incorporación de las PITC a las AVP, el número de personas que se sometieron a las pruebas para la infección por el

VIH en las nueve clínicas duplicó el número de los que se sometieron exclusivamente a las AVP. Durante 30 meses, 44 420 pacientes recibieron asesoramiento a través de las PITC y 31 197 pacientes aceptaron someterse a las pruebas, siendo el 44% de los mismos varones. De los que se sometieron a las pruebas, un 21% (6572) resultaron VIH+; el 38% de estos pacientes VIH+ (2515) se inscribieron en el tratamiento y asistencia del VIH. La media de tiempo entre las pruebas y la inscripción fue de 6 días. La aceptabilidad de las pruebas fue creciendo con el tiempo.

Conclusión La introducción de PITC rutinarias empleando asesores no científicos en las clínicas de atención primaria de Lusaka, Zambia, aumentó de manera espectacular la acogida y la aceptabilidad de las pruebas de VIH. Además, las PITC se incorporaron rápidamente a los departamentos ambulatorios de atención primaria. Maximizar el número de pacientes que se sometan a la asistencia y el tratamiento del VIH sigue siendo todo un reto y exige realizar investigaciones en mayor profundidad.

References

- Branson BM, Handsfield HH, Lampe MA, Janssen RS, Taylor AW, Lyss SB et al.; Centers for Disease Control and Prevention (CDC). Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Recomm Rep* 2006;55(RR-14):1–17, quiz CE1–4. PMID:16988643
- Guidance on provider-initiated HIV testing and counselling in health facilities. Geneva: World Health Organization; 2007.
- Matovu JK, Makumbi FE. Expanding access to voluntary HIV counselling and testing in sub-Saharan Africa: alternative approaches for improving uptake, 2001–2007. *Trop Med Int Health* 2007;12:1315–22. doi:10.1111/j.1365-3156.2007.01923.x PMID:17949401
- Arthur GR, Ngatia G, Rachier C, Mutemi R, Odhiambo J, Gilks CF. The role for government health centers in provision of same-day voluntary HIV counseling and testing in Kenya. *J Acquir Immune Defic Syndr* 2005;40:329–35. doi:10.1097/01.qai.0000166376.23846.38 PMID:16249708
- Bassett IV, Giddy J, Nkera J, Wang B, Losina E, Lu Z et al. Routine voluntary HIV testing in Durban, South Africa: the experience from an outpatient department. *J Acquir Immune Defic Syndr* 2007;46:181–6. doi:10.1097/QAI.0b013e31814277c8 PMID:17667332
- Bwambale FM, Ssali SN, Byaruhanga S, Kalyango JN, Karamagi CA. Voluntary HIV counselling and testing among men in rural western Uganda: implications for HIV prevention. *BMC Public Health* 2008;8:263. doi:10.1186/1471-2458-8-263 PMID:18664301
- Voluntary HIV-1 Counseling and Testing Efficacy Study Group. Efficacy of voluntary HIV-1 counselling and testing in individuals and couples in Kenya, Tanzania, and Trinidad: a randomised trial. *Lancet* 2000;356:103–12. doi:10.1016/S0140-6736(00)02446-6 PMID:10963246
- deGraft-Johnson J, Paz-Soldan V, Kasote A, Tsui A. HIV voluntary counselling and testing service preferences in a rural Malawi population. *AIDS Behav* 2005;9:475–84. doi:10.1007/s10461-005-9018-x PMID:16261266
- Irwin KL, Valdiserri RO, Holmberg SD. The acceptability of voluntary HIV antibody testing in the United States: a decade of lessons learned. *AIDS* 1996;10:1707–17. PMID:8970692
- Manzi M, Zachariah R, Teck R, Buhendwa L, Kazima J, Bakali E et al. High acceptability of voluntary counselling and HIV-testing but unacceptable loss to follow up in a prevention of mother-to-child HIV transmission programme in rural Malawi: scaling-up requires a different way of acting. *Trop Med Int Health* 2005;10:1242–50. doi:10.1111/j.1365-3156.2005.01526.x PMID:16359404
- Matovu JK, Gray RH, Makumbi F, Wawer MJ, Serwadda D, Kigozi G et al. Voluntary HIV counseling and testing acceptance, sexual risk behavior and HIV incidence in Rakai, Uganda. *AIDS* 2005;19:503–11. doi:10.1097/01.aids.0000162339.43310.33 PMID:15764856
- Mossdorf E, Stoeckle M, Vincenz A, Mwaigomole EG, Chiweka E, Kibatala P et al. Impact of a national HIV voluntary counselling and testing (VCT) campaign on VCT in a rural hospital in Tanzania. *Trop Med Int Health* 2010;15:567–73. doi:10.1111/j.1365-3156.2010.02490.x PMID:20345555
- Pronyk PM, Kim JC, Makhubele MB, Hargreaves JR, Mohlala R, Hausler HP. Introduction of voluntary counselling and rapid testing for HIV in rural South Africa: from theory to practice. *AIDS Care* 2002;14:859–65. doi:10.1080/0954012021000031921 PMID:12511218
- Sherr L, Lopman B, Kakowa M, Dube S, Chawira G, Nyamukapa C et al. Voluntary counselling and testing: uptake, impact on sexual behaviour, and HIV incidence in a rural Zimbabwean cohort. *AIDS* 2007;21:851–60. doi:10.1097/QAD.0b013e32805e8711 PMID:17415040
- Sweat M, Gregorich S, Sangiwa G, Furlonge C, Balmer D, Kamenga C et al. Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. *Lancet* 2000;356:113–21. doi:10.1016/S0140-6736(00)02447-8 PMID:10963247
- Wringe A, Isingo R, Urassa M, Maiseli G, Manyalla R, Chagalucha J et al. Uptake of HIV voluntary counselling and testing services in rural Tanzania: implications for effective HIV prevention and equitable access to treatment. *Trop Med Int Health* 2008;13:319–27. doi:10.1111/j.1365-3156.2008.02005.x PMID:18397395
- Towards universal access: scaling up priority HIV/AIDS interventions in the health sector: progress report 2008*. Geneva: World Health Organization; 2008.
- Bassett IV, Walensky RP. Integrating HIV screening into routine health care in resource-limited settings. *Clin Infect Dis* 2010;50(Suppl 3):S77–84. doi:10.1086/651477 PMID:20397960
- Bayer R, Edington C. HIV testing, human rights, and global AIDS policy: exceptionalism and its discontents. *J Health Polit Policy Law* 2009;34:301–23. doi:10.1215/03616878-2009-002 PMID:19451406
- Collini P. *Opt-out HIV testing strategies*. London: BMJ Publishing Group Ltd.; 2006: Available from: <http://clinicalevidence.bmj.com/downloads/2.Opt-out%20HIV%20testing%20strategies.pdf> [accessed 14 February 2011].
- Ivers LC, Freedberg KA, Mukherjee JS. Provider-initiated HIV testing in rural Haiti: low rate of missed opportunities for diagnosis of HIV in a primary care clinic. *AIDS Res Ther* 2007;4:28. doi:10.1186/1742-6405-4-28 PMID:18047639
- Kenyon K. Routine HIV testing: a view from Botswana. *Health Hum Rights* 2005;8:21–3. doi:10.2307/4065328 PMID:17136897

