



Rates of Pharyngeal *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in Men and Women with a History of Receptive Oral and Anal Intercourse

Danby CS¹, Cosentino LA², Rabe LK², Priest CL², Damare KC², Macio IS², Meyn LA², Wiesenfeld HC^{1,2}, Hillier SL^{1,2}

¹University of Pittsburgh, Department of Obstetrics, Gynecology and Reproductive Sciences and

²Magee-Womens Research Institute, Pittsburgh, PA, USA

Background

- Both women and men who have sex with men (MSM) report frequent receptive oral sex.¹
- There are no US Food and Drug Administration cleared nucleic acid amplification tests (NAATs) for detection of *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) from pharyngeal swab samples.²
- Annual pharyngeal GC testing in men with a history of receptive oral intercourse is recommended.²

Objectives

- To evaluate pharyngeal GC and CT infections in MSM and women with a history of receptive oral and anal intercourse.
- To assess the sensitivity of GC culture vs NAAT for detection of pharyngeal GC.
- Hypothesis: Pharyngeal screening would increase the number of identified cases of GC and CT infection.

Methods

- **Study population:** Women (n=172) and MSM (n=222) reporting a lifetime history of receptive oral and anal intercourse were enrolled in the study and completed a structured questionnaire.
- **Specimen collection:** Clinicians collected swab samples from the pharynx, anorectum, vagina (in women) and urine (in men).
- Testing for CT and GC was performed using:
 - Two NAATs: Cepheid Xpert® CT/NG (Xpert) and Gen-Probe® Aptima® (AC2).
 - GC culture of the pharynx.
- True positives were defined if both Xpert and AC2 were positive, if GC culture was positive, or if either Xpert or AC2 were positive and confirmatory tests Aptima CT or Aptima GC alternate primers were positive.

Results

- GC and/or CT at any site (pharyngeal, rectal or genitourinary) occurred in 78/222 (35%) of men and 25/172 (14.5%) of women.
- Only 8 (2%) of pharyngeal swab samples were positive for CT, and the prevalence was similar in men and women (Table 1).
- Pharyngeal GC was more common in men (n=37 men, 16.7%) than in women (n= 4 women, 2.3%) by NAAT (Table 1).
- The overall sensitivity and specificity of Xpert and AC2 were high, though Xpert had 6 false positives for pharyngeal GC (Table 2).
- GC culture of the pharynx was performed for 249 of participants.
 - Culture was positive in 13 (5.2%) participants, for a sensitivity of 32% for culture vs NAAT (Table 2).
- Overall, 17/55 (31%) of the total GC infections in men would have been missed without NAAT pharyngeal testing.

Table 1. Prevalence of Pharyngeal GC and CT, by Gender

Pathogen	Men (n=222)	Women (n=172)	p-value
<i>N. gonorrhoeae</i>	37 (16.7%)	4 (2.3%)	<0.001
<i>C. trachomatis</i>	5 (2.3%)	3 (1.7%)	>0.99

Table 2. Performance of Xpert, AC2, Aptima GC and Culture in the Detection of GC from Pharyngeal Specimens

Test Method	True + (n = 41)	False + (n = 353)	Sensitivity	Specificity
Xpert	39	6	95.1%	98.3%
AC2	38	0	92.7%	100%
Aptima GC	41	0	100%	100%
GC Culture	13	0	31.7%	100%

Conclusions

- Men who report a lifetime history of receptive oral intercourse have high rates of pharyngeal GC.
- Most pharyngeal GC infections remain undetected unless NAAT is used.
- NAAT has a much higher sensitivity in the detection of pharyngeal GC, and should be used.
- The frequency of pharyngeal infection due to CT is low even among people having high overall rates of infection.

References

- 1) Gindi RM, Ghanem KG, Erbding EJ. Increases in oral and anal sexual exposure among youth adolescents attending sexually transmitted diseases clinics in Baltimore, Maryland. *J Adolesc Health* 2008; 42:307-8
- 2) CDC. Sexually transmitted diseases treatment guidelines. *MMWR Recomm Rep* 2015; 64:1-137.

Acknowledgements: Reagents for CT/GC testing were provided for by Cepheid and Hologic.

The Microbicide Trials Network is funded by the National Institute of Allergy and Infectious Diseases (UM1AI068633, UM1AI106707), with co-funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development and the National Institute of Mental Health, all components of the U.S. National Institutes of Health.

