

Strategies to guide HIV prevention approaches: Correlation of sexually transmitted infections and sexual behaviour with risk of HIV infection.

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**BACKGROUND**

HIV diagnoses amongst UK men who have sex with men (MSM) have steadily increased despite prevention programmes and increased HIV testing<sup>1</sup>. It is hoped that new biomedical interventions may decrease transmission however these must be carefully targeted for maximum impact.

The aim of this cross sectional study was to examine associations between sexual behaviour, STI diagnoses and HIV status in order to identify individuals at highest risk.

**TABLE 1: Demographics of study participants**

	Frequency (column %)
<b>Sex</b>	
Female	111 (11.3)
Male	874 (88.7)
Total	985 (100)
<b>Risk factor</b>	
Heterosexual	153 (15.5)
*PWID	5 (0.5)
MSM	817 (82.9)
Not Known	10 (1.0)
Total	985 (100)
<b>Born in the UK</b>	
No	523 (53.0)
Yes	443 (44.9)
Missing	19 (1.9)
Total	985 (100)
<b>Age at participation (years)</b>	Median (IQR) 30.8 (26.7-39.5)

\* PWID – People who inject drugs

**METHODS**

Between October 2010 and May 2011 high risk individuals (MSM, people who inject drugs - PWID, from a country of high prevalence) attending a London sexual health clinic for STI testing were prospectively recruited into a validation study of a HIV point of care test<sup>2</sup>. Participants self-completed a paper based, sexual behaviour questionnaire. Responses were linked to HIV and STI results. Statistical analyses examining associations between sexual behaviour, STIs diagnosis and HIV status were assessed using exact logistic regression in STATA 12.

**RESULTS**

985 participants had HIV serology; (88.7%) were male and the majority men who have sex with men (MSM), see table 1. The median age at study participation was 30.8 years old. In total 22/985 (2.2%) tested HIV positive. 959/985 had parallel STI testing; of these 105 (11.0%) had an STI diagnosed at study participation (see figure 1).

Participants reported a median of one sexual partner where unprotected sex had occurred during the 3 months prior to study participation, interquartile range (IQR = 0-2). The median number of unprotected vaginal and anal sex acts reported was also one (IQR = 0-6).

