

Epidemiology poster session 5: Transmission dynamic: coinfection

P1-S5.23 HIV INCIDENCE AND TIME TO DIAGNOSIS AMONG MEN WITH BACTERIAL RECTAL INFECTIONS, NEW YORK CITY, 2008–2010

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Background HIV infection disproportionately affects men who have sex with men (MSM) in the industrialised world. Rectal infections are objective markers of HIV risk behaviour. We examined the association between rectal chlamydia/gonorrhoea (CT/GC) infections and HIV seroconversion.

Methods MSM attending New York City public STD clinics who report receptive anal sex are offered rectal testing using GC culture and CT nucleic acid amplification tests (NAAT); patients not known to have HIV are offered HIV testing. We created a retrospective cohort of MSM diagnosed with rectal CT or GC in 2008–2009 at STD clinics who tested HIV-negative by pooled NAAT at that visit. The outcome was time to HIV infection, defined as a STD clinic diagnosis or identified through a match against the citywide HIV/AIDS registry (HARS) for HIV diagnosed elsewhere during the analytic period. For MSM who seroconverted, HIV-free time-at-risk was from rectal infection to date of positive HIV test; those not reported with HIV were presumed uninfected and censored on 31 December 2010. Cox proportional hazards models were used to explore demographic and behavioural factors associated with HIV acquisition.

Results A total of 229 HIV-negative MSM diagnosed with rectal infections contributed 368.29 person-years of follow-up; 22/229 (9.6%) were diagnosed with HIV (16 in STD clinics and an additional 6 found in HARS), for an annual HIV incidence of 5.97% (95% CI 3.84 to 8.90). Median time from rectal infection to HIV diagnosis was 290 days (range 98–748). The small subgroups of black and <20-year-old MSM had markedly high incidence (14.19% and 10.79%, respectively) (see Abstract P1-S5.23 table 1). MSM reporting

inconsistent condom use had an annual HIV incidence of 6.33% (95% CI 3.43 to 10.75). Black race was associated with a 6.5-fold increased risk of HIV; after adjusting for age this finding did not reach statistical significance (HR=5.05, 95% CI 1.00 to 25.68).

Conclusions More than 1 in 20 MSM with rectal infections are diagnosed with HIV within a year; risk is higher for subgroups such as young and black MSM. Local data on risk for seroconversion may be more compelling than national data in risk-reduction counselling. As the majority of rectal infections are due to CT, and CT is associated with substantial HIV risk, routine rectal CT screening is indicated for MSM. STD/HIV registry matching/integration permit more accurate incidence estimates and definition of affected populations with which to focus prevention activities.

P1-S5.24 PREVALENCE OF CHLAMYDIA TRACHOMATIS AMONG WOMEN INFECTED BY HIV ATTENDING THE INSTITUTE OF TROPICAL MEDICINE IN AMAZONAS, BRAZIL

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Background *Chlamydia trachomatis* (CT) is one of the world's most frequent sexually transmitted infections (STI), having great impact on sexual and reproductive health.

Objectives To describe clinical profile of and the prevalence of CT infection in HIV women attending the Institute of Tropical Medicine in Manaus, Amazonas, Brazil **Methods:** A cross-sectional study performed among women attending the AIDS clinic from March to December 2010. They were invited to take part in the study and answered an interview including demographic, behavioural and clinical data. They underwent in a gynaecological examination where it was collect a cervical sample for diagnosing CT by hybrid capture.

