diverse factors that drive the epidemic. Therefore, it is critical that HIV prevention programmes and strategies match the local context and that resources are allocated to interventions with the greatest impact. Nigeria's National Agency for the Control of AIDS (NACA) is coordinating a large-scale initiative to conduct rapid epidemic appraisals across most states, including the mapping and size estimates of female sex workers (FSWs). Seven states have completed the appraisal of FSWs, and are now planning programmes accordingly.

Methodology Mapping was done using a two-level process of identifying and validating locations where FSWs solicit and/or meet clients. The first level involved conducting interviews with secondary key informants to collect information on the location and profile of hotspots, size estimates and typology of FSWs. The second level was done by interviewing primary key informants (FSWs themselves) at each hotspot to validate the information collected and generate more detailed information.

Results A total of 10,233 hotspots were identified across the states and 126,489 FSWs {Hotel/Lodge (29.6%) Bar/Nightclub (30%), Home based (4.1%), Brothel (14.6%) and Street based (16.6%)} were mapped. There was substantial variability in the population density of FSWs (per thousand adult men) across the states ranging from 17 in Abuja to 2 in Anambra. Furthermore, there were clear differences in the density of FSWs per spot with the mean number of FSWs/spot ranging from 17 in Abuja to 8 in Ondo.

Conclusion The FSW population in Nigeria is large and diverse, with substantial differences between and within states with respect to the population size, density and organisational typologies of sex work. This information is central to Nigeria's planning process for scaling up focused HIV prevention programmes and services.

013.2 CAN THE UNAIDS MODES OF TRANSMISSION MODEL BE IMPROVED? A COMPARISON OF THE ORIGINAL AND REVISED MODEL PROJECTIONS USING DATA FROM NIGERIA

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Mathematical modelling has increased our understanding of the HIV epidemic and played a key role in decision making. The UNAIDS Modes of Transmission (MoT) model has been used by 29 countries to analyse their HIV epidemics, with the results helping to guide and focus interventions. However, the simplistic compartmentalisation of the population within the model has raised concerns over its reliability.

We compared the MoT model projections for Cross River, Nigeria, with a revised MoT model that incorporates additional heterogeneity (including subgroups for sero-discordant partnerships and individuals engaging in transactional sex) and updated parameters. We categorised population subgroups into 'high-risk', representing core groups, their bridging partners and sero-discordant partnerships; 'medium-risk', who are regular partners of 'high-risk' individuals; and 'general population', who are not linked to 'high-risk' or 'medium-risk' groups. Sensitivity analyses were undertaken and model projections assessed which population categories generated the highest incidence of HIV.

The original MoT model projections suggest 73% of HIV infections occur in general population subgroups and 21% amongst 'high-risk' groups. Following revisions to the MoT, model projections estimate 76–94% (95%CrI) of new HIV infections are expected to occur in high-risk groups, who make up just 23% of the population, compared to 6–24% amongst general population subgroups. Changes in the distribution of infections result from the introduction

of sero-discordant partnerships and 'transactional sex' groups (a relatively large subset of the population, often ignored in modelling analysis) in the model, which are classified as 'high-risk'.

The UNAIDS MoT remains an accessible and potentially useful model that can help inform intervention priorities. However, our findings strongly suggest that the current model may produce misleading findings, especially in more concentrated HIV epidemic settings. Results from this study indicate the need for UNAIDS to conduct a formal review of the MoT, and for further revisions to be made.

013.3 ESTIMATING THE EPIDEMIOLOGICAL IMPACT OF ANTIRETROVIRAL TREATMENT ON HETEROSEXUAL HIV EPIDEMICS IN SOUTH INDIA: A MODELING STUDY

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Background In south India, where intensive condom-based targeted interventions (TIs) for female sex workers (FSWs) have been successful, the potential impact of past, current, and proposed universal antiretroviral treatment (ART) eligibility criteria on concentrated HIV epidemics, remains unknown.