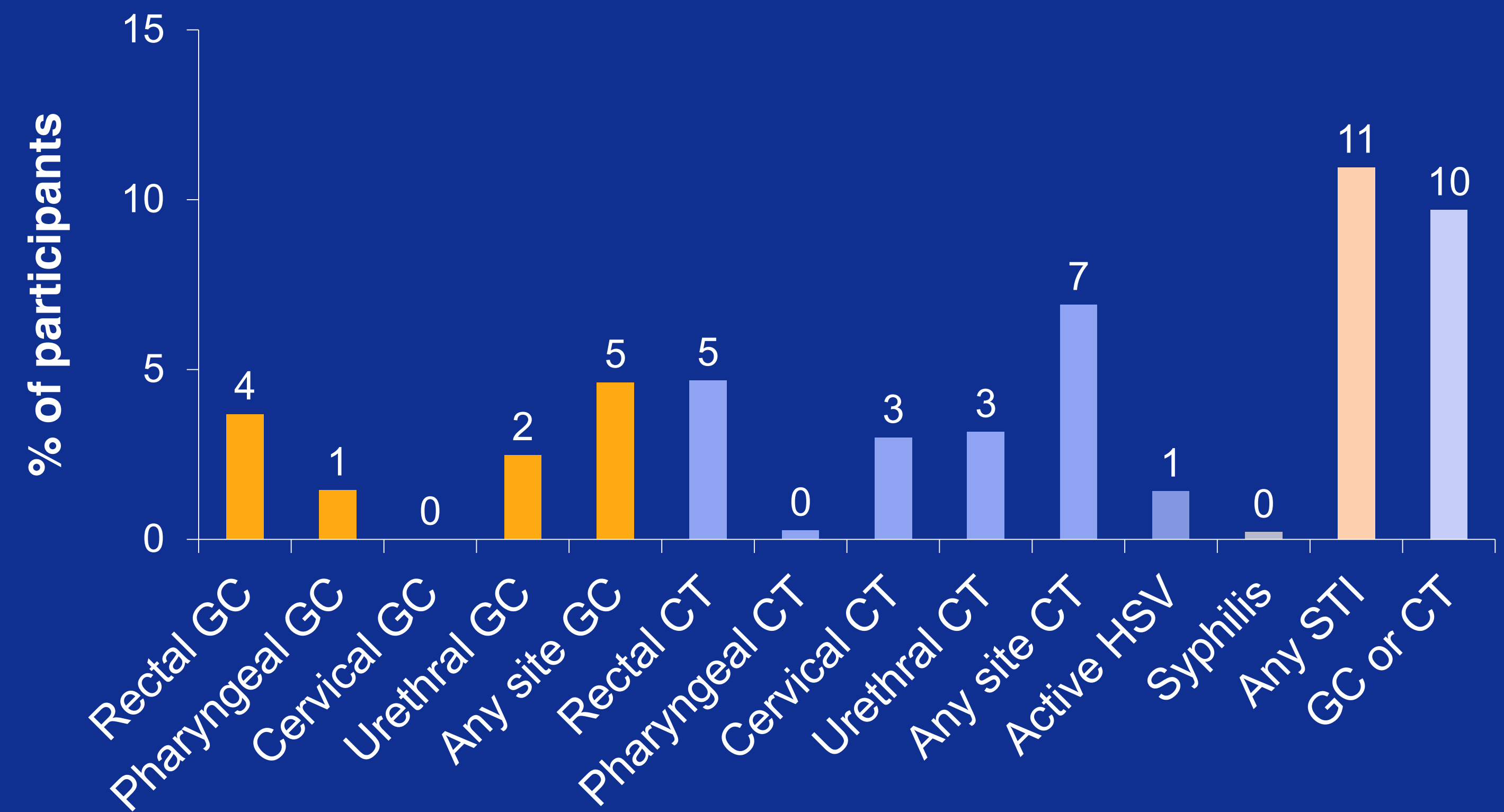
Participants diagnosed with rectal gonorrhoea (OR=8.0, 95%CI = 1.3-34.0) or rectal chlamydia (OR=7.7, 95%CI = 1.7-27.9) had increased odds of HIV diagnosis at participation (see figure 2).

Patterns of sexual behaviour were also associated with HIV status (see figure 3); for each additional partner where unprotected vaginal or anal sex was reported there was a 13% increase in the odds of testing HIV positive (p=0.002). Conversely for each additional unprotected vaginal or anal sex act reported there was a 3% increase in the odds of testing HIV positive (p=0.02).