Results A total of 330 women were included in the study. Median age was 32 (IQR (IQR): 27; 38) years and median of schooling 9 (IQR: 4; 11) years. Prevalence rate of CT was 4.5% (95% CI 2.3%—to 6.7%). Median of first sexual intercourse was 16 (IQR: 14; 17) years

Abstract P1-S5.23 Table 1 Annual HIV Incidence among 229 HIV-Negative MSM Diagnosed with Rectal Chlamydia or Gonorrhoea at New York City STD Clinics Between January 2008 and December 2009

	Number of patients	%	Person-years at risk	Number of HIV seroconversions by STD clinic diagnoses	Total number of HIV seroconversions after HIV registry cross-match	Annual HIV incidence	95% CI
Overall	229	100%	368.29	16	22	5.97	3.84 to 8.90
Age (years):							
<20	25	11%	37.07	4	4	10.79	3.42 to 26.00
20–29	148	65%	239.90	9	13	5.42	3.01 to 9.03
30–39	42	18%	69.56	2	5	7.19	2.63 to 15.93
40+	14	6%	21.75	0	0		
Race/ethnicity:							
Non-Hispanic White	71	31%	116.63	2	3	2.57	0.65 to 7.00
Non-Hispanic Black	44	19%	63.44	6	9	14.19	6.92 to 26.03
Hispanic	83	36%	135.40	5	5	3.69	1.35 to 8.18
Asian	12	5%	20.23	1	1	4.94	0.25 to 24.38
Other/multiple	19	8%	32.59	1	4	12.27	0.15 to 15.13
Rectal infection:							
Chlamydia	158	69%	252.62	10	14	5.54	3.15 to 9.08
Gonorrhoea	49	21%	80.85	4	5	6.18	2.27 to 13.71
Both	22	10%	34.82	1	3	8.62	2.19 to 23.45
Early syphilis concurrently or in last 2 years:							
Yes	31	14%	50.33	3	4	7.95	2.52 to 19.17
No	198	86%	317.96	12	18	5.66	3.46 to 8.77

and 53.9% were married or reported a stable partner. A total of 70.9% reported regular use of condoms in the last year. Risk factors reported were: injecting drug use (1.2%), no-injecting drugs (15.2%), previous STI (32.4%), commercial sex workers (16.4%), more than one partners in the last year (12.7%) and in life (94.5%). Regarding clinical symptoms, 51.1% reported chronic pelvic pain, 55.2% vaginal discharge, 23.0% dysuria and 10.0% genital bleeding. CD4 counts were more than 500 cells/mm³ in 21.8% and viral load were less than 100 copies/mm³ in 55.2%. In the final model of logistic regression the only variable remained was having more than one partner in life.

Conclusions Health programmes need to pay attention to the need to screen for easily curable sexually transmitted infections, such as Chlamydia trachomatis, in populations that are more vulnerable and at greater risk, as women living with HIV.

P1-S5.25 ACYCLOVIR AND TRANSMISSION OF HSV-2 FROM HSV-2/HIV-1 DUALY INFECTED PERSONS

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Background Daily suppressive therapy with valacyclovir reduces the risk of sexual transmission of HSV-2 in healthy HSV-2 serodiscordant heterosexual couples by 48%. Whether suppressive therapy reduces HSV-2 transmission from persons who have both HIV-1 and HSV-2 is unknown.

Methods Within a randomised trial of daily acyclovir 400 mg bid in African HIV-1 serodiscordant couples, in which the HIV-1 infected partner was HSV-2 seropositive, we identified partnerships in which the HIV-1 susceptible partners were HSV-2 seronegative. Cox proportional hazards analysis was used.

Results We followed 911 HIV-1 and HSV-2 serodiscordant couples for a median of 18 months (IQR 3, 24). For 112 couples (12%), the HIV-1/HSV-2 infected partner was male, of whom 37% (34/91) were circumcised. 68 HSV-2 seroconversions were observed (an incidence of 5.1 per 100 person-years): 40 in the acyclovir group and 28 in the placebo group (HR 1.4, 95% CI 0.8 to 2.2; p=0.2). In a multivariate analysis of HSV-2 susceptible women, hormonal contraception (HR 3.84, 95% CI 1.32 to 11.14, p=0.013) and having an uncircumcised male partner (HR 8.91, 95% CI 1.17 to 67.85, p=0.035) were significant risk factors for HSV-2 acquisition. Among HSV-2 susceptible men, younger age was the only significant HSV-2 risk factor (p=0.014).

