An AIDS-free world through the full decentralisation of HIV services: a proof-of-concept study

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Abstract

Background Nigeria has the third largest global burden of HIV/AIDS, with an epidemic that is described as stable. HIV/AIDS management in Nigeria has been run as a vertical programme since 2004, which has fuelled stigma and discrimination because facilities have designated AIDS doctors, treatment days, and specialist clinics. This situation has hindered access for patients, and catalysed inefficiency and ineffectiveness in the system with mass refusal of care by HIV-infected individuals. The objective of this proof-of-concept study was to explore the potential effect of full service decentralisation and commonisation. This study involved assessment of the benefits of integrating comprehensive HIV services into core daily health services, involving the training and empowerment of all health-care workers in HIV diagnosis, treatment, and care, thus ensuring the management of HIV-infected individuals as normal patients in selected health-care facilities in Nigeria.

Methods With funding from the US Government, Excellence & Friends Management Consult (EFMC) developed an innovative HIV programming matrix that fully integrates comprehensive HIV services into the core health services of supported facilities. This new model was piloted in three states of Nigeria across 121 public and private health-care facilities. In selected sites, HIV-designated vertical services were dismantled because the new model did not require a specialist task-force on HIV, nor specialist clinics, laboratories, or personnel. As a replacement, HIV-related services were provided together with other clinical services on all days of the week in an integrated manner. Additionally, HIV drugs were stored in the central pharmacy, HIV laboratory equipment was installed in the central hospital laboratory, and counselling and testing was done at all relevant units of the facilities. Supported facilities signed an agreement with EFMC that allowed EFMC to provide financial and technical assistance.

Findings 121 facilities, consisting of ten secondary health centres, 99 primary health centres, and 12 private medical vendors in three states participated in this process over 18 months (October, 2011, to March, 2013). Newly activated (or HIV naive) sites adapted to the new programming pattern faster than did sites where HIV services were already in place. In all sites, the cost of programming reduced by an average of 45%, with most sites able to sustain full HIV care at half or less of their projected budgets. Training and mentoring of all health-care workers in supported facilities and their involvement in the programme improved efficiency, because previously disfranchised health workers had access to HIV knowledge. Weekly enrolment improved by more than 200%, quality of care was reported to be better by both internal and external assessors, and reports of work done were submitted on time.

Interpretation An AIDS-free generation is possible through commonisation of HIV services. For this to happen, HIV services must be fully decentralised and integrated into the fabric of the health system. Every health worker within a facility should be equipped with knowledge and skills to provide HIV services. This training can begin from pre-services undergraduate education and will enhance effectiveness, improve quality, and minimise or eradicate stigma and discrimination in all supported sites.

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Conflicts of interest
We declare that we have no conflicts of interest.

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What proportion of patients need to be tested to realise test and treat goals? Trend analysis of patients screened for HIV within the New York City municipal health-care system

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Abstract

Background New York City Health and Hospitals Corporation (HHC) is the largest municipal health-care system in the USA, comprising 11 acute-care hospitals and six community clinics. Since 2005, HHC has made HIV testing routine, with the goal of reducing incidence and late-stage diagnosis. In this analysis we aimed to: identify proportional markers to signal that a facility's HIV screening efforts had reached stable, routine levels; and identify a marker that, if maintained, would suggest programme goals would be achieved.

Methods Since 2005, 17 HHC facilities have submitted monthly HIV testing reports. We analysed data from 2006–12 to identify patterns in newly diagnosed patients and to assess the rate of concurrent HIV/AIDS diagnoses. Time trends and associations between the reach of screening and screening outcomes were explored with scattergrams and lowess plots, and we used linear and piecewise-linear mixed effects regression models of these outcomes over time. A linear spline of calendar year with knots at 2008 was the fixed effect, with random intercepts at the facility level. To test the association of screening reach with yield of new HIV diagnoses, we estimated mixed effects piecewise linear models of new HIV diagnosis and concurrent HIV/AIDS diagnosis with a linear spline of screening reach with join points at 10% and 20% as fixed effects, and facility-level random intercepts.

Findings Between 2006 and 2012, 7 381 847 patients aged 13 years and older were seen at 17 HHC facilities. 1 157 830 unique patients were tested, and 11 781 HIV-positive diagnoses were made, 4963 of them new. Rates of concurrent HIV/AIDS diagnosis for newly diagnosed patients went from 32·26% (190 of 589) in 2006, to 25·27% (94 of 372) in 2012. The proportion of age-eligible patients who were screened went from 9·41% (92 123 of 979 376) in 2006, to 18·03% (198 938 of 1 103 079) in 2012. Facility annual proportions ranged from 5·49% (5505 of 100 248) to 39·23% (3909 of 9964), with nine facilities annually screening 20% or more by 2012. In sites with higher proportions of age-eligible population screened, the proportion of tests leading to new HIV diagnoses declined in a curvilinear fashion. We found that when more than 20% are screened, the yield of new HIV diagnoses levels off at approximately 0·3%. The proportion of newly identified patients with a concurrent HIV/AIDS diagnosis declined almost linearly up to a screening proportion of 40%, at which point the predicted and observed rate of concurrent AIDS diagnosis is zero.

Interpretation Routine HIV screening within health-care systems should see a significant decline in undiagnosed HIV patients if they annually reach 20% of their age-eligible patient population. The goal of reaching patients early in their diagnosis and avoiding concurrent HIV/AIDS diagnoses would appear to be reached through routine screening when 40% of age-eligible patients are screened annually. Screening efforts must consider prevalence when interpreting results for other areas; the prevalence of HIV infection in New York City was 1·36% in 2012. The strength of these results related to concurrent HIV/AIDS rates are limited by the number of facilities reaching rates above 20%.

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Contributors
CS did the statistical analysis. EC wrote the abstract with input from CS and TH. All authors have seen and approved the final version of the abstract for publication.

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We declare that we have no conflicts of interest.

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Two retrospective cohort studies exploring HIV medication and overall adherence at HIV-specialised pharmacies: implications for HIV patients with comorbid conditions and serious mental illness

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Abstract

Background Approximately 90% of HIV-positive patients have at least one comorbid condition: hypertension, high cholesterol, and heart disease are among the most common. Many HIV patients also have a serious mental illness (eg, anxiety disorder, bipolar mood disorder, major depression, and psychosis), associated with a more rapid and harder-to-treat progression of HIV disease and higher health-care expenditures. Previous studies have found higher adherence to antiretroviral therapy for patients using HIV-specialised pharmacies (HIV-SPs) compared with traditional pharmacies (TPs). We investigated whether HIV-SP users had higher adherence to drugs used in treating comorbid conditions than did patients using TPs, and explored the differences in antiretroviral therapy adherence among patients with and without serious mental illness.

Methods In study 1, which sought to investigate differences in medication adherence for patients using HIV-SPs versus TPs, we did a retrospective study of HIV patients submitting prescriptions for antiretroviral medications at a Walgreens retail pharmacy with use of data from May 1, 2011, to April 30, 2012. HIV patients older than 18 years with at least two prescriptions for antiretroviral drugs and either an HMG-CoA reductase inhibitor (statin) or an angiotensin converting enzyme or angiotensin receptor blocker (ACE/ARB) were included in the study. Proportion of days covered (PDC) was used to measure medication adherence, and student's *t* tests measured group differences. In study 2 we did a retrospective data analysis of HIV patients with serious mental illness. Patients were included who submitted prescriptions for antiretroviral drugs and medication associated with serious mental illness between January 1, 2011, and June 30, 2012, at a Walgreens retail pharmacy.

Findings In study 1, 3660 patients with ACE/ARB prescriptions and 3365 patients with statin prescriptions were assigned to either a study or comparison group based on the type of pharmacies used. Propensity score matching controlled confounders by age, sex, number of chronic conditions, and medication use resulted in a similar number of patients (1484 for ACE/ARB users and 1372 for statin users) assigned to each group. All groups were predominantly male with a mean age of 53 years. For patients taking ACE/ARBs, HIV-SP users had a significantly higher mean PDC of 82·61% (SD 19·74%) compared with 79·66% (SD 21·17%) in the TP group (p=0·0002). Among patients taking statins, HIV-SP users also had a higher mean PDC of 83·77% (SD 18·90%) versus 81·29% (SD 19·97%) in the TP group (p=0·0009). In study 2, of 13 637 HIV patients with serious mental illness exclusively using HIV-SPs, 32·7% (4452) were adherent (PDC ≥95%) versus 19·4% (4268) for 22 028 HIV patients with serious mental illness using only TPs (p<0·0001). Both groups were predominantly male with a mean age of 46 years. Approximately 28·6% (35 909) of all 125 408 HIV patients assessed had an indication of serious mental illness comorbidity.

Interpretation These combined studies demonstrated that adherence to therapeutic treatments for HIV and associated comorbidities was significantly higher for HIV-SP users than for TP users and gives new insight into how to better serve HIV populations and reduce medical costs. Serious mental illness comorbidity can contribute to a two-fold increase in hospitalisation costs, so the results of this study highlight the unique benefit that specialised pharmacies can have in treating HIV patients with serious mental illness. Both studies have limitations because the data are from one pharmacy chain, and whether patients submitted prescriptions elsewhere is unknown. However, we do know that it is less common for HIV patients to split their prescriptions between more than one pharmacy company.

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Conflicts of interest
The authors are employees of the Walgreen Co.