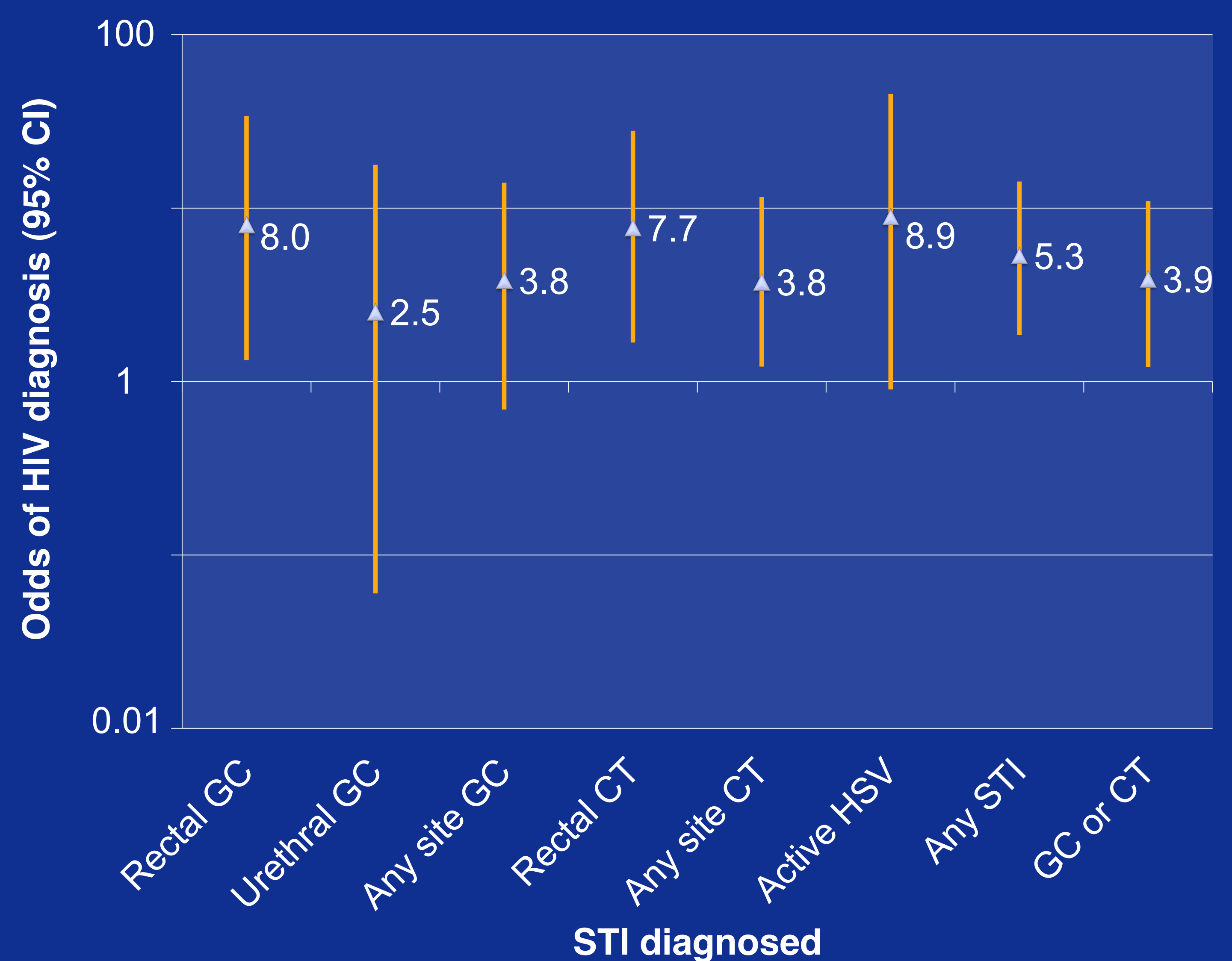
**References**

1. HIV in the United Kingdom 2012 report. Health protection agency
2. Jones CB; Kuldane K; Muir D; Pheko K; Black A; Sacks R; Smith A; Fidler S. (15 Dec 2012). Clinical evaluation of the Determine HIV-1/2 Ag/Ab Combo test. J Infect Dis. 206:1947-1949

