



CAS Summary

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(1)

Study Aims

Background

- Increase in oropharyngeal chlamydia among MSM in Australia¹
 - 1.5% prevalence among MSM attending MSHC 2015-2016²
- Saliva may play a role in gonorrhoea transmission³
 - *N. gonorrhoeae* can be isolated from saliva⁴
 - Saliva use as lubricant for anal sex is a strong risk factor for anorectal gonorrhoea⁵ and tongue kissing is risk factor for oropharyngeal gonorrhoea⁶
- However, limited evidence for risk factors for oropharyngeal chlamydia

Study Aims

Primary Aim

Can CT be detected in saliva in untreated MSM diagnosed with oropharyngeal chlamydia

Secondary Aim

Quantify the bacterial load of CT at the tonsillar fossae, the posterior oropharynx and in saliva

Study Design

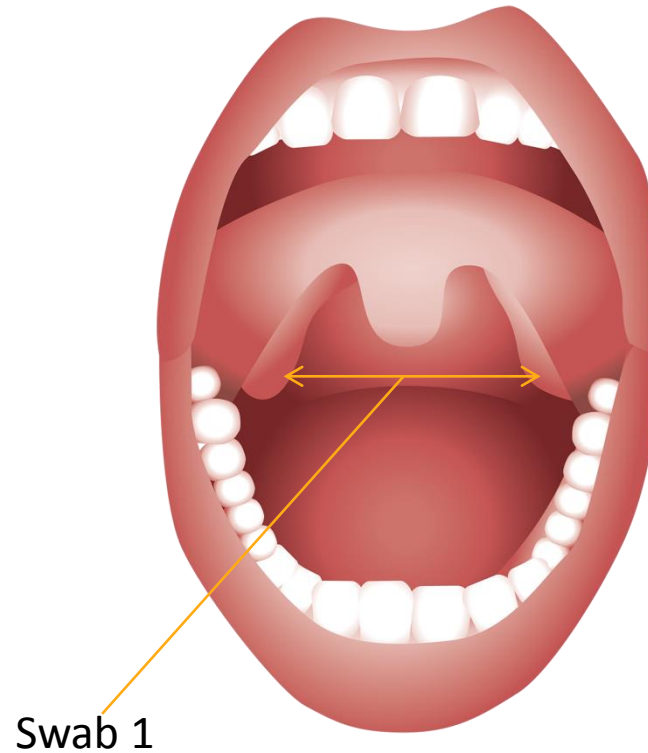
Study population

- MSM testing positive for oropharyngeal chlamydia at MSHC between August 2017 and August 2018 recruited
- Eligibility criteria:
 - No antibiotics in the previous 4 weeks
 - Returned for treatment within 14 days

Study Design

Sample Collection

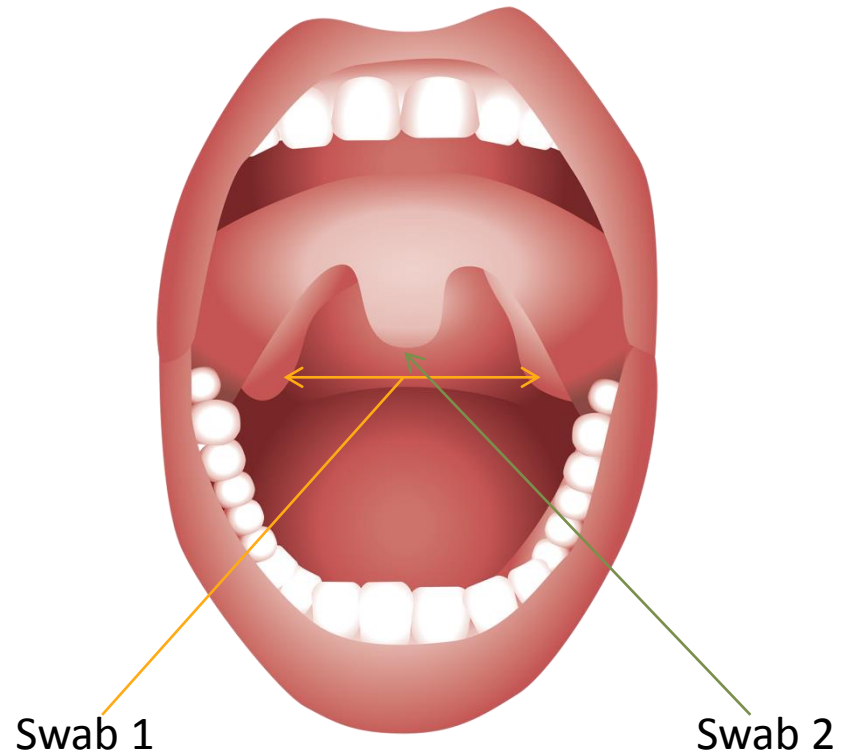
- Two throat swabs:
 - First from tonsillar fossae