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Drug use and HIV treatment outcomes among HIV-infected men who have sex with men accessing Ryan White services in New York: a cross-sectional study

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Abstract

Background **Drug use poses multiple challenges to maintenance of the physical health of HIV-infected individuals. Few studies have explored the association between drug use and HIV treatment outcomes among HIV-infected men who have sex with men (MSM). We aimed to examine the relation between drug use (defined here as use of crystal methamphetamine, crack cocaine or cocaine, heroin, or off-label prescription medications) and HIV treatment outcomes (unsuppressed viral load and a low CD4 count) among HIV-infected MSM.**

Methods **Analyses were done on all HIV-infected MSM who received Ryan White part A funded services at provider agencies in the greater New York metropolitan area, and had: an enrolment in a Ryan White part A programme between November, 2010, and June, 2012; at least one substance use assessment; and a valid viral load measurement with or without CD4 count in the 6 months before the substance use assessment. The primary outcomes for this study were unsuppressed viral load (>200 copies per mL) and a low CD4 count (<350 cells per μL). Independent associations between substance use and HIV treatment outcomes were examined by multivariate logistic regression. The multivariate model adjusted for all other covariates associated with poor HIV outcomes with p values less than 0·05 in unadjusted analyses. Results are presented as adjusted odds ratios (aORs) with 95% CIs. This project was classified as a programme evaluation (not research) by legal counsel at the New York City Department of Health and Mental Hygiene.**

Findings **Among 3287 HIV-infected MSM, 366 (11%) reported drug use. Most of the study population was aged 30–49 years (1798 [55%]; range 13–82 years), non-Hispanic black (1424 [43%]), and on antiretroviral therapy (2530 [79%]). In bivariate analyses, drug users were more likely than non-users to have unsuppressed viral load (234 of 340 [some missing values; 69%] *vs* 1044 of 2717 [38%]) and a low CD4 count (154 of 336 [46%] *vs* 924 of 2691 [34%]). In multivariate analyses controlling for sociodemographic and clinical characteristics, drug users were more likely to have unsuppressed viral load (aOR 2·74, 95% CI 2·09–3·59) and a low CD4 count (1·41, 1·10–1·80) than were non-users.**

Interpretation **Our results show a significant relation between drug use and both low CD4 count and unsuppressed viral load. Future studies should examine biological and psychosocial predictors of drug use, to inform intervention development for MSM who are drug users in HIV care settings. Although the substance use data for this study were based on self-report, which could be limited by recall and social desirability bias, this study was strengthened by use of the New York City HIV Surveillance Registry, which is a comprehensive source of longitudinal HIV-related laboratory data for individuals diagnosed with HIV or receiving HIV care in New York City.**

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Contributors
MF conceived and designed the study, and wrote the abstract with input from MI. JT and EA did the statistical analyses. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest
We declare that we have no conflicts of interest.

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Structural barriers to antiretroviral treatment: a study using population-based CD4 cell count and linked antiretroviral treatment programme data

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Abstract

Background The promise of an AIDS-free generation rests on treatment as prevention to reduce HIV incidence. Treatment as prevention depends critically on high antiretroviral treatment (ART) coverage. However, even under current national ART guidelines coverage remains far from universal in sub-Saharan Africa. We examined structural barriers to ART access in a community in rural South Africa, which has a very high adult HIV prevalence (28%) and incidence (approximately three new infections per 100 person-years).

Methods We did a population-based survey of CD4 cell count among 5000 randomly selected participants in the 2010 round of a longitudinal, population-based HIV surveillance study. The study was carried out by the Africa Centre for Health and Population Studies in the Hlabisa subdistrict of KwaZula-Natal. We identified the people needing ART among the HIV-infected surveillance participants as those who were either enrolled in the local ART programme (ie, people needing and receiving ART) or people who were not enrolled in the programme but had a CD4 cell count below a certain threshold (ie, people needing ART but not yet receiving it). We applied two different CD4 cell count thresholds (≤200 and ≤350 cells per μL), leading to two different samples of people needing ART (n=376 and n=610). We then used logistic regression to explore the effect of socioeconomic factors (sex, age, education, wealth, distance to the nearest ART clinic, urban/rural residence, and migration status) on the binary outcome of ART enrolment in relation to ART need.

Findings ART coverage was 72% in the 376 individuals who were either on ART or had a CD4 count of 200 cells per μL or fewer, and 45% in the 610 individuals who were either on ART or had a CD4 count of 350 cells per μL or fewer. Women who needed ART were significantly more likely to receive treatment than were men who needed it (48% *vs* 34%; p=0·003 for the ≤350 cells per μL threshold). The age pattern of ART coverage increased from approximately 20% at age 20 years to 60% at age 45 years, declining to 40% at age 70 years for the 350 cells per μL or fewer threshold. Controlling for other factors, among those needing ART, women were more than twice as likely to be taking ART than were men (adjusted odds ratio 2·43, 95% CI 1·36–4·33; p=0·003) and every additional km distance from the nearest clinic decreased the likelihood of ART used by approximately 20% (adjusted odds ratio 0·79, 95% CI 0·67–0·94; p=0·007). Education, wealth, and migration did not affect ART access. When we separated women into those who had not been pregnant since inception of the ART programme in 2004, and those who had been pregnant, pregnancy was a significant determinant of ART access, but explained only a small fraction (<10%) of the difference in ART access between women and men. When we used the second sample of 610 individuals, the findings remained essentially the same.

Interpretation Working towards universal coverage goals, ART programmes need to improve access for men, young and old people, and remote populations. Interventions improving geographical accessibility of ART programmes, such as subsidised transport or the opening of more ART clinics in remote areas, are likely to help to overcome important structural barriers to access.

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Conflicts of interest

We declare that we have no conflicts of interest.

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Use of HIV viral-load suppression to estimate the effect of community-wide home-based HIV counselling and testing and linkage to antiretroviral therapy on HIV incidence in South Africa: a mathematical modelling analysis

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Abstract

Background **High coverage of HIV counselling and testing (HCT) through community campaigns, which link most HIV-positive people to care, has the potential to decrease HIV incidence if most eligible people initiate antiretroviral therapy (ART) and are virally suppressed. The aim of our analysis was to use transmission models of HIV to estimate the effect of home-based HCT on HIV incidence in South Africa.**

Methods **We did an observational cohort study of community-wide home-based HCT in KwaZulu-Natal, South Africa, from September, 2011 to May, 2013. Resident adults within a geographically defined community were offered HCT. HIV-positive people received point-of-care CD4 cell count results, counselling about HIV and ART, referral for HIV care, and follow-up visits at months 1, 3, 6, 9, and 12. We assessed risk behaviour and adherence for HIV-positive people on ART. HIV viral load was measured among all HIV-positive people at baseline, 6 months, and 12 months. Using baseline HCT data and estimates from the literature, we developed a compartmental, deterministic model of HIV incidence in KwaZulu-Natal, incorporating sexual behaviour and ART use. The model population was stratified by sex, age, sexual activity, circumcision status, and condom use. We assumed that viral suppression on ART decreases HIV transmission by 90%, ART dropout was 5% annually, and the transmission probability in acute HIV was 26-fold higher than in chronic infection. Model output for HIV prevalence and incidence was validated with independent HIV survey data. We modelled the effect of home-based HCT every 5 years on HIV incidence at 5, 10, and 20 years.**

Findings **Of 1296 adults, 1273 (98%) were tested for HIV, of whom 404 (32%) were positive. At baseline, 158 (39%) participants were on ART and 127 (32%) were eligible for ART according to national guidelines (CD4 count ≤350 cells per μL). The median CD4 cell count among ART-naive individuals was high (472 cells per μL). By month 6, 359 (88%) participants of the HIV-positive group identified at baseline had visited an HIV clinic, and by month 12, 111 had initiated ART. At month 12, HIV viral load was suppressed among 233 (58%) of all HIV-positive people and among 170 (71%) of HIV-positive people on ART (n=241). With use of the proportion of all HIV-positive participants with viral suppression to indicate ART coverage and adherence, modelling estimated that: HCT every 5 years with ART initiated at CD4 count of 350 cells per μL or less would decrease HIV incidence over 5, 10, and 20 years by 31·3%, 32·9%, and 33·1%, respectively; and ART initiation at the new WHO guideline level of CD4 count of 500 cells per μL or fewer would decrease incidence by 41·0%, 44·6%, and 45·3%, respectively. With each round of HCT (assuming ART initiation at CD4 count ≤350 cells per μL), the proportion of incident cases from acute infection increased from 26% to 31%, 37%, and 40% over 5, 10, and 20 years, respectively.**

Interpretation **Achievable rates of HCT to ensure community-wide HIV testing and ART initiation at levels recommended by current South African guidelines could substantially decrease HIV incidence, if the majority of HIV-positive people achieve viral suppression. The effect will be limited by transmission from acutely infected, untreated individuals who are highly infectious.**

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Contributors
CC conceived and designed the study and oversaw the implementation, analysis, and interpretation. JH, JB, HvR, and RB contributed to the study design, analysis, and interpretation. HvR was the site principal investigator for the HCT study and oversaw the field operations. PM did the statistical analysis of the HCT study with input from RB, JB, JH, and CC. RY did the mathematical modelling with input from RB. RB wrote the abstract, which all authors have seen and approved the final version for publication.

Conflicts of interest
We declare that we have no conflicts of interest.

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Point-of-care HIV testing in primary care and early detection of HIV (RHIVA2): a cluster randomised controlled trial

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Abstract

Background Early HIV detection in primary care is a key challenge. We completed a cluster randomised controlled trial in UK general practices to determine whether point-of-care testing improved early HIV detection.

Methods We randomised 40 of 45 general practices in Hackney, London, UK, to receive a programme promoting rapid HIV testing to newly registering patients, or to usual care. With use of minimisation, and maintaining allocation concealment, practices were randomly allocated to the intervention or control group using the following criteria: practice list size, indices of multiple deprivation score, and male HIV testing rate. We were unable to blind general practices and study participants to allocation. The study was done between April, 2010, and August, 2012. Participants were individuals who were registering at a general practice and who were aged 16 years and older. Those unable to communicate in English who presented without a suitable translator, and known HIV-positive patients, were excluded. General practice staff received education and training in rapid HIV testing (INSTI™ HIV-1/HIV-2 Rapid Antibody Test; bioLytical Laboratories, Canada) for patients at registration or first consultation in general practice. Safe diagnosis and transfer of newly diagnosed cases into specialist care was established with use of quality assurance and electronic data monitoring programmes. The primary outcome was mean CD4 cell count of all patients newly diagnosed as HIV positive in general practice. Primary analysis was by intention to treat, with pre-planned sensitivity analyses, using mixed effects regression analysis to adjust for stratification factors and clustering within practices. This trial is registered, number ISRCTN63473710.

