

# **Incidence of Mycoplasma Genitalium in Urine Sample Testing for Gonorrhea and Chlamydia**

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## **Abstract**

While gonorrhea (GC) and chlamydia (CT) are among the most prevalent sexually transmitted diseases, mycoplasma genitalium has been identified as a rapidly emerging infection. The purpose of this study was to determine the prevalence of mycoplasma genitalium (MG), sometimes referred to as Mgen, in patients being tested for gonorrhea (GC) and chlamydia (CT) and thereby validating the Center for Disease Control's (CDC) assertion that MG is likely to become an increasing public health problem. Samples from random, de-identified patients being tested for GC and CT were run in four separate batches over a one-year period of time. The samples were tested on the Panther® System, utilizing assays provided by Hologic Corporation. Of the 658 samples tested, the following prevalence rates were found. Gonorrhea represented 12 positives (1.82%); Chlamydia represented 37 positives (6.51%); Mycoplasma genitalium represented 57 positives (8.66%). The number of MG positives was 4.75 times greater than GC and 1.54 times greater than that of CT.

## **Introduction**

The Centers for Disease Control continue to identify gonorrhea (GC) and chlamydia (CT) as the most represented sexually transmitted diseases within the U. S. population.<sup>1</sup> Mycoplasma genitalium (MG), a sexually transmitted bacterium, is believed to be more prevalent within the U.S. population, causing a number of complications in patients.<sup>2,3</sup> However, research on the prevalence of MG is limited and testing for this disease is not common within clinical settings.

The purpose of this study was to determine the prevalence of MG in patients being tested for a sexually transmitted disease. Given that routine testing for MG is not a standard clinical protocol, the significance of this study was to demonstrate that the presence of MG may be greater than GC or CT in patients being tested for sexually transmitted diseases. Given that the complications of undetected and untreated MG are significant, the results of the study may lead to additional attention from public health agencies.

## Methods

In order to determine the prevalence of MG in patients being tested for sexually transmitted diseases, random urine samples taken from 658 de-identified patients being tested for GC and CT were also subjected to testing for the presence of MG. Prior to the implementation of the study, IRB approval was requested and received for the utilization of the de-identified urine samples. The samples were run in four separate batches on the Panther® System, utilizing assays provided by Hologic Corporation. The assays provided by Hologic are currently pending FDA approval.

## Results

Of the 658 samples tested, the following prevalence rates were found. Gonorrhea represented 12 positives (1.82%); Chlamydia represented 37 positives (6.51%); Mycoplasma genitalium represented 57 positives (8.66%). The number of MG positives was 4.75 times greater than GC and 1.54 times greater than that of CT. Table 1 details the results of the 658 urine samples tested for GC, CT and MG.

**Table 1 – GC, CT and MG Positives (N=658)**

<u>Disease</u>	<u>Number</u>	<u>Percent</u>
GC	12	1.82%
CT	37	6.51%
MG	57	8.66%

## Discussion

Gonorrhea (GC) and chlamydia are among the most prevalent sexually transmitted diseases in the United States. Recent public health data reveals that 1,758,688 cases of chlamydia and 583,405 cases of gonorrhea were reported to the Center for Disease Control (CDC) in 2018<sup>1</sup>. The prevalence of chlamydia and gonorrhea infections per 100,000 population was 539.9 and 179.1 respectively<sup>1</sup>. Chlamydia infection rates in 2018 increased by 2.9% over the previous year, while gonorrhea infection rates increased by 6% over the same period<sup>1</sup>

*Mycoplasma genitalium* (MG) is a sexually transmitted bacterium and an established cause of urethritis, cervicitis, pelvic inflammatory disease, and obstetric complications.<sup>2,3</sup> MG was first isolated in 1980 from two of 13 men with urethritis.<sup>4,5</sup> Slifirski *et al.* noted that published research data on the likelihood of transmission of MG, as well as proportional infection rates post sexual contact, are very limited.<sup>6</sup> Some previous studies have found that MG infection rates are one percent to three percent in men and women, according to community-based studies from the United Kingdom, United States, Australia, and Scandinavia.<sup>6-11</sup>