Study Design

Sample Collection

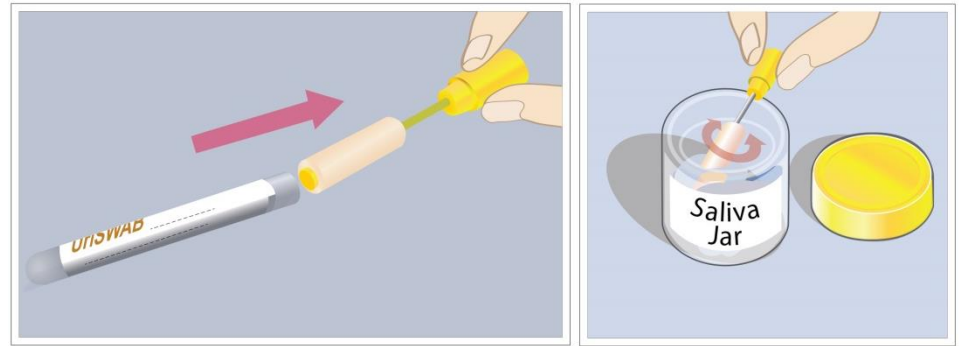
- Two throat swabs:
 - First from tonsillar fossae
 - Second from posterior oropharynx



Study Design

Sample Collection

- Saliva sample:
 - Participants asked to accumulate saliva for 30 seconds then expectorate into a specimen jar
 - Saliva immediately collected with a uriswab