Findings During the study 44 971 and 38 464 patients registered with intervention and control practices, respectively. Their mean age was 35·9 years (intervention group) versus 35·1 years (control group); and 45% in each group were men. Ethnicity was 49% white and 17% black (intervention) versus 57% and 15% (control). Intervention practices offered 11 180 rapid tests, with 4978 (44·5%) accepted (14 tests reactive, 11 confirmed HIV positive). Opportunistic serology testing identified 21 (intervention) and 14 (control) further cases. Of the 32 new diagnoses in the intervention group, 19 (59%) were men, 19 (59%) were black African, and five (16%) were men who have sex with men (MSM). Mean CD4 count was 356 cells per µL (SD 254) in the intervention group versus 270 cells per µL (SD 257) in the control group. The difference in CD4 cell count on a square root scale adjusted for stratification factors was 3·7 (95% CI 1·83–9·40; p=0·186). In a pre-planned sensitivity analysis, excluding seven patients diagnosed via the established NHS antenatal HIV screening programme, mean CD4 counts were 369 cells per µL (SD 262) in the intervention group versus 194 cells per µL (169) in the control group (adjusted difference: 7·5 [95% CI 0·94–14·07]; p=0·025). All patients diagnosed via rapid testing were successfully transferred into specialist care.

Interpretation We show that a programme offering rapid HIV testing at general practice registration led to earlier detection of HIV, and identified cases from non-MSM risk groups. Staff support and quality assurance are paramount for safe implementation of such an intervention. To reduce undiagnosed and late presentation of disease, we recommend that large-scale HIV testing be implemented in UK general practices in high-prevalence settings.

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Contributors

CG had the original idea for the study. WL, HM, CG, SK, DM, SM, SC, KB, SB, JF, GH, and JA designed the study. WL, HM, DM, SC, JA, and CG contributed to general practice staff training and education. WL and HM undertook the quality assurance of the study. SK and NM did the statistical analysis. RA provided advice on ethical aspects of the trial, including data management and data protection. AM completed data quality assurance checks. WL and CG wrote the abstract with input from SK and JA. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

We declare that we have no conflicts of interest.

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Retinal vascular changes and immune restoration in a cohort of HIV/AIDS patients on highly active antiretroviral therapy

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Abstract

Background **Retinal microvascular changes have been shown to reflect systemic inflammation in vivo. We aimed to investigate whether retinal microvascular changes are correlated with, and predictive of, CD4 and CD8 cell count changes in patients with HIV/AIDS being treated with highly active antiretroviral therapy (HAART).**

Methods **We did a longitudinal hospital-based study. 50 HIV/AIDS patients being treated with HAART were sequentially recruited from March, 2011, to September, 2011, from the Communicable Disease Center, Singapore, and then followed up at a 9 month visit. Demographic and socioeconomic information and history of HIV infection were collected at baseline. Blood pressure and anthropometric measurements, blood tests for immune status assessment (CD4 and CD8 cell counts), and retinal photography were done at baseline and at 9 months. Retinal vascular parameters (calibre, tortuosity, branching angle, and fractal dimension) were assessed by a semiautomated computer-based programme (Singapore I vessel assessment [SIVA], version 3.0, Singapore Eye Research Institute, Singapore). Changes of retinal vascular parameters and CD4 and CD8 cell counts were defined as the difference between baseline and 9 months.**

Findings **The mean age of the 50 participants was 46·36 years (SD 8·67). Participants were ethnically Chinese, Malay, and Indian; most (82%) were Chinese and most male (96%). 35 of 50 patients had CD4 counts of fewer than 200 cells per μL at baseline. Years of HAART ranged from 0 to 11 years. There were significant increments in CD4 cell counts (153·42 *vs* 227·74 cells per μL; p<0·0001) and CD8 cell counts (819·90 *vs* 1014·1 cells per μL; p=0·012) between baseline and the 9 month visit, respectively. There were no temporal changes in retinal vascular parameters during this period. After adjustment for age, sex, ethnicity, and years of HAART, each 10 μm reduction in retinal venular calibre at baseline was associated with a 191·08 cells per μL increase in CD8 count (SE 63·54; p=0·004), but not in CD4 cell count, during the 9 month period. Changes of retinal arteriolar calibre and other retinal vascular geometric parameters were not associated with CD4 or CD8 cell count changes.**

Interpretation **Retinal venular narrowing was associated with an increase in CD8 cell counts over time. Our findings suggest that improved retinal venular health was predictive of immune restoration in HIV/AIDS patients who had been on HAART for at least 9 months. Longer follow-up is warranted to monitor the retinal vascular calibre changes in response to HAART treatment.**

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Contributors

L-JL wrote the abstract and did the statistical analysis. CYC revised the abstract and provided retinal imaging technical support. PT, TKY, RA, JN, and THL provided clinical observation and recruitment. T-YW revised the abstract and provided professional retinal imaging technical support. SCT is the principal investigator of this cohort and supervised the study. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

We declare that we have no conflicts of interest.

The relation between psychodemographic factors and perceived stigmatisation among people living with HIV/AIDS in Ibadan, Nigeria: a cross-sectional study

Olalekan Taoreed Kazeem

Abstract

Background The potential for rejection, abandonment, physical and emotional abuse, and other adverse consequences of being infected with HIV creates substantial barriers to disclosure of HIV status. A clear link has been shown between positive HIV cognition, low risk sexual behaviour, and disclosure of HIV status. The issue of perceived stigmatisation among people living with HIV/AIDS (PLWHAs) remains a major hindrance in the prevention and postexposure control of HIV/AIDS. This study investigated the link between HIV/AIDS cognition, HIV self-disclosure, and perceived stigmatisation, and explored the effect of age and sex on perceived stigmatisation.

Methods This correlational study adopted a cross-sectional design. The study was done in four centres for PLWHAs in Ibadan, Oyo State, Nigeria. The centres were: Adeoyo Maternity Hospital; APIN/PEPFAR units at St Mary Hospital, Eleta; Family Health and Population Action Council; and Association for Reproductive and Family Health (AFRH). These sites were selected because of their focus on caring for PLWHA. All PLWHA in the centres were contacted. Prospective participants were required to complete a form assessing eligibility. Inclusion criteria were: diagnosed as HIV positive before the study, currently registered with any of the four centres caring for PLWHAs in Ibadan, English literate, and personally willing to participate after an informed consent process. Even though about 765 PLWHA were fully registered at the centres, only 500 fulfilled the eligibility criteria and were purposively included as participants. Of these, 421 questionnaires were correctly filled and returned (response rate 84·2%). Participants were made up of 278 (66%) female and 143 (34%) male patients. The participants' ages ranged between 23 and 52 years (mean age 34 years). Data were collected with the use of a 70-item self-report questionnaire consisting of respondents' sociodemographic characteristics and three validated instruments measuring HIV-perceived stigmatisation, HIV cognition, and HIV self-disclosure.

Findings A positive relation between HIV/AIDS cognition (r=0·10, p=0·034) and HIV self-disclosure (r=0·60, p=0·012) with perceived stigmatisation was recorded. A 2x2x2x2 factorial analysis showed that young females with poor HIV cognition, but who scored high on HIV self-disclosure (n=38, x=106·57, SD 4·8), were most likely to experience perceived stigmatisation. HIV/AIDS cognition and HIV self-disclosure jointly predicted perceived stigmatisation (R^2=0·36, p=0·021). Female PLWHA experienced perceived stigmatisation more than male PLWHA (*t* test 4·40, p=0·0013). Age had no significant effect on perceived stigmatisation.

Interpretation These findings establish that a link exists between HIV-perceived stigmatisation, HIV cognition, and HIV self-disclosure. Policies and actions should therefore focus on these issues in HIV prevention, care, and support.

Funding None.

Conflicts of interest

I declare that I have no conflicts of interest.

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Assessment of family planning use and associated factors among people living with HIV in Addis Ababa, Ethiopia

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Abstract

Background In Ethiopia, vertical virus transmission from mother to child accounts for more than 90% of paediatric AIDS cases. The best approaches to tackling this issue are to strengthen family planning programmes, provide reproductive health counselling to HIV-infected people, prevent unintended pregnancies, and reduce the risk of new HIV infections among infants. Thus, information regarding contraceptive use and associated factors among HIV-positive patients will be important in understanding the different factors affecting use of family planning services.

Methods A cross-sectional study was done between October, 2010, and May, 2011, in antiretroviral treatment units at selected health centres within the Addis Ababa city administration. The study participants were selected HIV-positive patients on follow-up care. A multistage sampling procedure was used to select study participants. There are ten sub-cities in Addis Ababa, and one health centre was selected randomly from each sub-city; study participants living with HIV were selected with use of a systematic random sampling technique. Data were collected via interview with use of a questionnaire that had been previously piloted successfully.

