

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.

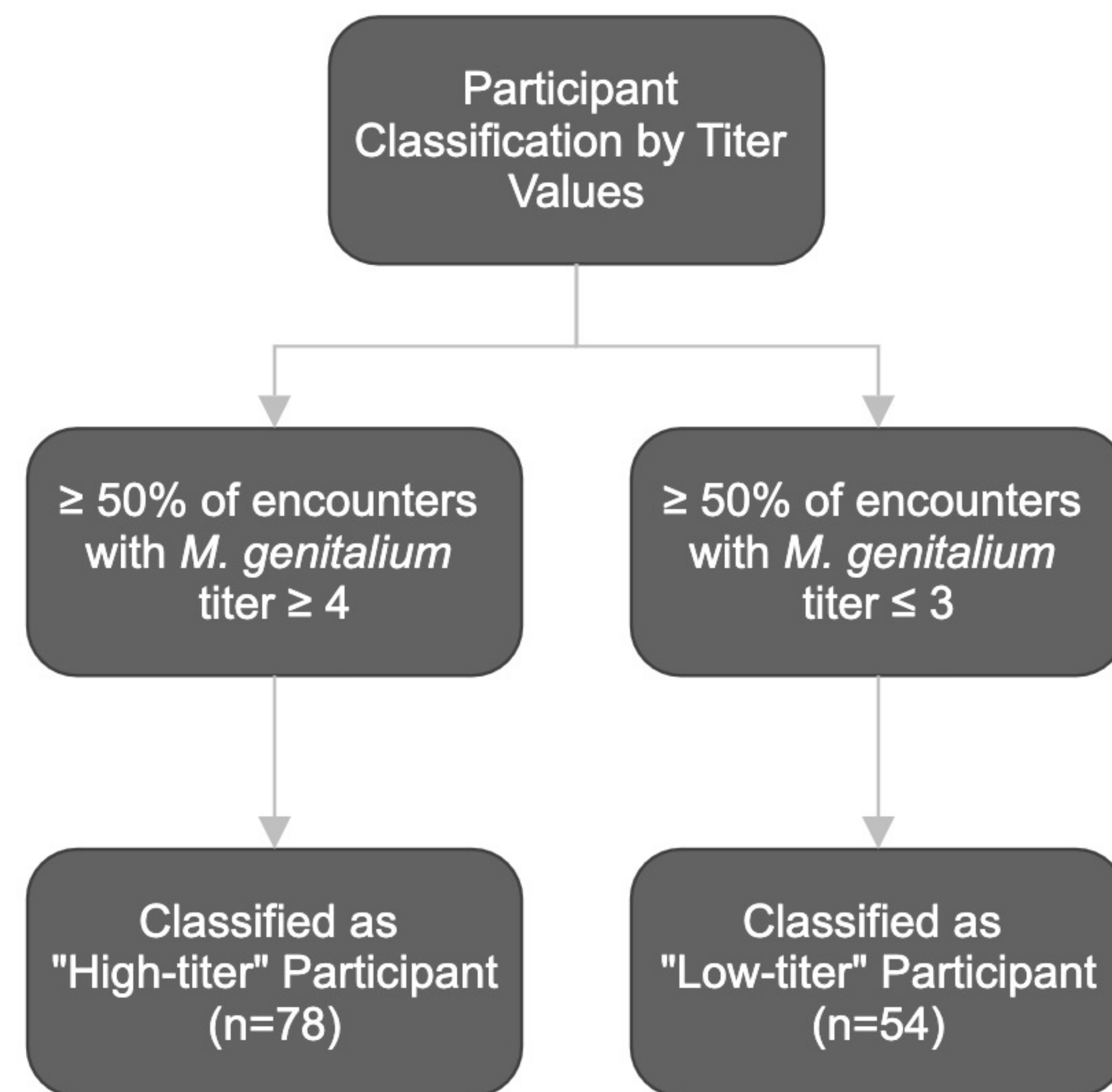


Figure 1: Participant classification by titer data.

To confirm lack of bias in the high-titer and low-titer assignments, demographic and race/ethnicity comparisons were made amongst the two groups and a third group of 62 participants from whom *M. genitalium* was never detected. The high-titer and low-titer groups underwent statistical analyses relative to demographic, high-risk sexual behavior, and organism persistence parameters.

