



Surveillance for sexually transmitted infections among female sex workers in Hillbrow, Johannesburg

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Introduction

Surveillance for sexually transmitted infections (STI) is imperative for the correct empiric antibiotic choices to be made in those public health treatment programmes which use the syndromic management approach. Asymptomatic STIs are particularly problematic as they are an important ongoing source of new infections. Both symptomatic and asymptomatic STIs increase the risk of HIV transmission and acquisition and the correct treatment of STIs is an important part of HIV prevention.

Despite being identified as a high risk population, little is known about the dynamics and natural history of HIV and STI epidemics among sex workers in South Africa, even in some places where sex work is prevalent. Understanding the prevalence, resistance pattern and clinical presentation of STIs is important if we are to optimise treatment and HIV prevention.

Objectives:

1. Determine the prevalence of STIs among symptomatic and asymptomatic sex workers.
2. Detect susceptibility of *Neisseria gonorrhoeae* (NG) to antimicrobial agents.
3. Use the prevalence of STI pathogens to validate existing syndromic management treatment guidelines.

Methods

Female sex workers (FSW) attending a sex-worker clinic or outreach brothel services between 7 March and 9 December 2014 in inner-city Johannesburg were invited to participate. Following informed consent a dedicated experienced nurse completed a questionnaire on demographics, sexual practices, presence of symptoms and previous treatment. Swab specimens were collected from their throats, urethra, cervix and vagina, rectum and base of ulcer if present. Swabs were plated onto labelled New York City medium agar plates and stored in a candle jar until processing at the laboratory; slides and dry swabs were prepared and stored in sterile containers (**Figure 1**). Specimens were transported on a daily basis to the laboratory where they were processed further. Microscopy was performed to identify bacterial vaginosis (BV). NG culture was performed according to standard methods and susceptibility testing for cefixime and ceftriaxone using E-tests. The cervical swab specimens were tested for NG, *C. trachomatis* (CT), *M. genitalium* (MG) and *T. vaginalis* (TV) using a validated in house multiplex polymerase chain reaction assay. Serum was tested for syphilis serology, hepatitis B and HIV.

Symptomatic participants were treated for STIs syndromically and were contacted for additional treatment if a pathogen not adequately treated was identified. Women were considered symptomatic if they had symptoms and signs of an STI. Where possible, partners were notified to receive appropriate treatment.

Figure 1: Specimens collected and stored at the clinic



Results

Of 268 FSW enrolled, the mean age was 31.5 (IQR 27-35) and mean duration of sex work was 4.9 years (range two months to 30 years). Substance use was common with over two thirds of women using at least one substance. No one admitted to using injectable drugs. Condoms were only used consistently by 88 (32.8%) women. The self-reported mean number of sexual partners in the past four weeks was 125 (range 8-440) translating to 33 496 sex acts/month for the 268 FSW.

HIV prevalence was 76.0% (**Figure 2**). Active hepatitis B was present in 13 (4.9%) and syphilis in 54 (20.1%) with 5 (1.9%) having active disease. Of 266 FSW tested, 196 (73.7%) had microbiological evidence of one or more genital tract infection (**Table 1**). All 23 NG isolates cultured were susceptible to ceftriaxone and cefixime Of these only 49 (25%) would qualify for syndromic management (**Figure 3**).

Figure 2: HIV status of a sample of 268 female sex workers, inner-city Johannesburg