Findings 628 participants were recruited to the study, of whom 421 (68·9%) were women and 190 (31·1%) were men, aged 19–53 years. 266 (43·5% [95% CI 39·6–47·5]) of the participants (192 [72%] women and 74 [28%] men) used at least one method of contraception. Among these users 238 (89·4%; 150 [63%] women and 88 [37%] men) were using condoms, and 68 (25·5%; 40 [71%] women and 28 [29%] men) were using injectables. Abstinence from sexual intercourse in 193 (54·2%) participants (141 women, 52 men), and desire for a child in 94 (27·2%) participants (66 [70%] women and 28 [30%] men), were the major reasons mentioned for not using contraception. Only 295 (48·3%) of respondents had previously had a discussion about family planning with their service providers, of whom 202 (68·5%) were women. We found that participants who had a high school and above level of education were twice as likely to use contraception as were those who had no formal education (adjusted odds ratio [aOR] 2·65 [95% CI 1·42–4·95]). Compared with study participants who had no children, those who had one child or more had a two-fold increase in use of contraception. Respondents with more than 1 year duration since HIV diagnosis were three times more likely to use contraception than were those with less than 6 months duration (aOR 3·27 [1·53–6·99]). Participants who were single and/or not married were also found to have a two-fold and four-fold increase in using contraception compared with married participants, respectively (aOR 2·75 [1·29–5·85]; and 4·23 [1·76–10·14]).

Interpretation More than half of the HIV-positive participants were not using contraception, despite nearly half being sexually active, and the majority had previously had no discussion about family planning with their service providers. Adequate counselling on issues regarding family planning, child bearing, and sexuality, through fully integrated family planning service in all antiretroviral units, might help to increase the uptake of contraceptive use among HIV-positive people.

Funding None.

Contributors
TBM wrote the abstract and did the statistical analysis. AM and BM prepared the study tools and assisted in study report writing. All authors have seen and approved the final version of the abstract.

Conflicts of interest
We declare that we have no conflicts of interest.

A comparison of human papillomavirus genotypes among HIV seropositive and seronegative Mexican women: a cross-sectional survey at a tertiary care hospital

S Flores, R Figueroa

Abstract

Background HIV-positive women have a higher risk of developing cervical cancer than do women who are HIV negative. The frequency of HIV/human papillomavirus (HPV) co-infection varies according to geographical area and population. The aim of this study was to assess the frequencies of HPV genotypes among HIV-positive and HIV-negative Mexican women.

Methods We did a cross-sectional survey among 42 HIV-positive women and 36 HIV-negative women attending the National Institute of Perinatology in Mexico City, for pregnancy and/or gynaecological care. Informed consent was obtained from participants, who were selected as a convenience sample from women with previous history of HPV infection, between January, 2012, and December, 2012. The protocol was approved by the Institutional Review Board (number 212250-22761). The two groups showed no differences in their demographic and sexual risk profiles, except for history of sexually transmitted infections. Cervical samples were collected from all women, and HPV detection and genotyping were done with the linear array HPV genotyping test (Roche, Branchburg, NJ, USA). Descriptive statistics and squared χ^2 test were done as appropriate. Confounding variables were controlled by stratified analysis.

Findings 177 HPV genotypes were detected, 112 (63·3%) in the HIV-positive group and 65 (36·7%) in the HIV-negative group (p=0·03). HPV detection rates were 2·6 versus 1·8 genotypes per patient (p=0·02) for HIV-positive and HIV-negative women, respectively. High-risk genotypes were more frequent among HIV-positive women than among HIV-negative women (53 [47·3%] *vs* 19 [29·2%]; p=0·02). Genotypes HPV-52, HPV-59, HPV-16, and HPV-31 were the most frequent among HIV-positive women, whereas HPV-52 and HPV-51 were most frequently found in HIV-negative women. More than one HPV genotype was found in 27 (64·3%) HIV-positive women and 22 (61·1%) HIV-negative women (p=0·9). HIV-positive women showed a two-fold greater risk for acquisition of high-risk HPV infection than did HIV-negative women (odds ratio 2·17 [95% CI 1·08–4·40]). Antecedents of sexually transmitted infections were acknowledged by 23 (54·7%) HIV-positive and six (16·6%) HIV-negative women. No associations between sexually transmitted infections and HPV infection were found. The stratified analysis revealed an increase in risk of acquisition of high-risk HPV infection in HIV-positive women adjusted by the antecedent of previous sexually transmitted infection (odds ratio 3·72 [95% CI 1·7–6·3]).

Interpretation HIV-positive women are prone to developing cervical cancer, possibly due to the higher frequency of HPV genotypes they carry, and predominant infection with high-risk genotypes. History of previous sexually transmitted infection should be taken into account when assessing the risk of HPV co-infection among HIV-positive women.

Funding None.

Contributors

RF did the methodological design and statistical analysis. SF did the HPV genotyping. Both authors have seen and approved the final version of the abstract.

Conflicts of interest

We declare that we have no conflicts of interest.

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Meeting Abstracts

Thromboelastography on plasma in virologically suppressed HIV-positive patients compared with healthy controls

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Abstract

Background Cardiovascular events in people infected with HIV are an emerging clinical problem and the underlying mechanisms are poorly understood. We examined functional plasma coagulation in HIV-infected people compared with healthy individuals on the basis of the hypothesis that plasma samples from HIV-infected people display hypocoagulable properties as an adaptive response to ensure blood flow through an activated, procoagulant endothelium.

Methods This cross-sectional study was done at Rigshospitalet (Copenhagen, Denmark). The study population comprised 67 HIV-infected people (97% white, 91% men, median age 55 years) who had received continuous combination antiretroviral treatment for a median of 12·5 years. 15 age-matched and sex-matched blood donors who were negative for HIV and viral hepatitis served as controls (median age 57 years; 87% men). All participants gave written informed consent. The study was approved by the local ethics committee. The clotting potential of plasma (pure fibrin clot) was assessed by thromboelastography. Thawed EDTA plasma was recalcified, activated with tissue factor, and analysed immediately at 37°C. To assess the clot resistance to fibrinolysis, the samples were analysed both with and without addition of tissue-type plasminogen activator. The indices recorded were reaction time (time until initial fibrin clot formation), angle (rapidity of fibrin clot build-up), maximum amplitude (strength of the fibrin clot), lysis after 30 and 60 min (percentage amplitude reduction after 30 and 60 min), and clot lysis time (time between maximal amplitude and 2 mm amplitude). Results are presented as medians with IQRs. Groups were compared with the Mann-Whitney test.

Findings Compared with healthy individuals (n=15), HIV-infected people (n=67) had delayed clot formation with a longer clot reaction time (14·1 min [12·2–17·4] *vs* 11·2 min [9·2–13·1]; p=0·0007) and a smaller angle on thromboelastography tracing curve (22·9° [19·3–30·0] *vs* 48·6° [40·8–56·7]; p<0·0001), indicative of reduced clot initiation and thrombin generation. Furthermore, HIV-infected people had reduced resistance to tissue-type plasminogen activator induced clot lysis (reduction of amplitude after 30 min of 53·6% [38·1–67·5] *vs* 24·2% [11·1–34·3], p<0·0001; and reduction at 60 min of 76·9% [68·1–84·6] *vs* 59·9% [47·3–65·6], p<0·0001). In addition they had a shortened clot lysis time (23·2 min [17·6–32·3] *vs* 37·3 min [33·1–45·5]; p=0·0003), indicative of altered fibrin clot structure. Clot strength as measured by maximal amplitude was similar between groups (25·4 mm [21·9–32·3] *vs* 24·9 mm [23·7–31·3], p=0·99).

Interpretation People infected with HIV displayed altered functional plasma coagulation compared with healthy individuals, which could be associated with their increased cardiovascular risk. This study is limited by the small number of healthy individuals, and the lack of information on cardiovascular risk factors—such as smoking—in the study population. The strengths of the study are the long follow-up of uninterrupted treatment and the substantial number of patients. This is, to our knowledge, the first study examining the clotting potential of plasma in HIV infected people and the results call for larger studies to determine the clinical implications of this finding.

Funding This work was supported by the Danish Medical Research Council, The Danish AIDS Foundation, AP Møller and wife Chastine Mc-Kinney Møller's Foundation (Fonden til Lægevidenskabens Fremme), the Augustinus Foundation, Grosser LF Foght's Foundation, Bjørn Aastrup's Foundation for AIDS research, Alfred Helsted's and Eli Møller's grant, and Rigshospitalet's Research Council. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the abstract.

Contributors

SRO, JG, TLK, HU, and FFR conceived the study. FFR did the sample collection. FFR, SRO, and PIJ did the laboratory analysis. FFR did the statistical analysis and wrote the first draft of the abstract. JG, PIJ, SRO, TLK, and HU reviewed and edited the abstract. All authors have seen and approved the final version of the abstract.

Conflicts of interest

We declare that we have no conflicts of interest.

Use of electronic data to assist with long-term follow-up in an urban HIV clinic

Clara Bertozzi-Villa, Josine Holsen, Rebecca Eavou, Richard Rodgers, Michelle Taylor, David Pitrak

Abstract

Background The University of Chicago Medicine (UCM) HIV clinic follows up 565 patients, with case management by one social worker. This large cohort makes active case follow-up difficult. Our clinic is located in a neighbourhood on the south side of Chicago. This area includes four of the six communities with the highest annual HIV diagnosis rates in the city and contains neighbourhoods with an HIV prevalence of 1% or more. We describe a programme that used medical informatics to re-link patients lost to follow-up into care and to assist in the long-term management of this group.

Methods Patients at the UCM HIV clinic were eligible for the study if they had attended at least one appointment but had not been seen in clinic for 6 months or more, our criterion for lost to follow-up. We used an electronic clinic database and electronic medical records to identify these patients. Those patients classified as lost to follow-up were re-linked to care by clinic social workers by phone or, if that failed, by follow-up letters. Patients were contacted from February to June, 2013, by the social worker and a social work intern. In an open programme, patients will become eligible for re-linkage on a rolling basis.

Findings Among 565 patients, 56 (10%) had not been seen for 6 months to 1 year, 40 (7%) had not been seen for 1–2 years, and 27 (5%) had not been seen for more than 2 years. Overall, 442 (78%) of our patients were retained in care and 123 (22%) patients were determined to be lost to follow-up. Age, sex, race, ethnicity, and insurance coverage did not predict lost to follow-up status. Ten patients (8%) were dead. Among 113 living patients, 64 (57%) were contacted by phone. 32 had moved or were in care elsewhere. 30 of the remaining 32 (94%) scheduled a clinic visit. Ten patients scheduled a visit in response to a letter or voicemail, but 49 (9% of the clinic cohort) remain lost to follow-up.

