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# Rates of Asymptomatic Nonurethral Gonorrhea and Chlamydia in a Population of University Men Who Have Sex With Men

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## Experiences From the Field

# Rates of Asymptomatic Nonurethral Gonorrhea and Chlamydia in a Population of University Men Who Have Sex With Men

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**Abstract.** **Objectives**: The study determined prevalence of asymptomatic nonurethral gonorrhea and chlamydia in men who have sex with men (MSM) seen at the Columbia University Health Service for routine care. **Participants**: The study enrolled 200 participants from March 2007 to May 2010. **Results**: Specimens were tested using culture and nucleic acid amplification testing (NAAT): 3.5% ($n = 7$) tested positive for pharyngeal gonorrhea by NAAT, none were positive by culture; 3% ($n = 6$) tested positive for rectal chlamydia by NAAT and 0.5% ($n = 1$) by culture. **Conclusions**: The incidence of pharyngeal gonorrhea and rectal chlamydia in MSM who visited the Columbia Health Service was similar to rates of asymptomatic nonurethral gonorrhea and chlamydia in studies conducted in the MSM population in non-university settings. This suggests that, following the Centers for Disease Control and Prevention guidelines,[1] 3-site testing for MSM seen at the Columbia clinic is indicated. NAAT is more sensitive than culture for nonurethral gonorrhea and chlamydia.

**Keywords:** men who have sex with men (MSM) sexual health, nonurethral chlamydia, nonurethral gonorrhea, nucleic acid amplification testing (NAAT), sexually transmitted infections (STIs) in MSM

Gonorrhea and chlamydia have been the most common treatable sexually transmitted infections (STIs) in the United States for over a decade. In 2009, 1,244,180 cases of chlamydia and 301,174 cases of gonorrhea were reported by the Centers for Disease Control and Prevention (CDC).[2] Infection with either of these pathogens has been shown to increase the risk of transmitting and acquiring human immunodeficiency virus (HIV) infection.[3,4] Pharyngeal gonorrhea appears to be more difficult to treat and consequently may contribute to the emergence of drug-resistant gonococcus.[5–7]

The prevalence rates of gonorrhea and chlamydia are disproportionately high among men who have sex with men (MSM) compared to rates in women and in heterosexual men. Over the last 10 years, the rates of these infections in MSM in the United States have increased, whereas in the general population, gonorrhea rates have declined.[2]

Infection in men commonly occurs at 3 sites: the urethra, the oropharynx, and the rectum; nonurethral gonorrhea and chlamydia are usually asymptomatic.[8,9] Gonorrhea can be transmitted by oral sex or anal sex to both the receptive and insertive partner.[4,8,10] The pharynx is often characterized as a bacterial "reservoir" of infection contributing to the high incidence of gonorrhea among MSM.[2] The risk of HIV transmission is increased by gonorrhea or chlamydia infections at any site; this includes infection of the oropharynx because transmission through oral sex (from the penis to the mouth) is a possible though rare source of HIV infection.[11–13]

The CDC recommends yearly screenings for urethral gonorrhea and chlamydia for MSM, using nucleic acid amplification testing (NAAT) if available, as well as

- screening for rectal gonorrhea and chlamydia in men who have had receptive anal intercourse during the preceding year;

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- screening for pharyngeal gonorrhea in men who have had receptive oral sex.[1]

A number of studies have demonstrated high rates of pharyngeal gonorrhea and rectal chlamydia infection in asymptomatic MSM. A large study completed in San Francisco showed that 53% of chlamydial infections and 64% of gonococcal infections were in nonurethral sites and therefore would not have been identified and treated if only urethral screening had been performed.[9] Studies performed between 2003 and 2010 showed pharyngeal gonorrhea rates ranging from 1.3% to 9.2% and rectal chlamydia rates from 1.7% to 8.2%.[8,14–19]

The US Preventive Services Task Force disagrees with the CDC recommendations; it states that evidence is insufficient to recommend for or against screening in MSM.[20] In practice, the CDC guidelines are often not implemented. For example, the CDC MSM Monitoring Project reported that, in 2008, 71% of MSM visits included testing for urethral gonorrhea, 44% for rectal gonorrhea, and 64% for pharyngeal gonorrhea.[2] The US Food and Drug Administration (FDA) has not yet approved NAAT for nonurethral sites; it is only available at commercial and government laboratories that have sought independent certification to perform this test.