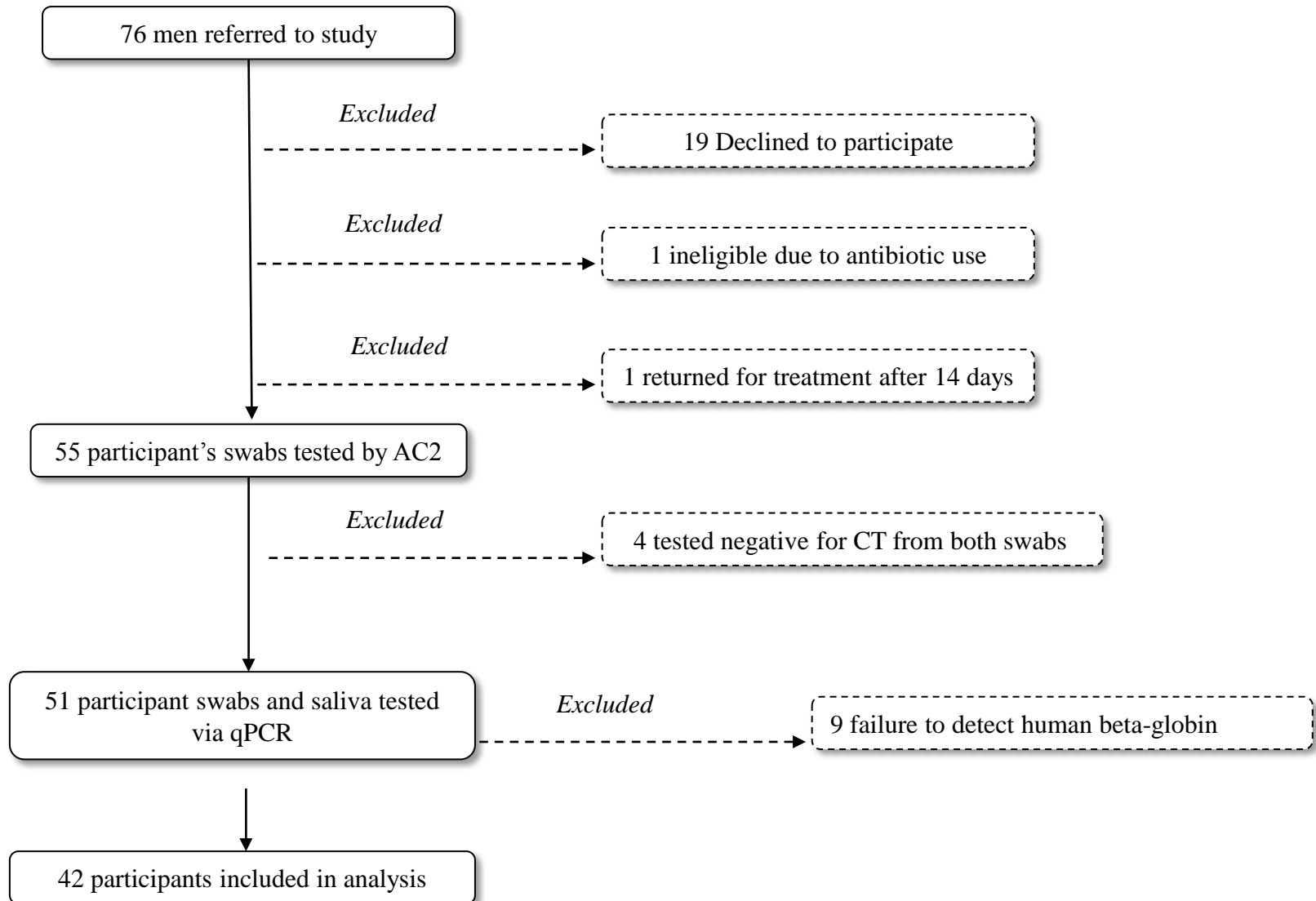
Adapted from Chow, 2017 ⁷

Study Design

- Tested by qPCR
- Two throat swabs collected:
 - First from tonsillar fossae
 - Second from posterior oropharynx

Tested by AC2
 - Saliva sample collected
 - Participants asked to accumulate saliva for 30 seconds then expectorate into a specimen jar
 - Saliva immediately collected with a uriswab

Results



Demographics

Table 1: Participant demographics and AC2 results for the 42 men included in analysis

	Age (years)	Days between diagnosis and enrolment	Sore throat	CT positive by AC2 from both tonsils and oropharynx swabs	CT positive by AC2 in tonsillar fossae swab only	CT positive by AC2 in posterior oropharynx swab only
Median [IQR]	28 [24 to 33]	5 [4 to 6]				
Number of participants (%)			12 (28.6%)	39 (92.9%)	2 (4.8%)	1 (2.4%)

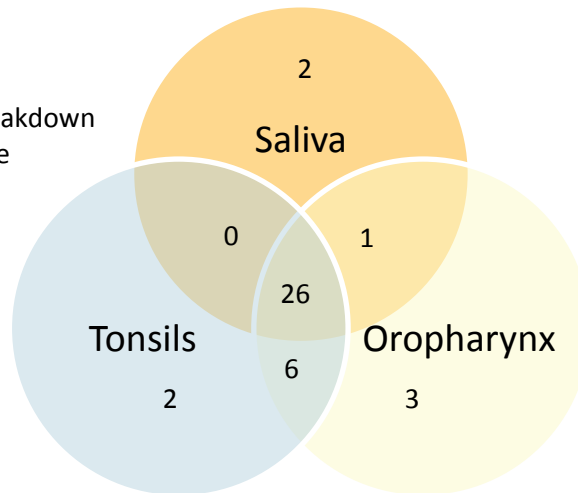
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qPCR Results