Interpretation Our retention rate is much higher than the US national retention rate of about 40%. Nonetheless, with a large cohort, it is important to implement measures to track retention. With this aim, we found electronic data to be useful for identification of patients lost to follow-up and to aid in efforts towards retention in care. We were very successful at collecting data from or re-linking patients who we could contact by phone, but less so when we had to send a letter. In addition to re-engaging patients into care, it is important for us to know if patients have died or transferred care to adequately assess our local cascade of engagement in care. With this study we hope to show the feasibility and sustainability of clinic-wide re-linkage initiatives.

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Contributors

CB-V analysed data and wrote the abstract with input from RE and DP. JH and MT called patients and coordinated linkage to care. RR collected data.

Conflicts of interest

DP received clinical trials support from Gilead, Merck, and ViroPharma. The other authors declare that they have no conflicts of interest.

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Meeting Abstracts

A quality framework to improve routine rapid HIV screening, diagnosis, and linkage to care at a high-volume, urban emergency department in New York City

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Abstract

Background Early identification and treatment of HIV infection reduces morbidity and mortality and the likelihood of transmission to others. In 2010, the Spencer Cox Center for Health at St Luke's and Roosevelt Hospitals partnered with the emergency department to move from a counsellor-based to an integrated model of oral rapid HIV antibody (RHIV) testing in the hospital's two emergency rooms in New York City. For this descriptive study, we collected data for patients seen in the emergency department, and new HIV-positive patients linked to care between 2011 and 2012, to understand barriers to programme implementation and improve quality of routine rapid HIV testing services.

Methods Over 24 months between Jan 1, 2011, and Dec 31, 2012, we implemented the integrated HIV testing model and conducted several monitoring and quality improvement projects. Every month, we measured the number of patients eligible, triaged, offered, accepted, and completed the RHIV test, and the number who tested positive and were linked to care. Data were collected from emergency department, outpatient, and inpatient electronic health records, and were compiled as a necessary part of quality management and the provision of linkage to care. Additional analyses included acceptance rate by site and by triage nurse. Nurses with fewer than 20 triage visits were excluded. Acceptance rate data were extracted from the emergency department electronic health record in aggregate form on a monthly basis, and entered into SPSS for statistical analysis.

Findings Model change resulted in a six-fold increase in testing within 6 months. Of the 339 449 triaged visits, patients from 323 575 (95·3%) visits were eligible for screening (>13 years, triage acuity level III or higher), 305 791 (90·1%) patients were offered the RHIV test, and 34 598 (11·3%) eligible people accepted HIV testing. Among these, 25 690 (74·3%) tests were completed. 81 (0·32%) new HIV cases were identified, of which 61 (75·3%) had an HIV primary care visit within 90 days of preliminary test. In subanalyses, we identified significant differences in individual and site performance for test acceptance and test completion. Among the 105 nurses included in the analysis, acceptance rates ranged from 0·4% to 30·8% (mean 10·8%). Nurses at one emergency room had a significantly higher mean acceptance rate (0·13, SD 0·06) than did nurses at the other (0·08, SD 0·07; $p<0·0001$). Linkage to care improved over time.

Interpretation Integrating routine, near-universal screening into a high-volume emergency department is feasible. From these results, five quality gaps were identified for targeted intervention: eligibility, test offer, acceptance rate, test completion, and linkage to care. These gaps are likely to exist in other routine screening programmes, and each can be targeted with additional measurement and quality interventions. Interventions that we have evaluated include changes in the emergency medical room, dissemination of individual performance reports, and collaboration with the local health department to reach patients lost to follow-up.

Funding The St Luke's and Roosevelt Hospitals routine RHIV testing programme receives grant funding from the New York City Department of Health and Mental Hygiene for costs associated with RHIV testing of uninsured patients.

Contributors

ZH did the statistical analysis. ZH and AG compiled and maintained the HIV testing database. DE and DW supported data collection and helped implement feedback and quality improvement projects. ZH wrote the abstract with input from all authors, and all authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

We declare that we have no conflicts of interest.

Food insecurity and viral suppression in a cross-sectional study of people living with HIV accessing Ryan White food and nutrition services in New York City

Emily Alexy, Matthew Feldman, Jacinthe Thomas, Mary Irvine

Abstract

Background There have been few studies of food insecurity (defined as limited access to nutritionally adequate food) among people living with HIV in the USA, perhaps because this issue is commonly associated with resource-poor countries. However, evidence that people living with HIV in resource-rich countries risk food insecurity underscores the need to understand how food insecurity affects treatment outcomes in this population. We aimed to examine the relation between food insecurity and viral load (VL) suppression among New York City (NYC) Ryan White food and nutrition programme clients.

Methods NYC Ryan White food and nutrition programme eligibility requires residence in the New York Eligible Metropolitan Area, income below 435% of the federal poverty level, and a documented need for nutritional services or inability to purchase or prepare nutritious food. Enrolled clients are assessed at intake and approximately every 6 months on topics including food insecurity (which is not assessed in other NYC Ryan White programmes). Clients categorised as food-insecure reported "fairly" or "very" often not having money for food, "sometimes" or "often" not having enough to eat, or going a whole day in the past 30 days without anything to eat. The analysis included adult Ryan White food and nutrition programme clients with an assessment in 2012 covering food insecurity. For clients with multiple eligible assessments, the earliest 2012 assessment was used. Data for unsuppressed VL (defined as VL >200 copies per mL) came from laboratory reporting in the NYC HIV Surveillance Registry; clients not found in surveillance data were excluded (n=190). Covariates considered included age, sex, race with or without ethnicity, education, employment status, housing status, drug use, antiretroviral status, body-mass index, and poverty level. Those significantly associated with unsuppressed VL in bivariate models were included in the multivariate model. This project was classified as a programme evaluation (not research) by legal counsel at the NYC Department of Health and Mental Hygiene.

Findings Among 3251 eligible NYC Ryan White food and nutrition programme clients in 2012, 2493 (77%) reported food insecurity. The study population was mostly male (2284 [70%]), non-Hispanic black (1616 [50%]), aged 50 years and older (1759 [54%]; range 18–84 years), and on antiretroviral medication (3065 [94%]). In bivariate analyses, unsuppressed VL was more common among food-insecure clients (872 of 2493 [35%]) than among food-secure clients (157 of 758 [21%]). Food insecurity was independently associated with unsuppressed VL in multivariate analyses (adjusted odds ratio 1·50, 95% CI 1·18–1·90).

Interpretation Our findings suggest that food security is important in maintaining the physical health of people living with HIV. Future studies should examine biological and psychosocial mediators of the relationship between food insecurity and HIV treatment outcomes, to inform intervention development. The analysis was limited by the availability of food insecurity data only for participants in food and nutrition programmes. A strength of this analysis was the use of NYC surveillance data to determine VL suppression. As food insecurity data from these programmes mature and can be analysed longitudinally, future analyses will offer a strengthened basis for causal inference.

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Contributors
All authors collaborated on the planning and design of the project. EA did the statistical analysis. EA and MF wrote the abstract, with input from MI and JT. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest
We declare that we have no conflicts of interest.

Acknowledgments
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Meeting Abstracts

Prediction of the risk of active tuberculosis in HIV-infection with an interferon-γ release assay

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Abstract

Background Globally, tuberculosis remains the main cause of death in HIV-infected people. The spread of HIV/AIDS cannot be curbed without effective tuberculosis control strategies. Targeted treatment of latent tuberculosis infection is cost effective, but requires accurate diagnostic methods. QuantiFERON-TB Gold (QFT), an interferon-γ release assay, is promising, but its predictive value in HIV-infected patients is uncertain. We followed up a cohort of HIV-infected people to establish the incidence of tuberculosis by linking to a national tuberculosis database, and determined the predictive value of QFT.

Methods We did a prospective 5-year cohort study in one medical centre and one regional hospital in Taiwan. HIV-infected adults attending outpatient clinics, from Jan 1, 2006, to Jan 31, 2010, were invited to participate after excluding active tuberculosis through absence of symptoms and a normal result of chest radiography. We used a questionnaire to obtain demographic information and information on past exposure to tuberculosis, previous tuberculosis disease, previous vaccination, HIV risk factors, CD4 cell counts, and HIV viral load testing within the past 3 months. At study entry, blood was taken for the QFT test. The cohort was followed up every 3 months, until development of active tuberculosis disease, death, or censoring on Dec 31, 2012. Cases of incident active tuberculosis were ascertained by linking participants to the national tuberculosis database registry. Patients were offered treatment if they tested positive. We used Kaplan-Meier survival analysis to explore risk factors. Multivariate Cox proportional hazards regression models were used to estimate hazard ratios for development of incident active tuberculosis, and were adjusted for age and baseline CD4 cell count.

Findings We enrolled 772 HIV-infected adults with a mean age of 36·8 years (SD 9·0), mostly men (744 [96·4%]), with a median CD4 cell count of 460 cells per μL (IQR 329–634), and a median log plasma HIV viral load of 3·40 copies per mL (IQR 1·74–3·97). HIV risk factors included being injecting drug users (517 [67%]), men who have sex with men (187 [24·2%]), and heterosexuals (62 [8%]). Almost a third (254 [32·9%]) were receiving antiretroviral treatment at study entry. Subsequently, 431 (60·3%) were placed on treatment during the study. The QFT was positive in 90 participants (11·7% [95% CI 9·5–14·0]) and indeterminate in 31 (4·0% [2·7–5·7]). 17 incident active tuberculosis cases (incidence rate 0·44 per 100 person-years) were recorded during 3843 person-years of follow-up (median 5·21 person-years), with two (11·8%) of 17 participants dying during the study. The median CD4 cell count at diagnosis of tuberculosis was 308 cells per μL (IQR 56–531). One patient had extrapulmonary tuberculosis and tested QFT negative. We found that people with a positive QFT had a five-fold risk (adjusted hazard ratio [HR] 5·02 [95% CI 1·75–14·42]; p=0·003) of developing active tuberculosis after ad justment for age, CD4 cell count, and HIV viral load. Individuals with an HIV viral load greater than or equal to 100 000 copies per mL had an eight-fold risk of developing active tuberculosis (adjusted HR 8·69 [1·21–62·23]; p=0·03). The negative predictive value of the QFT was 98·5% (95% CI 97·2–99·3).