Methods We developed a mathematical model of heterosexual HIV transmission to simulate the HIV epidemic in three south Indian districts, using district-specific epidemiological data. The model was calibrated to HIV prevalence by risk groups (low-risk, clients, FSWs), population size, and ART coverage. Assuming that condom-based TIs, HIV testing and treatment access, and retention in HIV-care are sustained at current levels, we compared the following scenarios against no ART: (a) continue with the previous eligibility criteria (CD4 ≤ 250 cells/μL) from the start of each district's ART programme; (b) expand from previous to current eligibility (CD4 ≤ 350 cells/μL) after November 2011; and (c) expand to early ART at any CD4 cell count after January 2013.

Results Without ART, the three districts achieve local elimination between the years 2040 and 2082, and by 2035–2063 under the current ART programme (eligibility criteria: CD4 ≤ 250 cells/μL prior to November 2011, CD4 ≤ 350 cells/μL thereafter). By January 2013, the current ART programme has potentially averted 7.8–11.0% of HIV infections, and saved 32–44 life-years per 100-person years on ART, in addition to gains achieved by local TIs. By 2023, the additional fraction of HIV infections averted by ART (compared to sustained TIs without ART) under scenarios A, B, and C are 21–42%, 33–57%, and 43–69%, respectively, and the incremental gains in life-years per 100-person years on ART are 120–140, 68–111, and 40–91, respectively.

Conclusions In declining HIV epidemics with sustained TIs, current ART programmes and proposed ART expansion could provide additional epidemiological impact. The medium-term incremental gains become smaller as eligibility expands but access and retention in care remain constant.

013.4 AN ETHNOGRAPHIC MAPPING STUDY OF "MONEY BOYS" AND THE MALE SEX TRADE INDUSTRY IN CHENGDU, SOUTH WEST CHINA

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Background HIV prevalence studies have found that male sex workers (MSWs) in China have high HIV prevalence, ranging from 5% to 9%. These “money boys” have been identified as a particularly vulnerable population, and it is imperative to develop effective programmes for HIV prevention in this population.

Objectives The study had 4 objectives: (1) to describe the operation of the male sex work industry; (2) to identify the environmental and structural factors that shape the risk practises of MSWs (3) to map solicitation venues and estimate the size of the MSW population to guide programme design and focus.

Method Ethnographic and geo-mapping techniques were combined to locate, enumerate and contextualise different aspects of the male sex trade industry. MSWs, network operators and brothel owners provided size estimates of MSWs for specific hotspots. Participant observation and key informant interviews were employed to understand the risk practises described by participants.

Results According to the ethnographic findings, MSWs are often recruited from rural villages via labour markets and from the urban gay community; they had high client volumes and were mobile within the city and between cities throughout China. Thirty MSW venues were mapped and 23 venues were validated. Systematic review and validation of gay websites revealed 48 brothels. Local prevention programmes reached only 16 venues. Five public toilets, 4 bathhouses and 7 parks, where MSWs frequented, were also mapped. The majority of venues were located within the commercial core, with easy access to public transportation. The MSW population was estimated between 373 and 1200. Some MSWs (n = 97) advertised on gay websites and through cell phone applications.

Conclusion Despite criminalization, there is a thriving male sex trade in Chengdu. Local efforts to reach these communities need to be scaled up to address programme coverage gaps.

013.5 THE HIV MODES OF TRANSMISSION MODEL: A SYSTEMATIC REVIEW OF ITS FINDINGS AND ADHERENCE TO GUIDELINES

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Background The HIV Modes of Transmission model (MOT) estimates the annual percentage distribution of new HIV infections (PNI) by key risk groups. It was designed to guide country-specific HIV prevention policies. To determine if the MOT produced context-specific recommendations, we analysed the MOT results by regions and epidemic types and explored the factors (e.g. data inputs, adherence to guidelines) influencing the differences.