Figure 1: Venn diagram showing breakdown qPCR detection for each sample type



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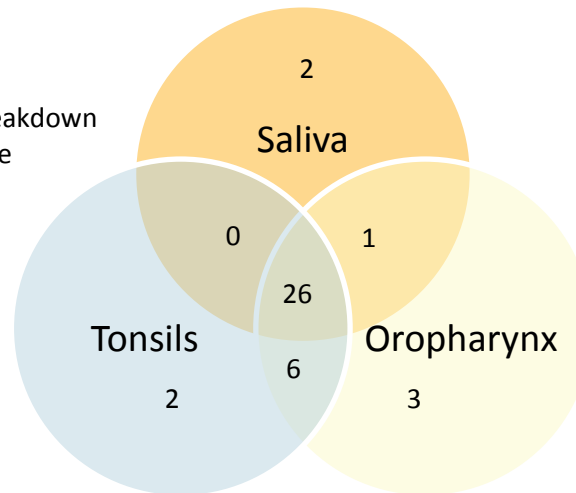
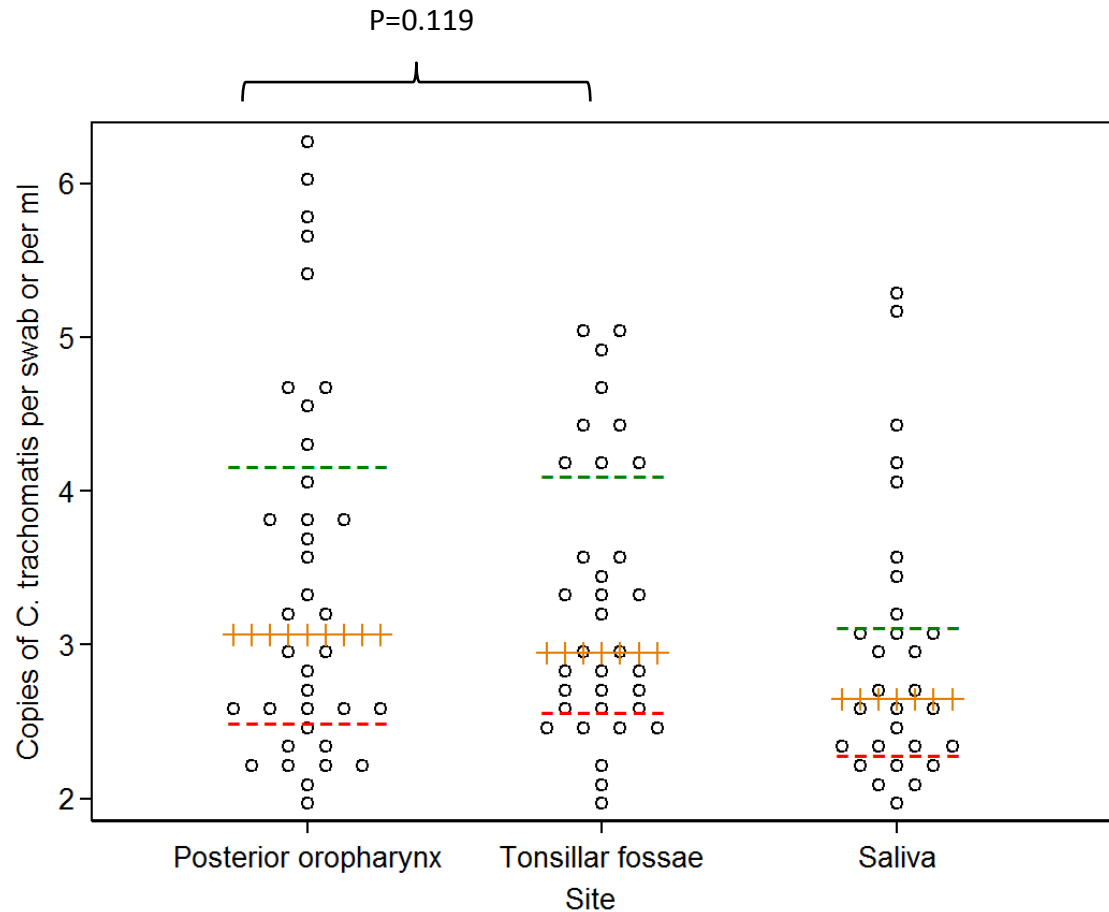


Table 2: Total median and log10 median loads of *Chlamydia trachomatis* detected by qPCR for each site

Specimen	Number of samples with CT detected from qPCR (%)	Median CT load (IQR)	Log ₁₀ median CT load (IQR)
Tonsillar fossae swab	34 (81.0%)	893 copies/swab (390-13,224)	3.0 (2.6-4.1)
Posterior oropharynx swab	36 (85.7%)	1,204 copies/swab (330-16,211)	3.1 (2.5-4.2)
Saliva	29 (69.0%)	446 copies/ml (204-1,390)	2.6 (2.3-3.1)

qPCR Results

Figure 2: Log transformed median copies of *C. trachomatis* for each sample type. **Amber +** marks the median bacterial load for each site. **Green** and **red** dashed lines mark the upper and lower quartiles, respectively