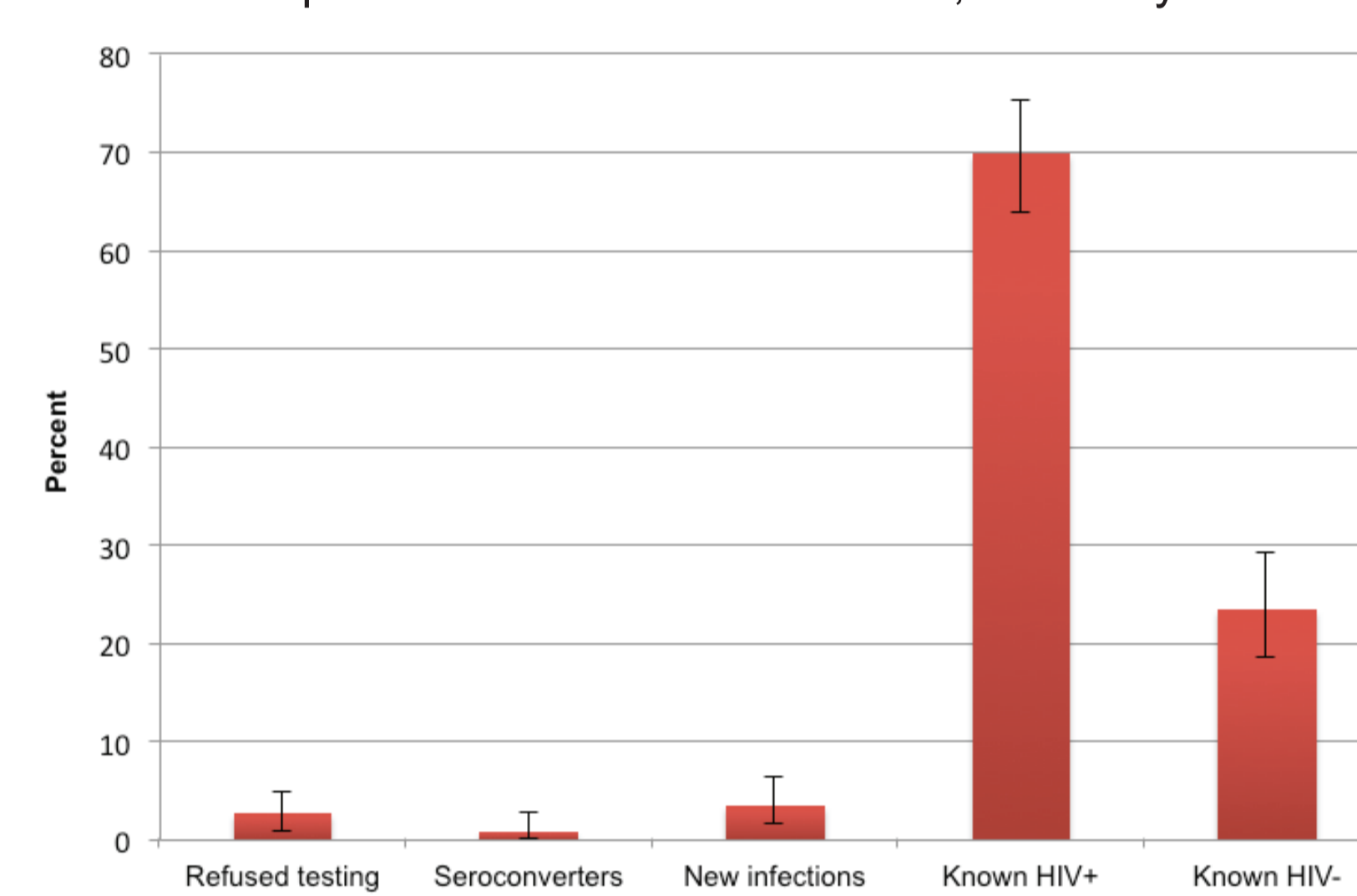
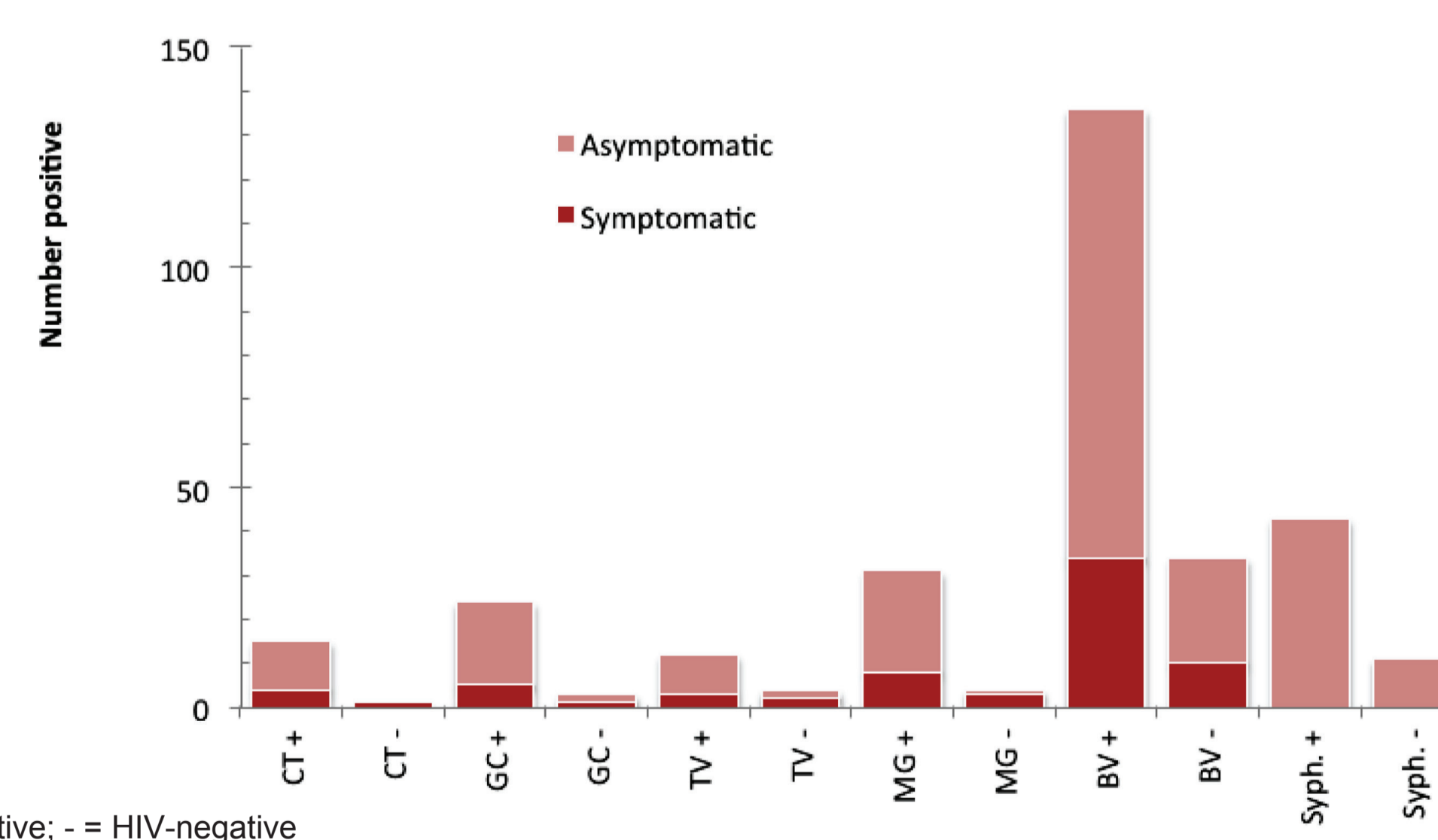


