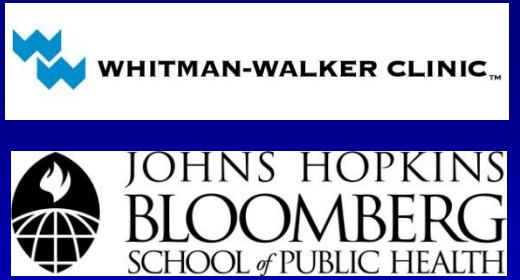




# The prevalence of asymptomatic rectal, urethral, and pharyngeal *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) among men who have sex with men (MSM) participating in the Washington, D.C. Multicenter AIDS Cohort Study (MACS)



Joseph Baker<sup>1</sup>, Michael Plankey<sup>2</sup>, Yiga Josayma<sup>1</sup>, Philippe Chiliade<sup>3</sup>, Akbar Shahkolahi<sup>4</sup>, Max Menna<sup>1</sup>, Kevin Minter<sup>1</sup>, Rebecca Slack<sup>2</sup>, Yang Yang<sup>2</sup>, Richard Elion<sup>1</sup>, Joseph B. Margolick<sup>5</sup>  
<sup>1</sup>Whitman Walker Clinic, Washington, DC, USA; <sup>2</sup>Georgetown University Medical Center, Washington, DC, USA; <sup>3</sup>Family Health International, Arlington, VA, USA; <sup>4</sup>AIDS Clinical Trials Group, Silver Spring, MD, USA; <sup>5</sup>Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, USA.

## Introduction

### Abstract

**Background:** The United States has the highest prevalence of sexually-transmitted infections (STI) in the developed world. In STD/HIV clinics, the prevalence of *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) among MSM is estimated at 6-25% and 2-12%, respectively, and 4-11% for both in HIV-infected MSM (the majority of these cases are asymptomatic). GC/CT screening may be important because, in addition to the detection and treatment of the targeted organisms, these infections can increase the risk of HIV transmission. To evaluate screening strategies for GC/CT among MSM, more data are needed from disparate venues where GC/CT detection is not likely a presumptive outcome as is the case with STD/HIV clinics. Therefore, we determined the 'natural history' prevalence of GC/CT infection and correlates of infection among MSM participating in the Washington, DC site of the Multicenter AIDS Cohort Study (MACS).

**Methods:** During semiannual study visits from December 2006-December 2007, urine, rectal, and pharyngeal samples were collected from 257 patient-visits provided by 147 asymptomatic MSM. Samples were tested for GC/CT using a validated nucleic acid amplification technique (NAAT).

**Results:** There were 16 positive tests, yielding a GC/CT prevalence from all anatomic sites of 6.2%. The highest prevalence of infection was found in the pharynx, with nine samples positive for GC (3.5%) and one for CT (0.4%). In the rectum, two samples were positive for GC (0.8%) and four for CT (1.6%). The anatomic site with the highest prevalence of CT was the rectum, and for GC the pharynx. There were no positive urine tests. Meeting sexual partners on the Internet, unprotected receptive anal sex, and ≥5 sexual partners in the previous six months were reported by 64%, 42%, and 64% of the men with positive tests, respectively.

**Conclusions:** Within a longstanding, prospective cohort study of MSM, the prevalence of asymptomatic GC/CT infection and the most commonly infected anatomic sites (rectum and pharynx) were similar to results found among predominantly HIV infected, asymptomatic MSM tested at STD/HIV clinics. Meeting sexual partners on the Internet was a statistically significant correlate of infection; furthermore, receptive anal sex and multiple sexual partners continue to be important co-factors in STI transmission.

## Aims

To estimate the prevalence of asymptomatic *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) infections in the anal canal, throat and urethra among asymptomatic MSM participating in the Multicenter AIDS Cohort Study (MACS) at the Whitman-Walker Clinic site in Washington, DC.

To identify predictors of infection.

## Methods

- Study participants were from the Washington DC site of the MACS, which is an ongoing, prospective study (started in 1984) of the natural and treated histories of HIV-1 infection among MSM and is conducted by sites located in Baltimore/Washington DC, Chicago, Pittsburgh and Los Angeles.
- All the participants who reported having sex with other men in the previous six months were invited to participate. All participants read and signed the informed consent.
- One urine sample, two rectal and two pharyngeal swabs were collected from each participant.
- Specimens were tested in the Whitman-Walker Clinic Laboratory using a validated nucleic acid amplification technique (NAAT).
- Positive results were reported to each participant via phone by the study physician. They were then counseled to seek treatment. Retesting was performed after completion of treatment.
- For any positive result, the name of the participant and his contact information was reported, as required, to the city or state Department of Health.
- Any sample which tested positive for CT was sent for Lymphogranuloma venereum (LGV) testing at the CDC in Atlanta, Georgia.

### Study Sample

- Total number of Washington, DC MACS/SHARE participants: 160.
- From December 15, 2006 to June 14, 2007, 156 men were asked to participate. 147 accepted (94%). All agreed to have each anatomic site tested. 9 declined (6%).