23. Kiene SM, Bateganya M, Wanyenze R, Lule H, Nantaba H, Stein MD. Initial outcomes of provider-initiated routine HIV testing and counseling during outpatient care at a rural Ugandan hospital: risky sexual behavior, partner HIV testing, disclosure, and HIV care seeking. *AIDS Patient Care STDS* 2010;24:117–26. doi:10.1089/apc.2009.0269 PMID:20059356
24. Leon NH, Colvin CJ, Lewin S, Mathews C, Jennings K. Provider-initiated testing and counselling for HIV - from debate to implementation. *S Afr Med J* 2010;100:220–1. PMID:20459964
25. Perez F, Zvandziva C, Engelsmann B, Dabis F. Acceptability of routine HIV testing ("opt-out") in antenatal services in two rural districts of Zimbabwe. *J Acquir Immune Defic Syndr* 2006;41:514–20. doi:10.1097/01.qai.0000191285.70331.a0 PMID:16652062
26. Bolton-Moore C, Mubiana-Mbewe M, Cantrell RA, Chintu N, Stringer EM, Chi BH et al. Clinical outcomes and CD4 cell response in children receiving antiretroviral therapy at primary health care facilities in Zambia. *JAMA* 2007;298:1888–99. doi:10.1001/jama.298.16.1888 PMID:17954540
27. Stringer JSA, Zulu I, Levy J, Stringer EM, Mwango A, Chi BH et al. Rapid scale-up of antiretroviral therapy at primary care sites in Zambia: feasibility and early outcomes. *JAMA* 2006;296:782–93. doi:10.1001/jama.296.7.782 PMID:16905784
28. Topp SM, Chipukuma JM, Mwango LK, Chiko LM, Tambatamba-Chapula B, Wamulume C, et al. Integration of HIV and outpatient services in Lusaka Zambia: improving HIV case finding with opt-out provider initiated testing and counselling (Abstract No. MOPE0843). Presented at the XVIII International AIDS Conference, 2010, Vienna, Austria.
29. Topp SM, Chipukuma JM, Giganti M, Mwango LK, Chiko LM, Tambatamba-Chapula B, et al. *Provider initiated counseling and testing in outpatient departments in Lusaka, Zambia: improving case-finding for patients with advanced HIV disease* (Abstract No. THPE0285). Presented at the XVIII International AIDS Conference, 2010, Vienna, Austria.
30. Topp SM, Chipukuma JM, Giganti M, Mwango LK, Chiko LM, Tambatamba-Chapula B et al. Strengthening health systems at facility-level: feasibility of integrating antiretroviral therapy into primary health care services in Lusaka, Zambia. *PLoS ONE* 2010;5:e11522. doi:10.1371/journal.pone.0011522 PMID:20644629
31. Homsy J, Kalamya JN, Obonyo J, Ojwang J, Mugumya R, Opio C et al. Routine intrapartum HIV counseling and testing for prevention of mother-to-child transmission of HIV in a rural Ugandan hospital. *J Acquir Immune Defic Syndr* 2006;42:149–54. doi:10.1097/01.qai.0000225032.52766.c2 PMID:16760796
32. Pope DS, Deluca AN, Kali P, Hausler H, Sheard C, Hoosain E et al. A cluster-randomized trial of provider-initiated (opt-out) HIV counseling and testing of tuberculosis patients in South Africa. *J Acquir Immune Defic Syndr* 2008;48:190–5. doi:10.1097/QAI.0b013e3181775926 PMID:18520677