Table 1: Number and type of genital tract infection among 266 female sex workers

| | Single infection N (%) | Two infections N (%) | Three infections N (%) | Four infections N (%) | Total women infected N (%) |
|----|------------------------|----------------------|------------------------|-----------------------|----------------------------|
| CT | 5 (1.9) | 7 (2.6) | 4 (1.5) | 0 (0.0) | 16 (6.0) |
| GC | 10 (3.8) | 11 (4.1) | 5 (1.9) | 2 (0.8) | 28 (10.5) |
| TV | 11 (4.1) | 6 (2.3) | 4 (1.5) | 2 (0.8) | 23 (8.6) |
| MG | 29 (10.9) | 23 (8.6) | 3 (1.1) | 2 (0.8) | 57 (21.4) |
| BV | 118 (44.4) | 45 (16.9) | 8 (3.0) | 2 (0.8) | 173 (65.0) |

*CT = *C. trachomatis*, NG = *N. gonorrhoeae*, TV = *T. vaginalis*, MG = *M. genitalium* and BV = bacterial. vaginosis

Figure 3: Number of symptomatic and asymptomatic STIs stratified by HIV status among 268 female sex workers, Johannesburg, South Africa



+ = HIV-positive; - = HIV-negative

Conclusion

There is a high prevalence of HIV and STIs among FSW in the inner-city of Johannesburg. The majority of STIs are asymptomatic and using current National Guidelines, most STIs will not be identified and treated. FSW have multiple sexual acts, often without condoms. They remain an important group to target to reduce HIV and STI transmission. New interventions to identify and treat STIs among key populations are needed.

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