## Conclusions and Discussion

- This study found asymptomatic GC/CT infection concentrated in the rectum and pharynx.
- Urine screening alone is not warranted given that the majority of asymptomatic infection among MSM has been found in the pharynx and rectum.
- Annual GC/CT screening in the pharynx and rectum has greater potential cost-effectiveness compared to urine screening alone because more asymptomatic GC/CT infections can be treated, thereby decreasing GC/CT transmission and risk of HIV transmission.
- Within a longstanding, prospective cohort study of MSM, the prevalence of asymptomatic GC/CT infection and the most commonly infected anatomic sites (rectum and pharynx) were similar to results found among predominantly HIV infected, asymptomatic MSM tested at STD/HIV clinics.
- Our results are supported by other investigators: Kent CK et al. Clin Infect Dis. 2005 Jul 1;41(1):67-74; Cook et al Sex Transm Infect. 2002 Jun;78(3):190-3.

## Results

**Table 1. Prevalence of GC/CT by anatomic site. \* \*\***

11 cases of GC (0 urine, 9 pharyngeal, 2 rectal): 4.3% GC prevalence.  
 5 cases of CT (0 urine, 1 pharyngeal, 4 rectal): 1.9% CT prevalence.  
 Overall prevalence of GC/CT from urine, pharynx, and rectum: 6.2%.

	Initial Screening (n=147)		Second Screening (n=95)		Total* (n=257)	
	Infection	Prevalence (95% CI)	Infection	Prevalence (95% CI)	Infection	Prevalence (95% CI)
GU	0	0.0 (0.0, 2.4)	0	0.0 (0.0, 3.7)	0	0.0 (0.0, 1.4)
GP	4	2.7 (0.9, 6.5)	3	3.2 (0.9, 8.4)	9	3.5 (1.8, 6.4)
GR	2	1.4 (0.2, 4.8)	0	0.0 (0.0, 3.7)	2	0.8 (0.1, 2.7)
G total	6	4.1 (1.8, 8.5)	3	3.2 (0.9, 8.4)	11	4.3 (2.2, 7.4)
CU	0	0.0 (0.0, 2.4)	0	0.0 (0.0, 3.7)	0	0.0 (0.0, 1.4)
CP	1	0.7 (0.03, 3.4)	0	0.0 (0.0, 3.7)	1	0.4 (0.02, 2.0)
CR	3	2.0 (0.6, 5.8)	1	1.1 (0.1, 5.2)	4	1.6 (0.5, 3.9)
C total	4	2.7 (0.9, 6.5)	1	1.1 (0.1, 5.2)	5	1.9 (0.8, 4.3)
G/C total	10	6.8 (3.4, 11.9)	4	4.2 (1.5, 9.9)	16	6.2 (3.8, 9.7)

\*GU=gonorrhoea urine, GP=gonorrhoea pharynx, GR=gonorrhoea rectum, CU=chlamydia urine, CP=chlamydia pharynx, CR=chlamydia rectum  
 \*\*The total number of infections is higher than the sum of the initial and second screenings because some patients received additional tests

**Table 2. Sociodemographic, substance use, and sexual practice characteristics of the Washington, DC MACS/SHARE participants who underwent GC/CT testing.\***

\*None of the risk factors with the exception of meeting sexual partners on the Internet were significantly associated with GC/CT infection.

	All the Study Participants	Participants w/NEVER Positive GC CT Results	Participants w/EVER Positive GC CT Results	P-value
	n (%)	n (%)	n (%)	
Alcohol use*				0.81
Never	19 (13)	18 (14)	1 (7)	
Less than monthly	17 (12)	16 (12)	1 (7)	
Monthly	18 (12)	15 (11)	3 (21)	
Weekly	48 (33)	44 (33)	4 (29)	
Daily/Almost daily	45 (31)	40 (30)	5 (36)	
Number of sexual intercourse partners in the previous 6 months*				0.13
0	4 (3)	3 (2)	1 (7)	
1	30 (20)	28 (21)	2 (14)	
2-4	31 (21)	30 (23)	1 (7)	
5+	54 (37)	45 (34)	9 (64)	
Number of unprotected receptive anal intercourse partners in the previous 6 months				0.28
0	95 (65)	87 (65)	8 (57)	
1	23 (16)	20 (15)	3 (21)	
2+	16 (11)	13 (10)	3 (21)	
Where sexual partners were met				
Internet	49 (33)	40 (30)	9 (64)	0.01
Bar	19 (13)	16 (12)	3 (21)	0.39
Bath house/Party	38 (26)	36 (27)	2 (14)	0.52
Outdoor / Indoor Public Space	17 (12)	15 (11)	2 (14)	0.67
Other	18 (12)	17 (13)	1 (7)	1.00
Reported history of STD				
Yes	6 (4)	5 (4)	1 (7)	0.46