Few studies have been completed on the incidence of STIs in MSM on college campuses. The American College Health Association (ACHA) collects information about STIs on college campuses and reports urethral chlamydia and gonorrhea rates but has not reported on nonurethral infection rates in men and specifically in MSM.

## METHODS

### Population

The Columbia Health Service provides medical services to students on the Morningside Heights campus of Columbia University in New York City, including undergraduates and graduate students. Columbia University has a diverse student population in terms of age, race, and place of national origin.

Approximately 20,000 students per year are eligible to use the Columbia Health Service. During the period of the study (March 2007 to May 2010), the primary care division had 165,545 visits and 33,347 unique patients. About 14,000 of these patients were men. The median patient age was 25 years.

Subjects for the study came from 2 sources. Students using the primary care division for routine clinical care accounted for 66% ($n = 132$) of subjects. These patients sought care for issues unrelated to STI symptoms. The remaining 34% ($n = 68$) were recruited from men who came to the clinic for HIV antibody testing through the Gay Health Advocacy Project (GHAP), a program that provides HIV-related services to the Columbia University community.

### Clinical Procedures and Follow-Up

Primary care clinicians and GHAP peer counselors asked male patients if they had been sexually active with other men in the last 6 months; this was defined as at least 1 episode of oral or anal sex. Students meeting these criteria were invited to participate in the study.

The study interviewers explained the study and the required medical procedures and interviewed the subjects regarding sexual activity. Subjects had the opportunity to discuss any aspect of their sexual health and were offered additional testing for HIV and syphilis. Informed consent and confidentiality forms were obtained. The subjects then met with a physician or nurse practitioner who used standard clinical practices for obtaining samples from the throat and rectum.

Subjects were informed of results and a study physician or nurse practitioner provided treatment for infected subjects and their sexual partner(s). The Columbia University Institutional Review Board approved the study.

### Laboratory Procedures

Pharyngeal samples were obtained using a sterile cotton tipped swab in the areas between the tonsillar pillars and posterior to the pillars. Rectal samples were obtained using a swab moistened with sterile saline and inserted in the rectum for 20 seconds.

Samples were submitted to LabCorp using Jembec plates (Remel, Lenexa, Kansas) for *Neisseria gonorrhoeae*, universal transport medium for *Chlamydia trachomatis*, and Aptima Unisex swab (Gen-Probe, San Diego, California) specimens for nucleic acid amplification. Aptima specimens were tested using the Aptima Combo 2 (Gen-Probe, San Diego, California) assay per the package insert instructions.

### Statistical Procedures

All data were collected and entered into Excel by the project data coordinator and were then analyzed with SPSS software (IBM SPSS, Chicago, Illinois). Due to the low number of positive results, no bivariate tests to explore relationships between positivity and behavior could be performed. Continuous variables, frequencies, means, medians, and standard deviations were reported.

## RESULTS

A total of 230 subjects were interviewed for the study. Two hundred completed the entire study, and 30 dropped out before testing. Independent-sample $t$ tests revealed no statistically significant differences ($p > .01$) between the 2 participant referral sources in mean age or mean number of episodes of receptive or insertive anal or oral sex in the past 6 months.

Of the subjects, 3.5% ($n = 7$) tested positive for pharyngeal gonorrhea by NAAT. No subjects tested positive for pharyngeal gonorrhea by culture, and 0.5% ($n = 1$) tested positive for rectal gonorrhea by NAAT and culture.

Of the subjects, 3.0% ($n = 6$) tested positive for rectal chlamydia by NAAT; 0.5% ($n = 1$) tested positive for rectal chlamydia by culture; 0.5% ($n = 1$) tested positive

for pharyngeal chlamydia by NAAT. No subject tested positive for pharyngeal chlamydia by culture, and 0.5% ($n = 1$) tested positive for both pharyngeal gonorrhea and rectal chlamydia by NAAT.