Conclusions Suppressive acyclovir therapy did not decrease the risk of HSV-2 transmission within HSV-2-serodiscordant couples in which the HSV-2-seropositive partner also had HIV-1 infection. Hormonal contraceptive use and lack of male circumcision in the HIV-1/HSV-2 dually infected male partners increased the risk of HSV-2 acquisition among initially HSV-2 seronegative women.

P1-S5.26 BETTER-UNDERSTANDING OF THE DYNAMICS OF GONORRHOEA AND CHLAMYDIA THROUGH ANALYSIS OF COINFECTION

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Background Coinfection with gonorrhoea and chlamydia occurs frequently. It is well known that the proportion of gonorrhoea-infected individuals who also have chlamydia is higher than the

proportion of chlamydia-infected people who also have gonorrhoea. This difference has implications for the detection and management of infections and might simply reflect the higher prevalence of chlamydia than gonorrhoea in the general population. The objective of this study was to explore the characteristics of chlamydia-gonorrhoea coinfection in a transmission dynamic model and determine whether levels of coinfection might give insights into hard-to-measure behavioural parameters such as mixing patterns.

Methods We designed a simple transmission dynamic model to capture gonorrhoea and chlamydia dynamics within a heterosexual population. We fitted the model to empirical surveillance data (Gonococcal Resistance Antimicrobials Surveillance Programme, GRASP) about levels of infection and the NATSAL 2000 sexual behaviour survey. The baseline prevalence of chlamydia was 2.6%. We tested whether the model replicated the observed prevalence of coinfection. We then extended the model to improve its realism and capture potential interactions including cotreatment, cotransmission, short term acquired immunity or changes in symptom severity or susceptibility.

Results The best fitting model predicts a gonorrhoea prevalence of between 0.4 and 0.7% and of those with gonorrhoea 15% (men) and 17% (women) also have chlamydia, compared with empirical estimates of 28% (men) and 38% (women). Of those with chlamydia, 3.0% and 2.6% of men and women are coinfecting with gonorrhoea. The model also predicts an increasing prevalence of coinfection with increasing sexual activity.

Conclusions A trend of increasing coinfection with increasing sexual activity is observed in the empirical data for men, but not women: the highest risk women with gonorrhoea have lower levels of chlamydia than the moderate activity women. The best fitting models underestimate the level of coinfection observed. Cotreatment and temporary immunity to chlamydia do not appear sufficient to explain the differences between the model and observations. Differences in coinfection levels are a complex phenomenon that do not just reflect differences in population prevalence and are not captured by the simplest models.

P1-S5.27 LOW PREVALENCE OF ASYMPTOMATIC STI IN HIV-INFECTED HETEROSEXUAL MALES AND FEMALES, VISITING AN HIV OUTPATIENT CLINIC IN THE NETHERLANDS

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Background In the Netherlands no guidelines exist for routine STI screening of HIV-infected patients. In a study in two academic hospitals in the Netherlands, 16% of HIV-infected MSM in HIV care had an asymptomatic STI, making regular STI screening in this group appropriate. It is unclear whether regular STI screening should also be considered for HIV-infected heterosexual men and women. Therefore, we studied the prevalence of, and factors associated with asymptomatic STI in a representative group of HIV positive heterosexual men and women.

Methods HIV-1 infected heterosexual patients visiting the HIV outpatient clinic of the Academic Medical Center in Amsterdam, the Netherlands, were screened for STI during a routine visit. Patients spontaneously reporting symptoms compatible with STI were excluded. *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) were tested by PCR on throat swabs, vaginal or anal self swabs and urine samples, depending on gender and sexual behaviour. Hepatitis B virus (HBV) and hepatitis C virus (HCV) serology were performed and patients were screened for syphilis by TPHA and RPR. Participants were interviewed by a trained interviewer about sexual risk behaviour in the previous 6 months.