

**Background** Estimating the distribution of new HIV infections according to identifiable characteristics is a priority for programmatic planning in HIV prevention. We propose a mathematical modelling approach that uses robust data sources to estimate the distribution of new infections acquired in the generalised epidemics of sub-Saharan Africa and validate it against cohort data.

**Methods** We developed a predictive model that represents the population according to factors powerfully associated with risk: gender, marital status, geographic location, key risk behaviours (sex-work, injecting drug-use, male-to-male sex), sero-discordancy within couples, circumcision and ART status. Incidence inference methods are applied to estimate the short-term distribution of new infections by group. The model is applied within a Bayesian framework whereby regional demographic and epidemiological prior information is updated, where possible, with local data. We validated and trained the model against cohort data from Manicaland (Zimbabwe), Kisesa (Tanzania) and Rakai (Uganda). Building on the results from the acquisition model we infer likely sources of transmission. The model was applied to six countries in the region to investigate potential differences in incidence patterns.

**Results** Without training using the site-specific data, the model was able to predict the pattern of new infections with reasonable accuracy: 95% credible intervals were substantially overlapping and the rank ordering of groups with new infections was consistent. With training using group-specific data on new infections, the accuracy of predictions for subsequent rounds of data improved further and credible intervals narrowed. When applied to the six countries in the region the model showed variation in the distribution of infections between and within countries consistent with the data on prevalence.

**Conclusions** It is possible to accurately predict, the distribution of new HIV infections acquired using data routinely available in many countries in the Sub-Saharan African region. This validated tool can complement additional analyses on resource allocation and data collection priorities.

**Declaration of conflicts of interest** All authors declare having no conflicts of interest.

#### P16.12 OPTIMISATION HIV INVESTMENT IN SWAZILAND: MODELLING HIGH-IMPACT INTERVENTIONS

<sup>1</sup>SL Kelly\*, <sup>1</sup>AJ Shattock, <sup>1,2</sup>CC Kerr, <sup>1</sup>DP Wilson, <sup>3</sup>T Gama, <sup>3</sup>N Mathabela, <sup>4</sup>N Ceesay, <sup>5</sup>M Gorgens. <sup>1</sup>The Kirby Institute; <sup>2</sup>University of Sydney; <sup>3</sup>NERCHA; <sup>4</sup>UNAIDS; <sup>5</sup>World Bank

10.1136/sextrans-2015-052270.559

**Introduction** Swaziland has the highest global HIV prevalence with an estimated 27% of people aged 15–49 living with HIV. To address this issue, the Government aimed to optimise HIV investment by assessing the impact of key interventions.

**Methods** We used Optima to assess the impact of moderate- and high-level scale-up of five interventions: scaling-up antiretroviral therapy (ART) coverage to 65% (at CD4 count <500 cells/mm<sup>3</sup>) by 2020 and 75% by 2030 (moderate scale-up) or 85% by 2020 and 90% by 2030 (high-level scale-up), voluntary medical male circumcision (VMMC) to 55% by 2018 (moderate) or 45% by 2015 and 70% by 2018 (high-level) for males aged 10–49, prevention of mother-to-child transmission to 90% (moderate) or 95% (high-level) by 2018, tuberculosis/HIV co-treatment to 75% by 2015, 85% by 2018, and 90% by 2030 (moderate) or similar targets for high-level scale-up except with 95% coverage by 2030, and implementation of conditional cash transfers

(CCT) to 60% (moderate) or 95% (high-level) by 2018 for women aged 15–24. Data were provided by the Swaziland Government for general and key populations disaggregated by age and sex for 2000–2013.

**Results** By 2030, compared to current coverage, it is possible to reduce new infections by 27% and AIDS-related deaths by 12% (moderate scale-up) or by 49% and 24%, respectively, with high-level scale-up. The highest impact interventions are ART, VMMC, and CCT.

The discounted cumulative additional program cost of these combined interventions was US\$74 million with an incremental cost-effectiveness ratio of US\$2,700 per infection averted (for moderate scale-up) and US\$309 million with an incremental cost-effectiveness ratio of US\$6,300 per infection averted (for high level scale-up).

**Conclusion** Rapid scale-up of ART and VMMC, as well as implementation of CCT for women aged 15–24 showed the greatest impact on reducing new HIV infections and AIDS-related deaths in Swaziland.