### Population Characteristics

The median age of study subjects was 25 (range 18–39). Of the subjects, 9.5% ($n = 19$) were less than 20 years of age, and 81% of the subjects ($n = 162$) were 20 to 29 years of age. The remaining 9.5% of subjects ($n = 19$) were older than 29.

Of all subjects, 2% ($n = 4$) were positive for HIV at the time of entry to the study. All of these 4 subjects were negative for nonurethral gonorrhea or chlamydia.

### Sexual Behavior

During the last 6 months, 154 (77%) subjects had at least 1 episode of receptive anal intercourse. In the last 6 months, 71 (35.5%) subjects reported receptive anal intercourse without condoms and 78 (39%) reported insertive anal intercourse without condoms. In those who had unprotected intercourse, the mean number of episodes of receptive intercourse without condoms was 3.80 ($SD = 13.09$) and the mean number of episodes of insertive anal intercourse without condoms was 4.18 ($SD = 12.78$).

### Laboratory Screening Method

NAAT was significantly more sensitive than by culture, as has been reported in other studies; 14 infections were detected by NAAT and 1 by culture. According to other published studies, sensitivity varies by NAAT type. The Gen-Probe Aptima Combo-2 assay has been shown to be the most sensitive and specific NAAT.[17,21,22]

### Limitations

The study does not include the number of eligible subjects who declined participation because study clinicians found it burdensome to submit information on eligible male patients unwilling to participate in the study and did not do so on a consistent basis. The number of subjects who tested positive in the study was too low to correlate with any particular sexual behavior or demographic factor.

## COMMENT

The study screened a sample of MSM at Columbia University and found results within the range of similar studies conducted in different settings; at least 3% of subjects had either a pharyngeal gonorrhea or rectal chlamydia infection. The CDC recommends screening for gonorrhea and chlamydia for any subpopulation with a prevalence rate greater than 2%.[23] Consequently, according to CDC guidelines, NAA screening for nonurethral gonorrhea and chlamydia is indicated in MSM patients seen at the Columbia Health Service.

Whether these data are applicable to other postsecondary institutions is a complex question. Campus populations vary widely in demographic characteristics and in the sexual behavior of students. We lack meaningful data to compare the prevalence of infection at Columbia with the prevalence at other universities. The 2011 ACHA–National College Health Assessment (NCHA) national survey does reveal some relevant information. In the survey (which included over 100,000 students at 19 postsecondary institutions), 7% of male respondents reported having had male sexual partners in the year prior to the study.[24]

There are significant barriers to adopting the CDC guidelines. First, NAAT for nonurethral sites is not uniformly available. Because it is not yet FDA approved for nonurethral sites, laboratories must obtain special verification to use it. At least 18 state public health laboratories and 12 commercial laboratories have received such verification; a list can be found at http://depts.washington.edu/nnptc/PHLabs.html. A useful summary of information regarding the verification process can be found at http://www.allbusiness.com/sector-62-health-care/ambulatory-services/1187891-1.html.

Second, when NAAT is available, it is more expensive than culture. Because most university clinics are constrained by budgetary limitations, screening should therefore be targeted to patients at highest risk for nonurethral gonorrhea and chlamydia infection.

Given the high rate of STIs in the MSM community and the increased risk of HIV infection in the presence of other STIs, other university clinics, when feasible, should consider a screening for nonurethral gonorrhea and chlamydia in MSM. As this will require accurate, sensitive sexual history taking, further training of providers may be required. Collection of samples will also require training, though these procedures will likely be familiar to most providers.

Further research in other university settings would be helpful in clarifying the need for routine screening for MSM. Additionally, studies on other populations, especially sexually active women under 25, might be useful.

MSM, as part of risk reduction education, need to understand that infection with other STIs (either ulcerative or inflammatory) facilitates HIV transmission.[10,25,26] They need to be educated to request such tests when they have engaged in receptive oral and/or anal sex.

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## NOTE

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