Longitudinal Assessment of *Mycoplasma genitalium* Antibiotic Resistance

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**INTRODUCTION**

*Mycoplasma genitalium* is a sexually transmitted infection with high prevalence in the men who have sex with men (MSM) population. Our laboratory has previously demonstrated a correlation between antibiotic resistance and high organism burden within *M. genitalium*. This study seeks to evaluate implications of increased *M. genitalium* organism burden within a longitudinal MSM cohort.

**METHODOLOGY**

Urine and rectal swab specimens were collected from a longitudinal MSM cohort. Eligibility requirements for participants in the longitudinal cohort at the time of enrollment include: 16 to 29 years old, male assignment at birth, English speaking, and either reporting a sexual encounter with a man in the last twelve months or identifying as gay, bisexual, or transgender.

Urine and swab specimens were tested for *M. genitalium* using an FDA-approved kit. Positive specimens underwent a series of ten-fold dilutions and were assigned a titer. The titer value corresponds to the highest dilution at which the organism could still be detected. A higher titer value indicates the participant has a higher organism burden.

132 cohort participants, that had tested positive for *M. genitalium* at least once, were analyzed over a series of 462 total encounters. Participants were assigned to two groups by *M. genitalium* titer data using the algorithm in Fig. 1.

**RESULTS**

Table 1 demonstrates no significant difference in demographic factors, indicating no bias in selection of the three groups.

<table>
<thead>
<tr>
<th>Analyte</th>
<th>High Titer (n=78)</th>
<th>Low Titer (n=54)</th>
<th>M. genitalium Negative (n=62)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>% African American</td>
<td>41.0</td>
<td>44.4</td>
<td>38.7</td>
<td>0.999</td>
</tr>
<tr>
<td>% Cisgender at Baseline</td>
<td>92.3</td>
<td>92.6</td>
<td>93.6</td>
<td>0.999</td>
</tr>
<tr>
<td>% Cisgender at most recent visit</td>
<td>84.6</td>
<td>83.3</td>
<td>87.1</td>
<td>0.843</td>
</tr>
</tbody>
</table>

Analysis of the *M. genitalium* high-titer and low-titer groups revealed significant differences in HIV seropositivity. Baseline HIV seropositivity correlated to high organism burden (*P* = 0.037; Table 2). Additionally, HIV seropositivity rates at the most recent encounter trended toward an increased seroconversion rate in participants with high-titer *M. genitalium* (*P* = 0.084; Table 2).

High-titer *M. genitalium* participants within the longitudinal cohort had a lower likelihood of remaining *M. genitalium*-negative in rectal swab screenings at two consecutive visits when compared to low-titer counterparts (Fig. 2). These data suggest that *M. genitalium* in high-titer participants is more transmissible and may potentiate HIV transmission. High-risk sexual behavior (e.g., insertive and receptive condyloma anal sex) did not impact high-titer and low-titer status (*P* ≥ 0.056; Table 2).

**CONCLUSION**

On the basis of a correlation between high organism burden and antibiotic resistance, the HIV seropositive MSM population may be at increased risk of antibiotic resistance and treatment failure. High-titer *M. genitalium* participants are also at increased risk for HIV seroconversion. These findings appear to be independent of high-risk sexual behavior.

**REFERENCES**