33. Centers for Disease Control and Prevention (CDC). Provider-initiated HIV testing and counseling of TB patients—Livingstone District, Zambia, September 2004–December 2006. *MMWR Morb Mortal Wkly Rep* 2008;57:285–9. PMID:18354372
34. Chandisarewa W, Stranix-Chibanda L, Chirapa E, Miller A, Simoyi M, Mahomva A et al. Routine offer of antenatal HIV testing ("opt-out" approach) to prevent mother-to-child transmission of HIV in urban Zimbabwe. *Bull World Health Organ* 2007;85:843–50. PMID:18038074
35. Harris JB, Hatwiinda SM, Randels KM, Chi BH, Kancheya NG, Jham MA et al. Early lessons from the integration of tuberculosis and HIV services in primary care centers in Lusaka, Zambia. *Int J Tuberc Lung Dis* 2008;12:773–9. PMID:18544203
36. Creek TL, Ntuny R, Seipone K, Smith M, Mogodi M, Smit M et al. Successful introduction of routine opt-out HIV testing in antenatal care in Botswana. *J Acquir Immune Defic Syndr* 2007;45:102–7. doi:10.1097/QAI.0b013e318047df88 PMID:17460473
37. Kessler JA, Ponce P, Saleshando G, Gluckman S, Friedman HM, Bisson G. Risk factors for failure to be offered routine HIV testing among adult medical inpatients in Botswana. *J Acquir Immune Defic Syndr* 2008;47:525–6. doi:10.1097/QAI.0b013e31815b0d5b PMID:18332769
38. Steen TW, Seipone K, Gomez FL, Anderson MG, Kejelepula M, Keapoletswe K et al. Two and a half years of routine HIV testing in Botswana. *J Acquir Immune Defic Syndr* 2007;44:484–8. doi:10.1097/QAI.0b013e318030ffa9 PMID:17211281
39. Weiser SD, Heisler M, Leiter K, Percy-de Korte F, Tlou S, DeMonner S et al. Routine HIV testing in Botswana: a population-based study on attitudes, practices, and human rights concerns. *PLoS Med* 2006;3:e261. doi:10.1371/journal.pmed.0030261 PMID:16834458
40. Wanyenze RK, Nawavvu C, Namale AS, Mayanja B, Bunnell R, Abang B et al. Acceptability of routine HIV counselling and testing, and HIV seroprevalence in Ugandan hospitals. *Bull World Health Organ* 2008;86:302–9. doi:10.2471/BLT.07.042580 PMID:18438519
41. Gammino VM, Mboya JJ, Samandari T, Sheth A, Almquist J, Nkubito G et al. Baseline evaluation of routine HIV testing among tuberculosis patients in Botswana. *Int J Tuberc Lung Dis* 2008;12(Suppl 1):92–4. PMID:18302830
42. Nsutebu EF, Walley JD, Mataka E, Simon CF. Scaling-up HIV/AIDS and TB home-based care: lessons from Zambia. *Health Policy Plan* 2001;16:240–7. doi:10.1093/heapol/16.3.240 PMID:11527864
43. *Zambia Demographic and Health Survey 2006–2007*. Lusaka: Zambian Central Statistical Office, Central Board of Health, & ORC Macro; 2009. Available at: <http://www.measuredhs.com/pubs/pdf/FR211/FR211%5Brevised-05-12-2009%5D.pdf> [accessed 2 March 2011]
44. Gay CL, Kashuba AD, Cohen MS. Using antiretrovirals to prevent HIV transmission. In: Kenneth HM, Hank FP, editors. *HIV prevention*. San Diego: Academic Press; 2009. pp. 107–45.
45. Wilson DP, Law MG, Grulich AE, Cooper DA, Kaldor JM. Relation between HIV viral load and infectiousness: a model-based analysis. *Lancet* 2008;372:314–20. doi:10.1016/S0140-6736(08)61115-0 PMID:18657710