**Disclosure of interest statement** No conflicts of interest.

#### P16.13 EPIDEMIOLOGY OF HIV PREVALENCE AMONG URBAN WOMEN IN TANZANIA

RK Singh\*. *International Institute for Population Sciences, Mumbai, India*

10.1136/sextrans-2015-052270.560

**Introduction** Tanzania is the country that was the hardest hit by the HIV epidemic in Sub-Saharan Africa. The present study was carried out to examine the risk factors of HIV infection among women who lived in an urban area in Tanzania.

**Methods** The Tanzania HIV/AIDS and Malaria Indicator Survey (2011–12) data has been used. The sample size for urban and rural women who were tested for HIV and ever had sex was 2227 and 6210 respectively. Bivariate and multivariate analyses like logistic regression analyses were used.

**Results** The present study found that rural women were significantly less likely to be HIV-infected compared to urban women (OR = 0.612,  $p < 0.00$ ). About 10% urban women were HIV-infected whereas 5.8% women in rural areas were HIV positive. Those women who had more than five sex partners were significantly four times more likely to be HIV-infected compared to women had one sex partner (OR = 4.49,  $p < 0.00$ ).

**Conclusion** The present study results suggested that less-educated women, women belong to poor or poorer quintile, women spent night outside, had more sex partners were significantly more likely to had HIV infection among urban women compared to rural women. There is an urgent need for a short and effective program to control the HIV epidemic in urban areas of Tanzania especially for less-educated urban women.

**Disclosure of interest** Nothing to Disclose.

#### P16.14 GEOGRAPHY OF AIDS IN THE STATE OF CEARÁ, BRAZIL

<sup>1</sup>NL Pedrosa, <sup>1</sup>HO Alexandre\*, <sup>1,2</sup>CV Lima, <sup>1</sup>SS Paiva, <sup>1,2</sup>VF Santos, <sup>1,2</sup>MTG Galvão. <sup>1</sup>Federal University of Ceará; <sup>2</sup>Federal University of Pernambuco

10.1136/sextrans-2015-052270.561

**Introduction** The geographical distribution of AIDS subsidises the understanding of the relationship of the disease with socio-economic and cultural characteristics, enabling local planning of

health interventions. Thus, the study aimed to determine the distribution of AIDS in Ceará, Brazil.

**Methods** It was an ecological and longitudinal study. It was analysed all individuals with aids, aged less than 13 years, residents in Ceará, Brazil, reported between 2001 and 2011 by the Information System Notification of the country. We carried out the distribution spatiotemporal cases where data were arranged in cartographic grid. From this, the main cases clusters were identified over the years. It was used ArcGis program.

**Results** The distribution of aids in the state during the study period allowed the identification of four significant clusters  $p < 0.05$ . The primary conglomerate ( $p < 0.01$ ) was located in Fortaleza, the state capital, with 15,42 Km radius, covering surrounding municipalities, being an active cluster in each year. Three other side identified clusters ( $p = 0.049$ ) were: Jijoca Jericoacoara; Groaíras, less than 1 km radius; municipalities of Limoeiro do Norte, Tabuleiro, Quixeré, São João do Jaguaribe and Russas, with radius of 36,8 km.

**Conclusion** The distribution of aids cases in Ceará does not occur randomly, but occurs in clusters over the years, suggesting studies to identify the determinants local features the largest number of cases.

**Disclosure of interest statement** This study was funded by CAPES (Higher Education Personnel Training Coordination) and CNPq (National Council for Scientific and Technological Development). No pharmaceutical grants were received in the development of this study.

#### P16.15 CHILDREN AND YOUNG PEOPLE LIVING WITH HIV/AIDS IN A STATE OF NORTH-EASTERN BRAZIL

CMD Florêncio, HO Alexandre\*, ICV Lima, VF Santos, MTG Galvão, SAR Pereira, FMS Oliveira,. *Federal University of Ceará*

10.1136/sextrans-2015-052270.562

**Introduction** With the advent of antiretroviral therapy there was a significant improvement in the quality of life of children and young people living with HIV/aids, allowing these patients reach adulthood. This public needs to live with the stigma and often with the lack of a structured household and better living conditions. As a consequence, they expose themselves to the risk of acquiring other diseases. This study aimed to describe the epidemiological profile of children and young people aged between 0 to 19 years, diagnosed with HIV/aids living in the state of Ceará in Brazil.