Slifirski *et al.* studied patients visiting sexual health clinics in Australia from 2009-2016 and found among those patients reporting sexual contact with a person infected with MG, the following infection rates were determined; a) 48.2% of women, 31.0% of heterosexual men, and 41.7% of MSM (men who have sexual contact with other men).<sup>6</sup> Further results indicated that in heterosexual contacts, women were twice as likely to be infected and within the MSM sexual category, rectal infection was more prevalent than urethral infection.<sup>6</sup>

One of the limitations of this study was the representation of the population from a single community. While it is possible that the results of this study do not reflect the larger population, it is unlikely. Still, the need for additional research and testing among larger populations across numerous geographic areas is needed.

## **Conclusion**

Given that MG has been identified by the Center for Disease Control as an emerging issue in sexually transmitted disease,<sup>12</sup> this study was undertaken to determine the prevalence of MG in patients that were being tested for gonorrhea and/or chlamydia. The result of the testing supports the CDC's assertion that MG is likely to become an increasing public health problem. To address this emerging problem, testing for MG should be included in the laboratory detection protocol for sexually transmitted diseases in order to document the increasing presence of MG in the population.

## References

1. Centers for Disease Control and Prevention: National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. <https://www.cdc.gov/std/stats18/STDSurveillance2018-full-report.pdf>.
2. Jensen JS, Bradshaw C. Management of Mycoplasma genitalium infections - can we hit a moving target? *BMC Infect Dis*. 2015; 15:343. [DOI PubMed](#)
3. Lis R, Rowhani-Rahbar A, Manhart LE. Mycoplasma genitalium infection and female reproductive tract disease: a meta-analysis. *Clin Infect Dis*. 2015; 61:418–26. [DOI PubMed](#)
4. Tully JG, Taylor-Robinson D, Cole RM, et al. A newly discovered mycoplasma in the human urogenital tract. *Lancet* 1981; I:1288–91.
5. Tully JG, Taylor-Robinson D, Rose DL, et al. Mycoplasma genitalium, a new species from the human urogenital tract. *Int J Syst Bacteriol* 1983;33:387–96.
6. Slifirski JB, Vodstrcil LA, Fairley CK, et al. Mycoplasma genitalium Infection in Adults Reporting Sexual Contact with Infected Partners, Australia, 2008–2016. *Emerging Infectious Diseases*. 2017;23(11):1826-1833. doi:10.3201/eid2311.170998.
7. Sonnenberg P, Ison CA, Clifton S, Field N, Tanton C, Soldan K, et al. Epidemiology of Mycoplasma genitalium in British men and women aged 16–44 years: evidence from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Int J Epidemiol*. 2015; 44:1982–94. [DOI PubMed](#)
8. Walker J, Fairley CK, Bradshaw CS, Tabrizi SN, Chen MY, Twin J, et al. ‘The difference in determinants of Chlamydia trachomatis and Mycoplasma genitalium in a sample of young Australian women’. *BMC Infect Dis*. 2011; 11:35. [DOI PubMed](#)
9. Andersen B, Sokolowski I, Ostergaard L, Kjolseth Møller J, Olesen F, Jensen JS. Mycoplasma genitalium: prevalence and behavioural risk factors in the general population. *Sex Transm Infect*. 2007; 83:237–41. [DOI PubMed](#)
10. Oakeshott P, Aghaizu A, Hay P, Reid F, Kerry S, Atherton H, et al. Is Mycoplasma genitalium in women the “New Chlamydia?” A community-based prospective cohort study. *Clin Infect Dis*. 2010; 51:1160–6. [DOI PubMed](#)
11. Manhart LE, Holmes KK, Hughes JP, Houston LS, Totten PA. Mycoplasma genitalium among young adults in the United States: an emerging sexually transmitted infection. *Am J Public Health*. 2007; 97:1118–25. [DOI PubMed](#).
12. Centers for Disease Control and Prevention:2015 Sexually Transmitted Disease Guidelines. <https://www.cdc.gov/std/tg2015/emerging.htm>.