Table 1. Patients who underwent counselling, accepted testing for human immunodeficiency virus (HIV) and tested positive each month at nine clinics taking part in provider-initiated testing and counselling programme, Lusaka, Zambia, 2008–2010

Month	Clinic 1			Clinic 2			Clinic 3			Clinic 4			Clinic 5			Clinic 6			Clinic 7			Clinic 8			Clinic 9		
	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)	C (No.)	AT (%)	THIV+ (%)
July 2008	344	43	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aug. 2008	393	43	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sept. 2008	105	70	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oct. 2008	675	47	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nov. 2008	596	45	13	598	26	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dec. 2008	360	43	17	304	58	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jan. 2009	287	45	20	97	67	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Feb. 2009	396	44	19	193	62	22	211	85	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mar. 2009	187	45	29	165	69	19	367	97	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Apr. 2009	103	51	40	153	72	19	217	100	17	85	70	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May 2009	265	45	24	133	68	17	190	100	16	1040	68	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
June 2009	72	26	32	16	75	17	220	100	19	218	46	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
July 2009	497	49	15	173	83	8	214	73	20	968	77	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aug. 2009	414	65	14	166	78	24	60	79	29	1038	77	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sept. 2009	202	73	22	187	82	22	228	100	19	975	62	20	834	57	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oct. 2009	560	88	8	243	88	26	243	90	18	130	60	32	648	72	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nov. 2009	466	91	10	146	93	28	235	100	14	162	45	38	714	77	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dec. 2009	275	77	24	176	93	24	107	98	28	376	61	36	319	73	30	124	98	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jan. 2010	368	80	22	156	92	24	93	100	18	405	63	26	710	75	23	694	100	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
Feb. 2010	472	78	16	208	98	18	92	100	11	607	56	15	822	77	23	324	100	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mar. 2010	479	75	17	241	89	22	193	98	12	316	61	23	829	69	24	377	99	17	35	100	23	NA	NA	NA	NA	NA	NA
Apr. 2010	309	76	13	190	90	20	266	96	11	402	56	27	436	61	26	280	99	27	38	97	19	NA	NA	NA	NA	NA	NA
May 2010	355	81	20	201	93	12	166	95	18	373	70	21	525	66	26	192	99	38	17	100	24	600	97	16	NA	NA	NA
June 2010	202	95	18	193	93	17	183	95	4	24	82	22	120	67	28	166	100	29	14	93	38	759	100	14	508	47	13
July 2010	139	78	29	113	96	20	61	100	14	288	76	19	473	65	23	20	95	37	102	99	38	281	96	23	647	41	11
Aug. 2010	222	80	26	69	88	18	292	95	9	608	90	29	305	66	38	22	95	19	129	98	40	285	98	23	290	29	30
Sept. 2010	375	86	18	223	86	25	277	95	6	785	84	33	432	67	31	20	95	42	182	99	32	245	98	40	136	100	21
Oct. 2010	236	72	29	195	85	21	260	100	13	393	74	20	117	76	32	28	96	48	64	100	58	172	97	64	59	100	54
Nov. 2010	286	82	20	192	86	21	286	99	12	315	97	34	175	63	36	25	92	35	70	99	49	214	97	32	484	49	18
Dec. 2010	251	71	18	173	87	24	224	100	15	279	100	24	365	70	33	10	100	10	78	96	35	182	96	41	187	49	31
Mean	329.7	61	19	188.6	78	21	203.7	94	17	466.1	64	23	489.0	69	26	175.5	99	23	72.9	98	26	342.3	99	15	330.1	47	13

AT, accepted testing; C, counselled; NA, not applicable; THIV+, tested HIV+.