Interpretation A high negative predictive value of QFT for incident tuberculosis confirmed the safety of not treating those with negative tests. QFT accurately identifies patients who might benefit from treatment of latent tuberculosis infection, which is an important step towards halting the dual epidemic.

Funding This study was supported by grants from Kaohsiung Veterans General Hospital, Taiwan (VGHKS97-066); the National Science Council of Taiwan (NSC 100-2314-B-010-039, NSC102-2314-B-010-017); and the National Health Research Institute, Department of Health, Taiwan (NHRI-99A1-PDCO-0710101).

Contributors
SSJL contributed to study design and writing of the abstract and carried out the study, with input from HHL, CTF, HCT, YSC, and IJS. CLS, KSW, and JKC carried out the study and did the analysis. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest
We declare that we have no conflicts of interest.

The Angola HIV epidemic, 2004–11: a case of change or stability?

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Abstract

Background In Angola, HIV transmission occurs mainly by unprotected sex. To characterise the epidemic accurately, sentinel surveillance activities must reach those population groups who are sexually active. Surveillance in pregnant women in antenatal clinics is considered an effective way to do routine epidemiological surveillance of HIV in countries with generalised heterosexual HIV epidemics. Angolans experienced 37 years of war that ended in 2002, and concerns have been raised about HIV prevalence since that time. Reliable data for HIV prevalence among pregnant women presenting to antenatal clinics have been available only since 2004, with previous survey results showing prevalence of 2·7% (95% CI 2·5–3·0) in 2004, 2·8% (2·5–3·1) in 2005, and 3·2% (3·0–3·5) in 2007. We assessed trends in the HIV epidemic in Angola and explored whether there has been an increase in HIV prevalence in Angola during the 8-year period following the war, between 2004 and 2011.

Methods We did a cross-sectional survey of HIV-positive pregnant women in 36 sentinel sites in 18 provinces of Angola in 2009 and 2011, to assess HIV prevalence. Participants were recruited consecutively as they presented for care until either the calculated sample size per site (500 women) or a 12-week time limit was reached. Selected women were aged between 15–49 years, had a pregnancy confirmed by a health-care professional, attended the antenatal clinic for the first time during the current pregnancy, and had accepted a test for syphilis. Participants received information from the nurse about HIV surveillance and provided verbal consent for remaining blood to be used for HIV testing. Women who were referred from another antenatal clinic within 3 months before their first visit, or who refused syphilis testing or treatment, were excluded from participation. These selection criteria were used in previous surveys. We calculated mean prevalence (with 95% CIs) for each province and for each year. χ^2 tests were done to assess HIV prevalence trends during the 8-year period (2004–11).

Findings During the 2009 and 2011 seroprevalence surveys, data from 17 441 and 17 988 pregnant women were collected, respectively, and aggregated HIV prevalence was 2·8% (95% CI 2·5–3·0) in 2009 and 3·2% (2·9–3·4) in 2011. In both years, considerable variation occurred across provinces, ranging from 1% (0·5–1·8) in Kwanza Sul to 4·4% (3·5–5·6) in Cunene in 2009, and from 0·3% (0·1–0·9) in Uíge to 5·8% (4·1–8·2) in Bié in 2011. When we compared these data with data from 2004 to 2011, we found that the HIV prevalence in Angola did not vary significantly over time (p=0·067).

Interpretation Although there are geographical variations in HIV prevalence in Angola, the prevalence of HIV among pregnant women has not increased during the past 8 years. Further national health surveys and HIV studies in specific at-risk populations will help to create a more accurate profile of the HIV/AIDS epidemic in Angola.

Funding None.

Contributors

EC wrote the abstract with input from AF, MCTM, RWS, PY, NN, DLH, CC, AS, and AC-P. EC, AF, RWS, and PY did the statistical analysis. DS, MLF, MG, NN, MCTM, and EC did the study and drafted the results. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

We declare that we have no conflicts of interest.

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Population-level phylogenetic surveillance of the Montreal men who have sex with men epidemic 2002–12

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Abstract

Background Failure to control HIV among men who have sex with men (MSM) in Montreal, Canada, (15% seroprevalence), despite widespread antiretroviral therapy coverage, has raised concerns about the effect of early-stage infection, which is frequently undiagnosed, on the size and duration of HIV outbreaks. We used viral phylogenetics to capture the underlying structure of MSM transmission networks (2002–12).

Methods With phylogenetic methods, we sought to ascertain the genetic interrelatedness of viral sequences from the provincial genotyping programme to deduce transmission dynamics of the MSM epidemic, concentrated in the greater Montreal area. Data from the SPOT rapid testing site (http://www.spottestmontreal.com) were used to determine testing propensity, partnership (stable or casual), risk behaviour, and demographic characteristics of the MSM population. Sequence datasets were obtained from all people who had an HIV isolates genotyped in Quebec (viral loads <400 copies per mL) after clinical indication of primary HIV infection (<6 months from infection). Phylogenetic analysis ascertained clustering patterns of MSM transmissions by robust criteria (>98% bootstrap, short genetic and congruent polymorphisms) and anonymised patient identifiers to ensure confidentiality while controlling for repeat sampling. Ethics approval was obtained from the Laboratoire de Santé publique du Québec, the Quebec Ministry of Health committee on confidentiality and access of information, and the Centre de santé de service sociaux Jeanne Mance.

Findings From 2002–12, 1723 people were genotyped for primary HIV infection, of whom 1475 were designated MSM. Epidemiological and sociodemographic data from the SPOT rapid testing site are presented for 1718 MSM, from July, 2009, to July, 2011, of whom 36 tested HIV positive and 1682 HIV negative. Expansion of the MSM epidemic over the past decade could be ascribed to large outbreaks averaging 16 primary HIV infections per transmission cluster expanding over a median of 11 months (IQR 8–21). These large outbreaks of primary HIV infections represented 25% (124 of 497) of MSM transmissions at the end of 2005, 39% (360 of 922) at the end of 2009, and 54% (797 of 1475) at the end of 2012. Fewer lineages (9·7%, 60 of 616) accounted for a growing proportion (54%, 797 of 1475) of MSM transmissions. Data from the SPOT rapid testing site showed that 813 of 1682 (48%) MSM sought testing and that 26 of 36 (72%) of those testing positive had not been tested in the previous 2 years. The odds ratio for HIV positivity was 4·36 (95% CI 2·02–9·44) for individuals reporting five to nine one-night partnerships compared with those reporting fewer than two such partners.

Interpretation In our cohort, most MSM infections in the antiretroviral therapy era may be ascribed to primary or early-stage infection. Our findings substantiate the importance of timely diagnosis and earlier antiretroviral therapy initiation to avert transmission cascades and the evolution of viruses showing protracted infectivity.

Funding The Canadian Institute for Health Research and the US National Institutes of Health.

Contributors

BGB coordinated the phylogenetic analysis based on sequence data obtained from the laboratories of MR, MAW, and BB. JO provided a database on testing habits and risk behaviours for the SPOT cohort.

Conflicts of interest

We declare that we have no conflicts of interest.

HIV burden in men who have sex with men: a prospective cohort study during 2007–12 in Beijing, China

Z W Jia, X J Huang, H Wu, N Li, Q Q Li, Z Y Liu, T C Cohen, K Mayer, C Dye, J A Salomon

Abstract

Background The burden of HIV is high in men who have sex with men (MSM), but the factors associated with increased disease burden are not fully understood. We did a prospective cohort study among MSM in Beijing, China, to explore these issues further.

Methods The study took place between May 1, 2007, and Dec 31, 2012. Participants were recruited from HIV-infected MSM seeking care at Youan Hospital, Beijing. After discharge, study participants agreed to be trained and were hired to distribute study recruitment flyers at venues frequented by MSM, including clubs, bars, parks, and bathhouses. Participants were also encouraged to refer their peers to enrol into the study. MSM were eligible to participate in the study if they were aged 18 years and older, reported sexual behaviours including vaginal or anal intercourse in the past 6 months, and had received no previous serological test for HIV antibody or an antibody-negative result. After enrolment, HIV-negative MSMs were encouraged to return for study visits, which included a standardised interview about sexual behaviour at 3 months. A service package was provided at each visit, including HIV antibody and syphilis tests, free condoms, an allowance of 50 CNY (US$7·40) for transport, and counselling on use of condoms to prevent HIV transmission. Primary outcomes were HIV infection at initial screening and during the 5-year follow-up, and the effect of condom use against acquisition of HIV infection according to consistency of condom use (50%, 75%, and 100%). Factors associated with increased disease burden were also examined with a Cox proportional hazards model.