RESULTS

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

	High Titer (n=78)	Low Titer (n=54)	<i>M. genitalium</i> Negative (n=62)	P-value
% African American	41.0	44.4	38.7	0.959
% Cisgender at Baseline	92.3	92.6	93.6	0.959
% Cisgender at most recent visit	84.6	83.3	87.1	0.843

Table 1: Participant demographics

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	Low Titer	P-value
% HIV positive at baseline	25.6	11.1	0.037
% HIV positive at most recent encounter	38.5	20.4	0.084
% Insertive condomless anal sex at baseline	42.3	53.7	0.138
% Insertive condomless anal sex at most recent encounter	38.5	53.7	0.056
% Receptive condomless anal sex at baseline	61.5	55.6	0.152
% Receptive condomless anal sex at most recent encounter	52.6	50.0	0.108

Table 2: HIV seropositivity and high-risk sexual behavior findings as a function of longitudinal high-titer and low-titer *M. genitalium* status.

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 transient and may potentiate HIV transmission. High-risk sexual behavior (e.g., insertive and receptive condomless anal sex) did not impact high-titer and low-titer status ($P \geq 0.056$; Table 2).

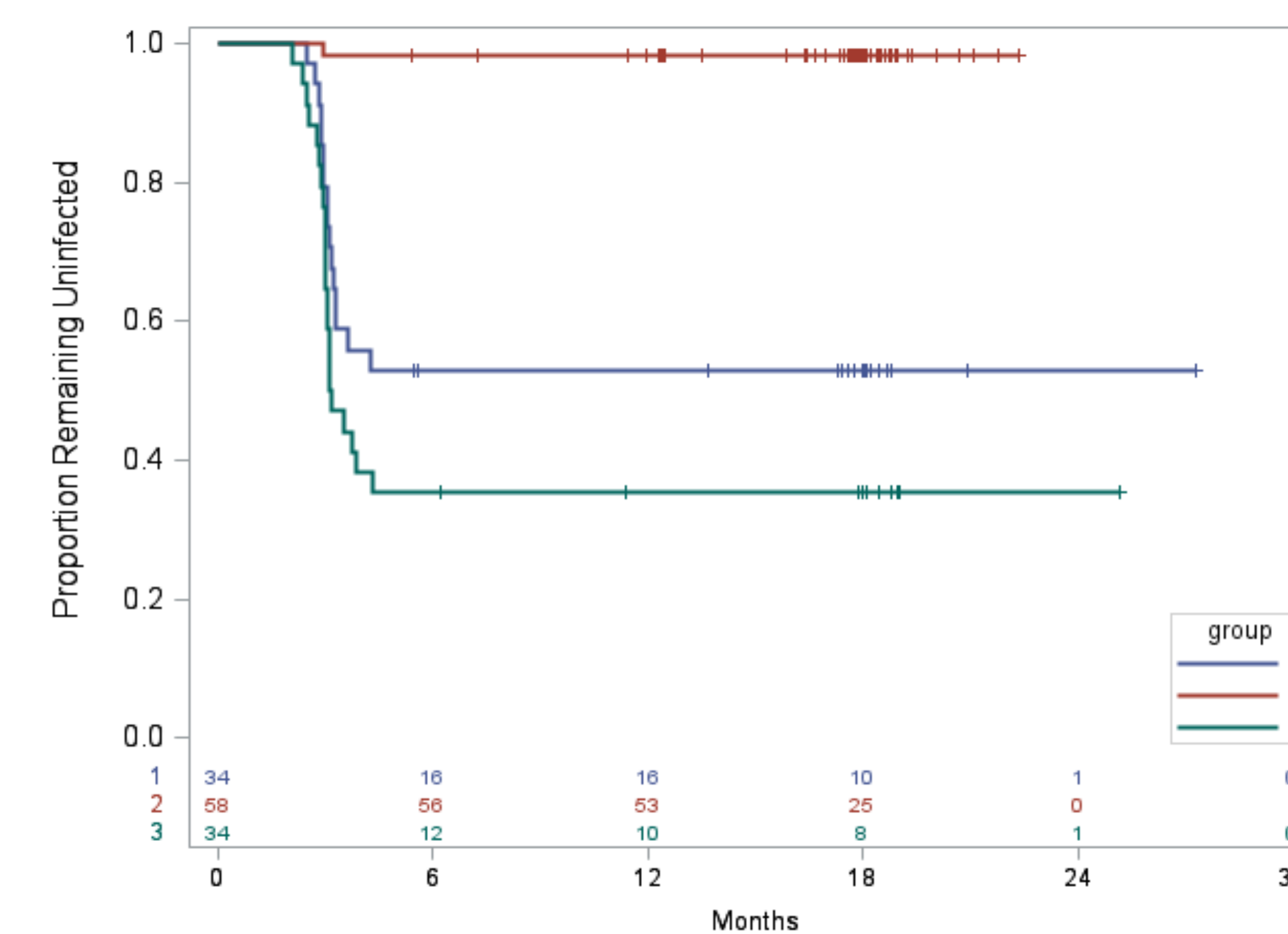


Figure 2: Sustained rectal *M. genitalium* negativity for high-titer (green line) and low-titer (blue line) participants ($P < .0001$).

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