4 SEXUALLY TRANSMITTED INFECTIONS

a Sentinel surveillance of sexually transmitted infection (STI) syndrome aetiologies among patients attending a public healthcare facility in Johannesburg: report on the findings from 2015 and comparison with 2014 data

Introduction

The syndromic approach to the management of sexually transmitted infections (STIs) in primary healthcare centres (PHCs) is based on the identification of a group of symptoms and easily recognizable signs associated with a number of well-defined aetiologies. Periodic aetiological surveillance of STI syndromes is critical in validating the existing treatment algorithms.

The NICD conducted a survey among patients presenting to a community-based primary healthcare facility in Johannesburg. The main objective was to determine the microbial aetiologies of the three major STI syndromes, namely male urethritis syndrome (MUS), vaginal discharge syndrome (VDS) and genital ulcer syndrome (GUS) in adult (>18 years) patients. Secondary objectives were to determine (a) the prevalence of HIV co-infection in patients presenting with STI syndromes; and (b) the antimicrobial susceptibility to extended-spectrum cephalosporins (ESCs) of *Neisseria gonorrhoeae* isolates from MUS patients.

Swabs were used for the sampling of genital discharge (vaginal, endocervical, urethral) and genital ulcers in consenting adult patients. Swab-extracted DNA was tested by multiplex real-time PCR assays for STI pathogens. Minimum inhibitory concentrations (MICs) to ceftriaxone and cefixime in *N. gonorrhoeae* isolates were determined using the E-test® method. Vaginal smears from VDS patients were examined microscopically for the presence of bacterial vaginosis (BV) and candidiasis. Giemsa-stained ulcer impression smears were screened for *Klebsiella granulomatis*. Serum specimens were tested for HIV. A total of 200 MUS, 200 VDS and 100 GUS in 2014 and 150-200 MUS, 100 VDS, and 100 GUS cases in 2015 were required to satisfy sampling requirements.

Results

In 2015, a total of 379 STI patients presenting to the PHC was tested: 169 MUS, 107 VDS and 103 GUS. Among MUS cases, *Neisseria gonorrhoeae* remained the most common aetiological agent detected (152/169, 89.9%) followed by *Chlamydia trachomatis* (31/169, 18.3%). There was a statistically significant increase in the prevalence of *N. gonorrhoeae* and a relative decrease in the prevalence of *Chlamydia trachomatis* compared to 2014 (Table 1). Most infections (134/169, 79.3%) had a single aetiology.

Among VDS patients, BV was the commonest cause (68/107, 63.6%), followed by *Chlamydia trachomatis* (28/107, 26.2%) and *Trichomonas vaginalis* (27/107, 25.2%), respectively (table 1). Of the 68 patients with BV, 32 (47%) were co-infected with one or more STI pathogens. A relative increase in the prevalence of *Trichomonas vaginalis* in 2015 was not statistically significant (p = 0.07). There were no significant differences in aetiological findings between 2014 and 2015.

The prevalence of GUD pathogens was as follows: HSV (57/103, 55.3%) and *Treponema pallidum* (4/103, 3.9%). No cases of lymphogranuloma venereum (LGV), chancroid and donovanosis were detected for both years (Table 2). Only one patient had mixed ulcer aetiology (HSV and *Treponema pallidum*) detected by PCR. An ulcer-derived pathogen was not identified in 42/103 (41%) GUS cases.

HIV seroprevalence rates were as follows: approximately 30% in MUS, 40% in VDS and 55% among GUS cases. HIV co-infection rates in 2015 were not significantly different from those in 2014. All gonococcal isolates from male urethral discharge specimens demonstrated low ES-cephalosporin MICs that were within the susceptible range.

Conclusions:

N. gonorrhoeae remains the commonest cause of MUS, and decreased susceptibility to ESCs was not detected in any isolate. Ongoing monitoring of antimicrobial susceptibilities in high-risk populations is essential. Herpes simplex virus remains the commonest detectable cause of genital ulceration, validating the continued use of acyclovir in syndromic management. The cause of ulceration in 41% of patients without a diagnosis requires further research. Bacterial vaginosis is the predominant cause of an abnormal vaginal discharge among female patients; however, a significant proportion was co-

infected with one or more STI pathogens.The HIV seroprevalence among STI patients is high, underlining the importance of linkage to universal HIV testing and treatment for these patients in primary healthcare settings.

Source: Centre for HIV and STI, NICD-NHLS (adrianp@nicd.ac.za; ranminik@nicd.ac.za).

Table 1. The prevalence (%) of STI pathogens in patients presenting with genital discharge in Johannesburg during 2014 and 2015

Pathogen	**MUS**			**VDS**		
	2014 (n=208)	2015 (n=169)	*P value	2014 (n=200)	2015 (n=107)	*p value
Neisseria gonorrhoeae	168 (80.5)	152(89.9)	0.01	35(17.4)	23(21.5)	0.44
Chlamydia trachomatis	61(29.3)	31(18.3)	0.01	41(20.5)	28(26.2)	0.28
Trichomonas vaginalis	6 (3.0)	3(1.8)	0.74	32(16.0)	27(25.2)	0.07
Mycoplasma genitalium	12(6.0)	1(0.5)	0.00	24(12.0)	13(12.2)	1.00
Bacterial vaginosis				109(54.2)	68(63.6)	0.21
Candidiasis				43(21.4)	26(24.3)	0.78

*p values reflect significance of difference between 2014 and 2015 data based on Fischer's exact tests

Table 2. The prevalence (%) of STI pathogens in patients presenting with genital ulcer syndrome in Johannesburg

Pathogen	**2014 (n=84)**	**2015 (n=103)**	***p value**
Herpes simplex virus	53 (63.1)	57 (55.3)	0.50
Treponema pallidum	6 (7.1)	4 (3.9)	1.00
Haemophilus ducreyi	0 (0.0)	0 (0.0)	-
Chlamydia trachomatis L1-l3	0 (0.0)	0 (0.0)	-
Klebsiella granulomatis	0 (0.0)	0 (0.0)	-
No pathogens detected	25 (29.8)	42 (40.8)	0.49

*p values reflect significance of difference between 2014 and 2015 data based on Fischer's exact tests