Findings At enrolment, among 5800 MSM we identified 484 (8·3%) prevalent cases of HIV infection and 293 (5·1%) prevalent cases of syphilis. 2045 (64%) of 3178 MSM were aged between 18 and 30 years, 2320 (73%) of 3178 had attained at least high school education, and 2166 (68%) of 3178 had never married. 466 (26%) of 1758 reported being in only steady partnerships, 642 (37%) of 1758 reported both steady and casual partnerships, and 650 (37%) of 1758 reported only casual partnerships. Among 3178 MSM who were HIV negative at enrolment and who had also completed at least one follow-up interview, 387 infections were observed in up to 5467 person-years of follow-up, implying an incidence of 7·1 per 100 person-years (95% CI 6·2–7·6), with median follow-up of 1·7 years (IQR 0·5–2·7) and an average retention rate of 84% per 6 month interval. Most study participants (2317 [84%] of 2766) were migrants, with major reasons for drop out being leaving Beijing, seroconversion, or feeling that testing was unnecessary. Comparing the final visit to the baseline visit, the probability of reporting 100% condom use increased by 47% among those in steady partnerships (from 322 of 969 participants to 624 of 1281 participants) and 42% in MSM in casual partnerships (from 414 of 1090 to 574 of 1068). Consistent condom use within steady partnerships was associated with lower HIV incidence than was inconsistent use: incidence was 11·5 per 100 person-years (95% CI 6·8–16·2), 9·4 per 100 person-years (5·9–12·9), and 8·7 per 100 person-years (6·0–11·3) in those reporting 50%, 75%, and 100% condom use, respectively.

Interpretation Overall HIV incidence and baseline levels of risk were high in this sample of Chinese MSM. During the study, preventive efforts increased, and condom promotion was associated with reduced risk. However, reliance on self-reported condom use is an important limitation. Further interventions (eg, sexually transmitted disease treatment and pre-exposure prophylaxis) might be needed to curtail the spread of HIV in this population.

Funding The study was funded by the Chinese Government 12th Five-Year Plan (2012ZX10001-003, 2012ZX10001-006, and 2012ZX10004904-002-002), National Natural Science Foundation (number 81372958), and Beijing Key Laboratory (number BZ0089). The sponsors of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

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Contributors

ZWJ, XJH, HW, NL, and CD designed the study. ZWJ, XJH, and HW wrote the first draft and ZWJ and CD wrote the final abstract. ZWJ, QQL, and TCC analysed the data, and ZWJ, XJH, HW, CD, TCC, JAS, and KM interpreted the results. ZYL continues to follow up the cohort and collect data.

Conflicts of interest

We declare that we have no conflicts of interest. The views expressed here are those of the authors and do not necessarily represent the decisions, policies, or views of WHO.

THE LANCET

Meeting Abstracts

A cross-sectional study of genetic diversity of the envelope glycoprotein of HIV-1 in Baja California, Mexico

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Abstract

Background **Mexico had 4598 reported cases of AIDS as of December, 2012, and 4% of the patients infected with HIV-1 in Mexico live in Baja California. The aim of this study was to analyse the predominant HIV-1 virus and characterise the extent of viral genetic diversity in populations from Ensenada and Tijuana cities in Baja California, Mexico.**

Methods **We collected clinical samples from February, 2012, to April, 2013, in three different public hospitals (one in Ensenada and two in Tijuana). Only patients with HIV-1 infections confirmed by Western blot who were naive to antiretroviral treatment (ART) were included in the study. All patients answered a questionnaire addressing sociodemographic and behavioural issues, gave signed informed consent, and allowed the extraction of 5 mL of whole blood.**

Findings **22 patients infected with HIV-1 were included in the study (mean age 37 years [range 18–50]) and 82% of the patients were men. 54% represented men who self-reported homosexual or bisexual behaviour. The mean plasma viral load was 239 946 HIV-1 RNA copies per mL (range 1950–1 862 087). The predominant route of transmission was sexual in 72% of the patients. Plasma RNA was extracted from whole blood with the High Pure Viral Nucleic Acid kit. The HIV-1 V3–V5 region of the gp120 *env* gene (HXB2 position 7065–7634) was amplified by nested polymerase chain reaction (PCR). Only five (23%) samples were successfully amplified and sequenced. We obtained a 579 bp sequence showing 116 variable sites. Reference sequences of different subtypes (n=58) were downloaded from the HIV-1 GenBank. Subtyping of the clinical strains was initially inferred with a maximum likelihood phylogenetic tree constructed with the HKY model and 1000 bootstrap datasets with PAUP 4.0Beta. The gene segments were analysed for recombinant screening with RIP3·0. To confirm consistent results, REGA HIV-1 Subtyping Tool (version 2·0) was also used. Phylogenetic analysis revealed that all five samples analysed were HIV-1 subtype B group M, which were distributed in two haplotypes. Hap 1 (n=4) was classified as X4 and Hap 2 (n=1) as R5 virus (which use CCR4 and CCR5 as a co-receptor, respectively). All samples showed the crown of the V3 loop with the aminoacid sequence glycine-proline-glycine-arginine. There was no phylogenetic clustering or differences between the samples according to sex, age, or method of acquisition of HIV infection.**

Interpretation **The genetic diversity of HIV has important implications for multiple aspects of the pandemic, including diagnostic and laboratory tests, susceptibility to ART, transmission capability, and disease progression. This study contributes to our understanding of the epidemiology of HIV infection in Mexico. We are now analysing more clinical samples collected from the same public hospitals, and the nucleotide sequences have been deposited in GenBank under accession numbers KF356165-67 and KF366441-42.**

Funding **This research was supported by Consejo Nacional de Ciencia y Tecnologia de Mexico (CONACyT) and Universidad Autonoma de Baja California.**

Contributors

NCM-C did the molecular analysis and prepared the abstract. RM-S conceived the study, reviewed the results, and reviewed the abstract. DSS-V did the epidemiological data analysis. IG-M reviewed the results. RL-V, BR-R, and PR-C collected samples. The authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

We declare that we have no conflicts of interest.

CD4 reconstitution and reduction of reservoir in HIV-positive patients following a single infusion of CCR5 modified autologous CD4 T cells (SB-728-T)

R-P Sekaly, J Zeidan, J Lalezari, R Mitsuyasu, G Lee, M Giedlin, G Nichol, W Tang, D Ando, S Deeks

Abstract

Background **SB-728-T is a zinc finger nuclease-mediated, CCR5-modified, autologous CD4 T-cell product. We investigated whether CCR5 knockout might render a survival advantage to the gene-modified CD4 T cells in HIV-infected patients and potentially improve antiviral immune function.**

Methods **Nine aviraemic and chronically HIV-infected patients with suboptimum CD4 counts (200–500 cells per μL) were infused with 10–30 billion SB-728-T cells. The treated patients were male (seven white, two Hispanic) with an average age of 49 years (SD 6·5), and 20·8 years (SD 6·5) of diagnosed HIV infection. All participants were on antiretroviral therapy before the study and for the duration of the study.**

Findings **We observed that a single infusion of SB-728-T was well tolerated and led to short-term and long-term CD4 reconstitution, with a median increase of 223 cells (95% CI 79–688) at day 14 and 103 cells (14–368) at month 12. This was primarily driven by an increase in central memory CD4 T cells (T_{CM}) (r=0·9, p=0·083). CD4 reconstitution also correlated with reduced inflammation in the innate immune system, whereby patients who showed comparatively less improvement in CD4 cell counts had overexpression of activation markers, as well as a gene expression signature of upregulated genes downstream of the type II interferon pathway. CCR5-modified CD4 T cells peaked near day 14 (median 8·5% CCR5-modified allele of peripheral CD4 T cells; 95% CI 5·2–12·0) and were sustained for longer than 12 months (median 4·8% [3·1–8·0] at 6 months; and 5·6% [3·3–8·8] at 12 months). By contrast, CCR5 modification was maintained specifically in the central memory T-cell compartment (median 6%, 7%, and 8% at approximately 15 days, 6 months, and 12 months, respectively). At month 12, we observed reductions in total cell-associated HIV DNA concentrations using digital droplet PCR and longitudinal linear regression analysis (median –0·6 log HIV copies per 10^6 peripheral blood mononuclear cells [95% CI –0·03 to –0·9]) which were related to both CD4 reconstitution (r=–0·86, p=0·024) and exposure to CCR5-modified cells (r=-0·75, p=0·002).**

Interpretation **SB-728-T infusion is safe and is associated with sustained improvements in CD4 cell counts. Decreased inflammation might provide a survival advantage after the infusion of central memory CD4 T cells. SB-728-T could have a role in the observed decrease in latent reservoir size. Clinically robust techniques such as digital droplet PCR for quantification of HIV in peripheral blood mononuclear cells are useful to guide clinical assessment of the antiviral effect of interventions in aviraemic HIV patients who are well controlled on antiretroviral therapy.**

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Contributors

All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

JL is an employee of Quest Clinical Research, and GL, MG, GN, WT, and DA are employees of Sangamo BioSciences.