Methods We systematically searched MEDLINE, EMBASE, UNAIDS reports, and contacted UNAIDS country directors for published MOT results from 2003 (1st published MOT).

Results We included 4 journal articles and 20 UNAIDS reports covering 29 countries. The largest PNI was among the low-risk group (one heterosexual partner) in 13 countries [range 26–63%], and increased with low-risk population size. The estimated PNI among female sex workers (FSWs) was universally low [median 1.3%, range 0.04–14.4%], and showed little variability by region and epidemic type despite variation in sexual behaviour e.g. number of partners. In India and Thailand, where FSWs play an important role in transmission, the PNI among FSWs was 2% and 4% respectively. In contrast, the PNI among men who have sex with men (MSM) varied across regions [MSM, range 0.1–89%] and increased with MSM population sizes. The PNI among people who inject drugs [PWID, range 0–82%] was largest in ‘early-phase’ epidemics with low overall HIV prevalence. Most MOT studies are being conducted and reported as per guidelines. However, many countries (n = 23)

reported data limitations - especially on high-risk groups - when parameterising the MOT.

Conclusion Although countries are generally performing the MOT as per guidelines, results showed little variation in MOT outputs (except MSM and PWID) by regions and epidemic types. Homogeneity in MOT outputs for FSWs, clients and low-risk population may limit the utility of MOT for guiding country-specific interventions in heterosexual HIV epidemics.

013.6 FOCUSING THE DELIVERY OF THE ENGLISH NATIONAL CHLAMYDIA SCREENING PROGRAMME: EXPLORING OPPORTUNITIES TO EXPAND TESTING WITHIN LOCAL SERVICES

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Background The National Chlamydia Screening Programme (NCSP) seeks to increase rates of chlamydia diagnosis amongst young people aged 15–24 across the 326 English Local Authorities (LA). 68% of screens and 79% of diagnoses are made in the community sexual health, general practise, pharmacy, termination of pregnancy (TOP) and genitourinary medicine (GUM) services that take part in the NCSP. These ‘Core Services’ are central to the delivery of the programme but not all clinics screen for chlamydia. This study was undertaken as part of a project to inform optimum services configuration to increase diagnostic rates to improve chlamydia detection and infection control.

Methods Diagnoses of genital chlamydia recorded in data from sexually transmitted disease clinics and NCSP surveillance datasets for 2011 were aggregated to LA level. Overall diagnostic rates (outcome) were calculated using Office of National Statistics (ONS) population estimates for the 15–24 year age group. This information was analysed together with the total testing at each Core Service and ONS area classification. Data were analysed using multivariable negative binomial poisson regression and spatial mapping techniques.

Results Overall chlamydia diagnostic rates were associated with increased rates of testing in community health services (RR = 1.02; p < 0.0001), general practise (RR = 1.01; p = 0.0176) and GUM (RR = 1.03; p < 0.0001) but not pharmacy or TOP. Diagnostic rates varied by geographic location (p < 0.0001), lower rates being seen in ‘Central London’ (RR = 0.63; 95% CI = 0.50–0.80), ‘London Suburbs’ (RR = 0.77; 95% CI = 0.61–0.96) ‘Southern England’ (RR = 0.63; 95% CI = 0.51–0.78) and ‘Outer London’ (RR = 0.64; 95% CI = 0.50–0.81). Diagnostic rates also increased as the range of service types contributing to testing increased (p = 0.0427).

Conclusions The analysis highlights the importance of community based testing and the provision of a range of services to achieving high rates of chlamydia detection. The study is being extended to investigate patient flow and service attendances within and between LAs in relation to gender, age group, ethnicity and service type.

0.14 - Clinical syndromes

014.1 BACTERIAL VAGINOSIS-ASSOCIATED BACTERIA (BVAB) AND NON-GONOCOCCAL URETHRITIS (NGU)

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Background Traditional cultivation approaches have not identified additional pathogens responsible for the 45% of non-gonococcal