**Methodology** Data were collected from the Notifiable Diseases Information System (Sinan) from 2003 to 2012. For comparison between gender traits studied, it was used the odds ratio tests and chi-square with significant value or p-value  $< 0.05$ .

**Results** A total of 10,284 people were diagnosed with HIV in Ceará during the period. Of this total, 4.62% were children and young adults up to 19 years. The sex ratio was 1.92: 1 with a predominance of males in the general population, while in the group studied the proportion was lower, being 1.04: 1. Girls with ages from 0 to five years (odds ratio: 0.5725;  $p$ -value = 0.0003), six to 12 years (odds ratio: 0.5281;  $p = 0.002$ ) and 13 to 19 (Odds ratio: 0.5079;  $p < 0.0001$ ) were more likely to be diagnosed with HIV than those of other ages.

**Conclusion** The male population is predominantly affected by HIV, however these proportions can vary depending on each age group, as girls and young women are more likely to be diagnosed with the virus. Thus, it is necessary the creation of public

policies for this audience and aimed at preventing infection by the virus.

**Disclosure of interest statement** This study was funded by CAPES (Higher Education Personnel Training Coordination) and CNPq (National Council for Scientific and Technological Development). No pharmaceutical grants were received in the development of this study.

#### P16.16 ASPECTS RELATED TO THE QUALITY OF LIFE OF PATIENTS WHO USE ANTIRETROVIRAL THERAPY

SC Pedrosa, HO Alexandre\*, ICV Lima, MLT Fiuza, GH Cunha, MTG Galvão. *Federal University of Ceará*

10.1136/sextrans-2015-052270.563

**Introduction** The antiretroviral therapy (ART), although is not a cure, allows the slow of the disease's course, while extending and promotes a better quality of life for the patient. Given that, the quality of health-related life is a concept that has as focus the subjective evaluation of the patient and is necessarily related to the impact of health status on the individual's ability to live fully, this study aimed to evaluate the satisfaction of the aspects related to quality of life in patients who use of ART.

**Methods** This is a cross-sectional study, with a descriptive character. The study included 215 patients who met the following inclusion criteria: in use of ART, age or over 18 years. The study met all legal and ethical issues.

**Results** Most participants were male (144; 66.98%) with a mean age of 40 years. The vast majority of respondents reported being satisfied or very satisfied: with sleep (127; 59%); the ability to perform activities of daily life (151; 70.23%), the ability to work (132; 61.40%).

**Conclusion** To conclude, antiretroviral therapy contributes to the improvement of personal satisfaction related to health parameter.

**Disclosure of interest statement** This study was funded by CAPES (Higher Education Personnel Training Coordination) and CNPq (National Council for Scientific and Technological Development). No pharmaceutical grants were received in the development of this study.

#### P16.17 CORRELATION BETWEEN DEMOGRAPHICS, CLINICAL AND RISK FACTOR FOR HIV INFECTED WITH HIV/TB CO-INFECTED IN AMERTHA CLINIC KERTI PRAJA FOUNDATION BALI

<sup>1</sup>ON Yuneti\*, <sup>1,2</sup>IWG Artawan Eka Putra, <sup>1,3</sup>AAS Sawitri, <sup>1,3,4</sup>DN Wirawan. <sup>1</sup>Udayana University, Post Graduate School of Public Health, Bali, Indonesia; <sup>2</sup>Udayana University, School of Public Health Faculty of Medicine Bali, Indonesia; <sup>3</sup>Udayana University, Department of Community and Preventive Medicine Faculty of Medicine, Bali, Indonesia; <sup>4</sup>Kerti Praja Foundation Bali, Indonesia

10.1136/sextrans-2015-052270.564

**Introduction** HIV infection increases the risk of developing Tuberculosis (TB), as TB infection increases the progression of HIV. In Indonesia, the rate of patients HIV positive with TB (HIV/TB co-infected) have reported 31.8% in 2013. In Bali HIV/TB co-infected patients have increased from 26% in 2012 to 30% in 2013. This study aims to determine the correlation between demographics, clinical and risk factor for HIV infected with HIV/TB co-infected in Amertha Clinic Kerti Praja Foundation Bali.