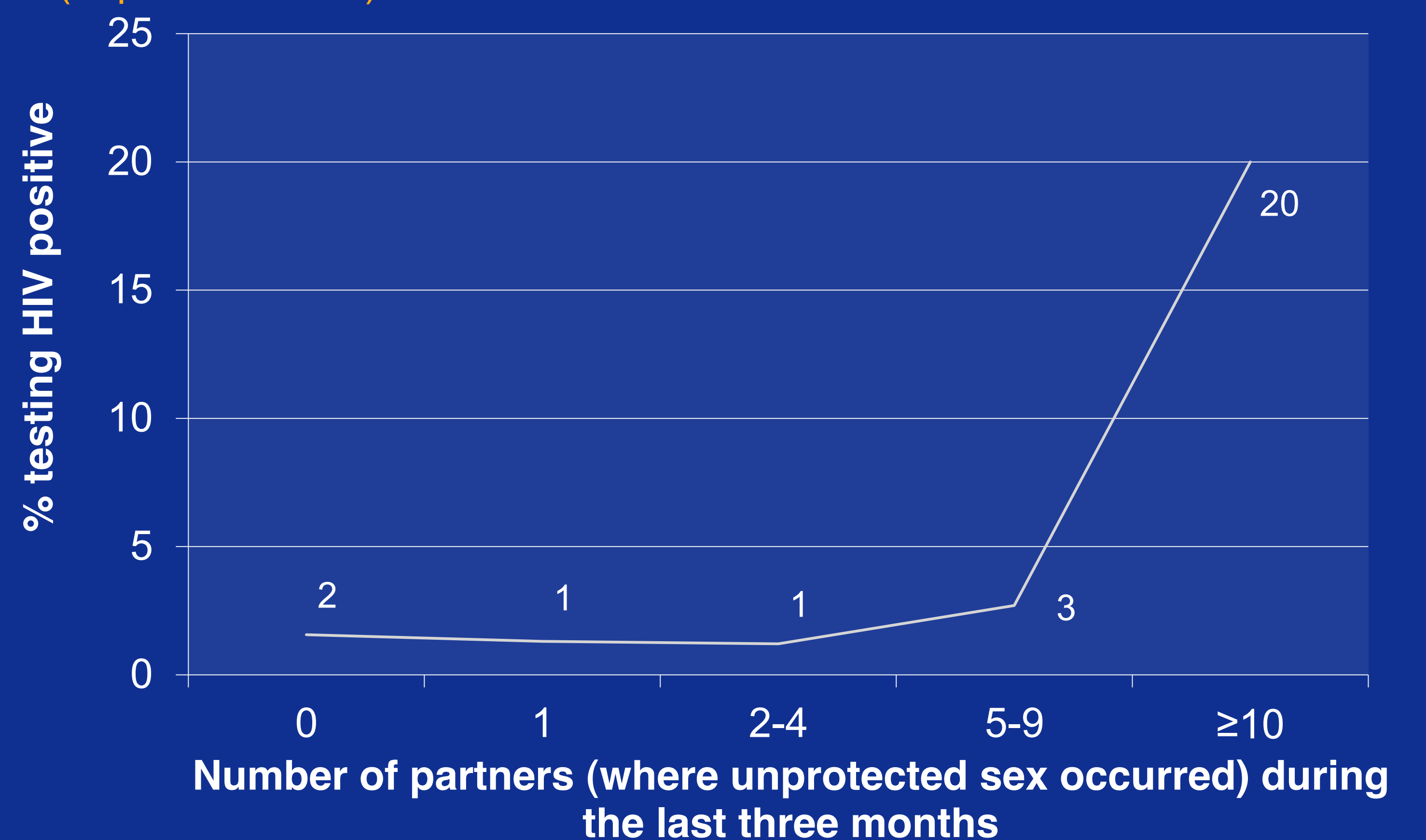
**FIGURE 1: STIs - Percentage of participants diagnosed**



**FIGURE 2: The odds of testing HIV positive if diagnosed with an STI**



**FIGURE 3: Relationship between reported number of partners (unprotected sex) and HIV status**



**Conclusions**

Efficacy trials suggest that with good adherence pre-exposure prophylaxis (PrEP) is an effective HIV prevention approach, however it's targeted operational use is currently unclear.

This cross sectional study identifies number of sexual partners, number of unprotected sexual acts and the presence of an STI as key predictors of HIV status. Data within this study was collected at a single visit and is analogous to that collected during a sexual health consultation. Algorithms incorporating these associations should therefore be considered in the targeting of PrEP to maximise impact.