THE LANCET

Meeting Abstracts

Haemopoietic stem-cell transplantation and long-term immune suppression in a patient with HIV infection receiving intensified early antiretroviral treatment

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Abstract

Background **Early antiretroviral treatment (ART), haemopoietic stem-cell transplantation (HSCT), and long-term immune suppression are promising strategies for control of HIV infection, which could potentially allow ART interruption. Here we discuss a patient with HIV infection who received early intensified ART and underwent HSCT for aplastic anaemia.**

Case presentation **A 12-year-old boy with aplastic anaemia acquired HIV infection through platelet transfusion while being treated with oral cyclosporine (10 mg/kg per day), prednisone (1 mg/kg per day), and subcutaneous filgrastim (5 μg/kg per day). Diagnosis was confirmed with a detectable plasma viral load of 508 000 copies per mL. Early ART was started 30 days after HIV infection (zidovudine/lamivudine, lopinavir/ritonavir, intensified with enfuvirtide). Because of HIV infection, physicians decided to postpone HSCT. Cyclosporine was substituted by mycophenolate mofetil (18 mg/kg per day) after 70 days of HIV infection. Plasma viral load was undetectable (<40 HIV RNA copies per mL) after 4 months of ART. After 250 days of HIV infection, the patient underwent HSCT from a sibling donor with an identical HLA genotype (A*02:01:01:01/02:01:01:01; B*41:01/27:05:02; C*02:02:02/17:01:01:01). Both were heterozygous for the CCR5Δ32 mutation. The conditioning regimen consisted of antithymocyte globulin (5 mg/kg per day) and cyclophosphamide (50 mg/kg per day) on day –5 to day –2, and intravenous cyclosporine (5 mg/kg per day) on day –1. Leucocyte engraftment was confirmed (day 9) and mycophenolate was continued for 2 years. Plasma viral load remained undetectable for 3 years. During this period, the patient did not show symptoms of aplastic anaemia, graft-versus-host disease, opportunistic infections, or serious side-effects linked to immunosuppression. At this point (aged 15 years), the patient arrived at our institution, where we started a follow-up protocol after acquiring informed consent from the patient and his parents. The patient had an indeterminate Western blot, negative HIV-ELISA, undetectable plasma viral load, a CD4 count of 766 cells per μL, and a proviral load of 2·88 DNA copies in peripheral blood memory CD4+ T cells (assay detection limit of 2·6 DNA copies). We started a programmed ART interruption protocol. Plasma viral load remained undetectable for 9 days. However, at day 14 the patient had a plasma viral load of 16 566 copies per mL and developed herpes zoster. ART was restarted at day 16 (plasma viral load of 440 307 copies per mL) with a regimen of tenofovir, emtricitabine, and efavirenz. Chimaerism was 89% after 56 months of HSCT. At present (aged 17 years), the patient is well and without symptoms of aplastic anaemia or HIV infection (undetectable plasma viral load and a CD4 count of 990 cells per μL). Consent was acquired from the patient's representatives to publish these data.**

Interpretation **This case emphasises that early and intensified ART, HSCT, and long-term immune suppression do not assure HIV control after ART discontinuation. Our patient was unable to control HIV infection without ART even though both he and the donor had the HLA B*27:05 allele and were heterozygous for the CCR5Δ32 mutation. HIV plasma viral load rebound could have been caused by remaining infected cells of the recipient because 100% chimerism was not achieved. Other factors to be considered are the absence of graft-versus-host disease, as well as conditioning and maintenance regimens and their potential effects on latently infected cells when compared with recently reported cases.**

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Contributors

GS-MdO wrote the clinical case review and abstract, and did the molecular biology studies. AM-O wrote the clinical case review and was a treating physician. PDR-E did the sample processing and contributed to writing the abstract. SÁ-R did the HLA and chimerism determination. RH-J did the CD4 cell count and viral load determination. TG-T did the CCR5D32 determination. AR-A did the sample processing. YA was a treating physician and involved in sample taking. CA-dlB contributed to writing the abstract. GR-T was a treating physician. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest

We declare that we have no conflicts of interest.

Retrospective proteomic analysis of cellular immune responses and protective correlates of p24 vaccination in an HIV elite controller

Nitin K Saksena, Suneth S Perera

Abstract

Background HIV p24 is an extracellular HIV antigen that is involved in viral replication. Falling p24 antibody responses are associated with clinical disease progression, whereas their preservation with non-progression implies that stimulation of p24 antibody production by immunisation might delay progression. This was the basis of the discontinued p24 vaccine. We identified a therapy-naive man aged 61 years from Sydney, Australia, infected in 1988 through his partner. He received the HIV-p24-virus like particle (VLP) vaccine and a 3 week course of azidothymidin monotherapy in 1993, and continued to show vigorous p24 antigen responses with more than 4% p24-specific CD4+ T cells, coupled with undetectable plasma viraemia, until December, 2011. The patient has since remained therapy naive, with plasma viraemia below detectable levels. The patient is heterozygous for CCR5Δ32 and has an HLA type A1, 2; B8, 44; DR4, 15. In 2011, a transitory viral spike (163 HIV RNA copies per mL plasma) was recorded, which without antiretroviral drug treatment reverted to undetectable virus (<20 HIV copies per mL) in 3 weeks. We aimed to define the immune-protective correlates of p24 vaccination in this individual by retrospective analysis of cellular responses to p24 antigen in CD4+ and CD8+ T cells, and CD14+ monocytes, in terms of the concentrations of 270 cytokines and chemokines during viraemia and aviraemia.

Methods We used whole peripheral blood mononuclear cells from the two phases, stimulated them with p24 antigen, and then separated them by magnetic beads as stimulated and unstimulated CD4+ and CD8+ T cells, and monocyte fractions. Cellular proteins were extracted, quantified, and analysed with a cytokine antibody array. Differentially expressed proteins were analysed with online bioinformatic tools, and statistics evaluated with the student *t* test and three k-way analyses.

Findings Encompassing all three cell types, we found statistically significant coordinated upregulation with high fold-changes of fractalkine, ITAC, IGFBP-2, cathepsin-S, and CCL14a in the aviraemic phase. TECK and TRAIL-R4 were downregulated in the viraemic phase and upregulated in the aviraemic phase. Fractalkine, which showed high fold-changes across cell types during the aviraemic phase and no expression during viraemia, plays a vital part in promotion of cell survival during homeostatic and inflammatory conditions. The upregulation of fractalkine in all three cell types (14-fold in CD4+ T cells, 12-fold in monocytes, and five-fold in CD8+ T cells) during aviraemia might be associated with a protective effect. Interestingly, downregulation of TRAIL-R3/R4 and TECK/CCL25 coincided with plasma viraemia and their upregulation with aviraemia, suggesting that dysfunction in antiapoptotic chemokines might be a mechanism contributing to loss of immune function during HIV infection, and that an effective T-cell-derived immune response can be mounted without T-cell exhaustion. Decrease in TECK expression is associated with increased apoptosis in lymphoid tissues in macaques infected with simian immunodeficiency virus.

Interpretation Because the p24 VLP vaccine failed to induce antibody titres, the possible beneficial effect of p24 vaccine in this individual could be attributed to broad and coordinated cellular responses mounted by all three cell types in tandem in modulating viraemic and aviraemic phases. This study highlights that induction of HIV-1-specific helper cells might be important in immunotherapeutic interventions and HIV vaccine development.

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Contributors
SSP carried out the experimental part of the study for fulfilment of the MPhil degree. NKS designed the study, helped to interpret and write up the study, and obtained funding for the study.

Conflicts of interest
We declare that we have no conflicts of interest.

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THE LANCET

Meeting Abstracts

A demographic study of patients presenting for HIV non-occupational postexposure prophylaxis and those newly diagnosed with HIV at a large urban hospital

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Abstract

Background **The Spencer Cox Center for Health operates non-occupational postexposure prophylaxis (nPEP) and rapid HIV screening programmes at St Luke's and Roosevelt Hospitals in New York City, USA, funded in part by the New York City Department of Health and Mental Hygiene. The aim of this study was to explore the possibility of disparities in nPEP awareness and/or accessibility by comparing the demographics of individuals presenting for nPEP and those newly diagnosed HIV-positive individuals within the same large urban hospital centre. Both programmes are collaborative efforts between the hospital's HIV centre (Spencer Cox Center for Health) and the emergency department, with patients identified primarily in the emergency department and linked to care at the HIV centre.**

Methods **Demographic data were extracted from electronic medical records of patients who underwent HIV rapid antibody testing and had newly diagnosed HIV infections, and of patients who received nPEP, between January, 2011, and June, 2013. All data were entered into an SPSS database for descriptive analysis. Characteristics of patients who received nPEP and those who were newly HIV diagnosed were compared with the χ^2 test and Wilcoxon test.**

Findings **The study population comprised 929 participants, 769 from the nPEP programme and 160 newly diagnosed through the rapid HIV screening programme. Most participants were men (774 [83%]), white (323 [35%]), and reported as a risk factor that they were men who had sex with men (540 [58%]). Mean age was 32 years (range 14–74). For those newly diagnosed with HIV with a documented CD4 cell count, 52 (42%) patients had a CD4 count of fewer than 200 cells per µL, 24 (19%) patients had CD4 count in the range 200–349 cells per µL, and 49 (39%) patients had a CD4 count of more than 350 cells per µL. Most participants resided in boroughs in New York City (799 [86%]), with 519 (56%) from Manhattan. Univariate analysis showed that nPEP patients differed significantly from those newly diagnosed with HIV by race ($p<0\cdot0001$), insurance status ($p<0\cdot0001$), and age ($p<0\cdot0001$). nPEP patients were more likely than were those newly HIV diagnosed to be white (294 [45%] of 652 *vs* 29 [20%] of 144), commercially insured (392 [51%] of 769 *vs* 39 [24%] of 160), and young (mean age 32 years *vs* 37 years, $t_{927}=-6\cdot4$; $p<0\cdot0001$). Newly diagnosed HIV patients were more likely to be black (68 [47%] of 144 *vs* 119 [18%] of 652), publicly insured (53 [33%] of 160 *vs* 82 [11%] of 769), and reside in the Bronx (18 [11%] of 159 *vs* 51 [7%] of 766).**

Interpretation **Differences in race, insurance status, age, and geographical area of residence suggest disparities in nPEP awareness and/or accessibility, and demonstrate a need for public health efforts to educate people about and facilitate access to nPEP in communities at high risk of HIV infection. Possible limitations of this study include varied stage of disease progression among the newly diagnosed sample, the limited number of sites providing nPEP relative to those providing HIV screening, and a lack of ability to survey the newly diagnosed population as to their awareness of nPEP. We aim to do further analysis with zip code geomapping to refine our understanding of differences in geographical distribution of patients accessing nPEP and those accessing HIV testing services.**

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Contributors
ZH, GO, and RP designed and did the statistical analysis. ZH and AG compiled and maintained the database. DE and DW provided leadership, ensuring systems for data collection, and reviewed all data and analysis. VS and AU provided outpatient leadership, ensuring systems for data collection, and reviewed all data and analysis. ZH wrote the abstract with input from all authors. All authors have seen and approved the final version of the abstract for publication.

Conflicts of interest
We declare that we have no conflicts of interest.