qPCR Results

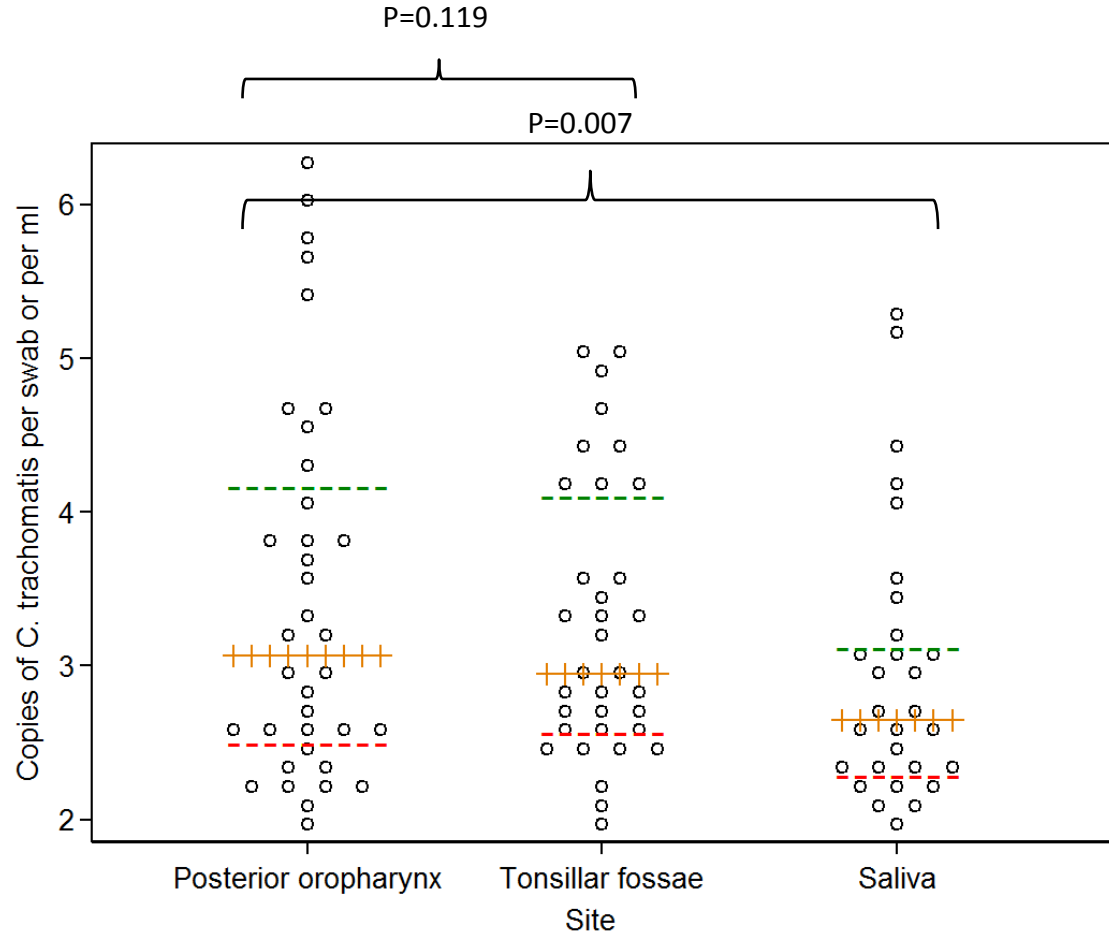


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qPCR