

## VITA RT-PCR, A MOLECULAR TEST FOR THE DETECTION AND DIFFERENTIATION OF VIABLE AND DEAD *CHLAMYDIA TRACHOMATIS*

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**Background:** Clinical management of *Chlamydia trachomatis* (CT) requires accurate determination of infectious status, particularly in high-risk populations e.g. MSM. Whilst nucleic acid amplification tests (NAATs) are sensitive, specific and widely used, they can overestimate infectivity rates. They are not ideal as a test of cure (TOC), since residual DNA/RNA can persist after treatment. VITA RT-PCR can overcome current drawbacks, providing a Viability Index from a relative measure of active transcription regardless of the quality/quantity of specimen. Our study investigated whether VITA could accurately distinguish between viable/dead CT, before and after treatment.

**Methods:** Rectal specimens were self-collected from 20 asymptomatic, CT NAAT-positive MSM at: Day 0 (prior to doxycycline treatment); Day 7 (post treatment and advised sexual abstinence); and Day 35 (recommended time for TOC). Swabs were collected in bacterial media (for confirmation of infectivity through culture) and in RNAprotect (for in-house NAAT and VITA).

**Results:** Overall, VITA demonstrated 96% concordance to in-house NAAT. Both VITA and NAAT suggested six participants self-cleared before treatment and positivity by day 7 was limited. At Day 0, 13 positive samples were determined viable by VITA, with 53% confirmed by culture. No viability was detected in cultured samples identified negative or dead by VITA. The low concordance with culture is consistent with prior studies, whereby sensitivity of CT detection was <46% in cohorts that simultaneously displayed NAAT positivity >91%.

**Conclusion:** Results imply doxycycline is highly effective for treatment of rectal CT and suggest the potential for TOC to be performed earlier than recommended. Apparent rates of self-clearance expose possible over-treatment of asymptomatic patients; however, with limited data available to support this, further investigation is required. VITA has the potential to be a powerful new tool for determining viability of infection at time of diagnosis, to confirm suitability of treatment and facilitate earlier TOC.

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