Results

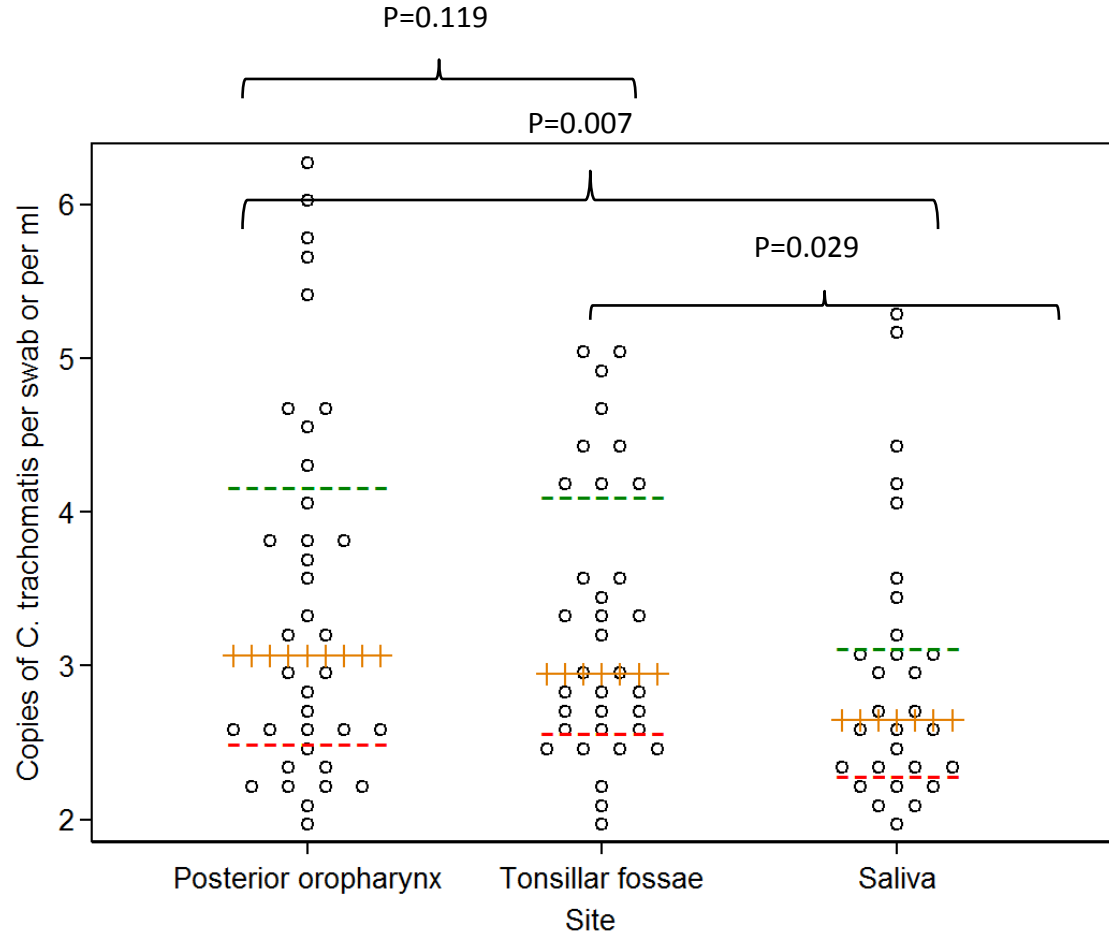
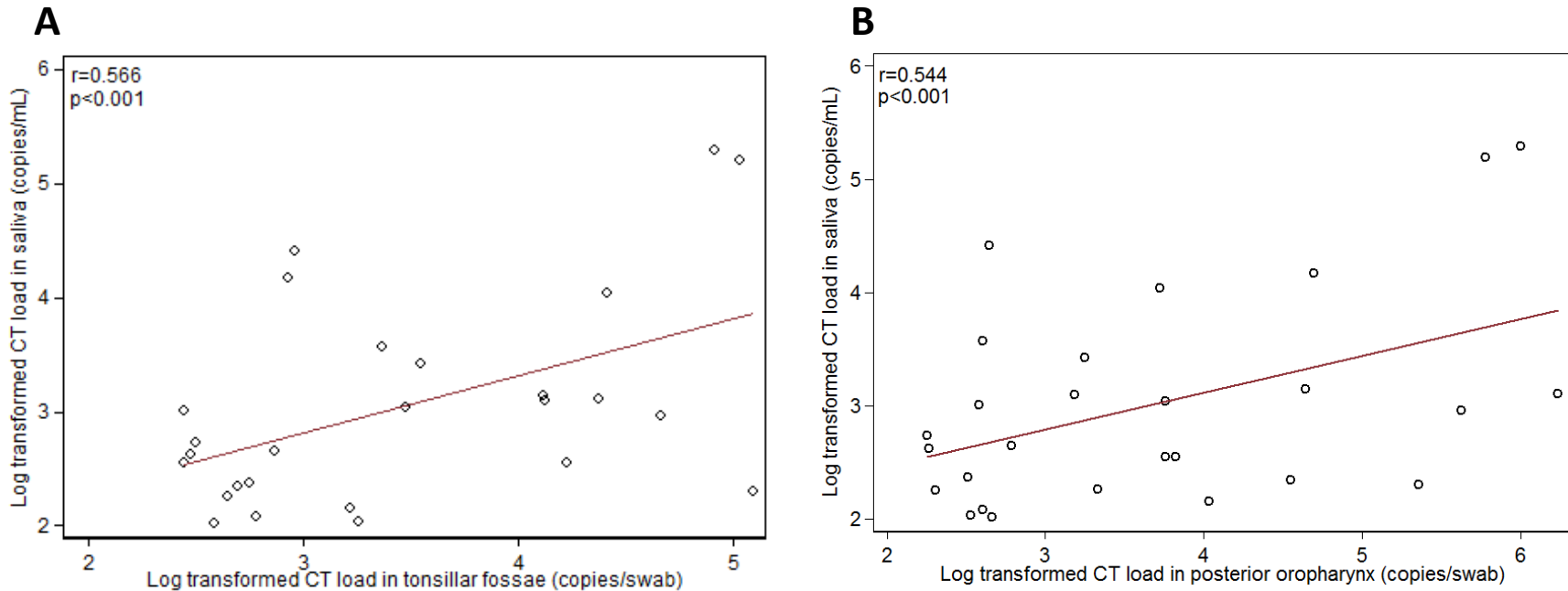


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qPCR Results

Figure 3: Correlation of \log_{10} saliva CT load with \log_{10} CT load at the (A) tonsillar fossae and (B) posterior oropharynx



Conclusions

- *C. trachomatis* DNA can be detected in saliva in most cases of oropharyngeal chlamydia
- There were no significant differences in the CT bacterial loads between the tonsillar fossae and the posterior oropharynx
- Saliva CT load was significantly lower than load at the tonsillar fossae and posterior oropharynx

Limitations

- Cannot determine viability
 - Future studies should culture CT from saliva or utilise other methods for viability detection
- Load could be influenced by the sampling methodology

Significance

- Saliva exchange has the potential to play a role in chlamydia transmission among MSM
- The fact that three cases (7%) had only one site CT positive by AC2 suggests that sampling both the tonsillar fossae and the posterior oropharynx is necessary for accurate diagnosis of oropharyngeal CT

Acknowledgments

Study Co-Authors



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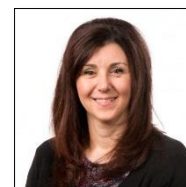
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References

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Sex practices and CT load

Table 3: Median log₁₀ bacterial loads of *Chlamydia trachomatis* from qPCR stratified by those who engaged in particular sexual practice in the 30 days prior to screening and those who did not.

	Did not engage in last 30 days ^a	Engaged in the last 30 days	p value*
	median (IQR)	median (IQR)	
Kissing	n=4 ^β	n=37	
<i>Tonsillar fossae</i>	2.5 (2.5 to 2.5)	2.9 (2.2 to 3.6)	0.777
<i>Posterior oropharynx</i>	2.3 (2.2 to 3.0)	2.9 (2.3 to 4.0)	0.676
<i>Saliva</i>	2.6 (1.3 to 2.7)	2.3 (0 to 3.1)	0.868
Receptive penile-oral sex[†]	n=5 ^β	n=36	
<i>Tonsillar fossae</i>	2.6 (2.5 to 2.9)	2.8 (2.1 to 3.5)	0.629
<i>Posterior oropharynx</i>	2.8 (2.3 to 3.8)	2.8 (2.2 to 3.9)	0.613
<i>Saliva</i>	2.6 (2.6 to 2.7)	2.3 (0 to 3.1)	0.908
Receptive penile-oral sex with ejaculation[†]	n=26	n=15	
<i>Tonsillar fossae</i>	2.6 (1.9 to 3.6)	2.9 (2.6 to 3.5)	0.268
<i>Posterior oropharynx</i>	2.7 (2.1 to 4.3)	2.9 (2.5 to 3.7)	0.800
<i>Saliva</i>	2.5 (0 to 3.1)	2.3 (2.0 to 2.6)	0.896
Insertive rimming[‡]	n=28	n=13	
<i>Tonsillar fossae</i>	2.7 (2.1 to 3.4)	3.3 (2.6 to 4.4)	0.193
<i>Posterior oropharynx</i>	2.7 (2.2 to 3.8)	3.6 (2.5 to 4.6)	0.647
<i>Saliva</i>	2.3 (0 to 3.0)	2.5 (2.0 to 3.1)	0.586

Acknowledgments

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