

A comparison of GC whole plate vs biplate for culture of *Neisseria gonorrhoeae* from oropharyngeal samples

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BACKGROUND

- Nucleic acid amplification tests (NAATs) are widely used for gonorrhoea screening worldwide but antimicrobial resistance is not yet readily available.
- Culture is recommended after a positive NAAT result before treatment to capture the antimicrobial resistance profile.
- Sensitivity of culture for *N. gonorrhoeae* is low for oropharyngeal infections.

AIM

- We aimed to compare the positivity of culture for *Neisseria gonorrhoeae* for samples inoculated with GC biplate versus GC whole plate to inform best clinical practice.

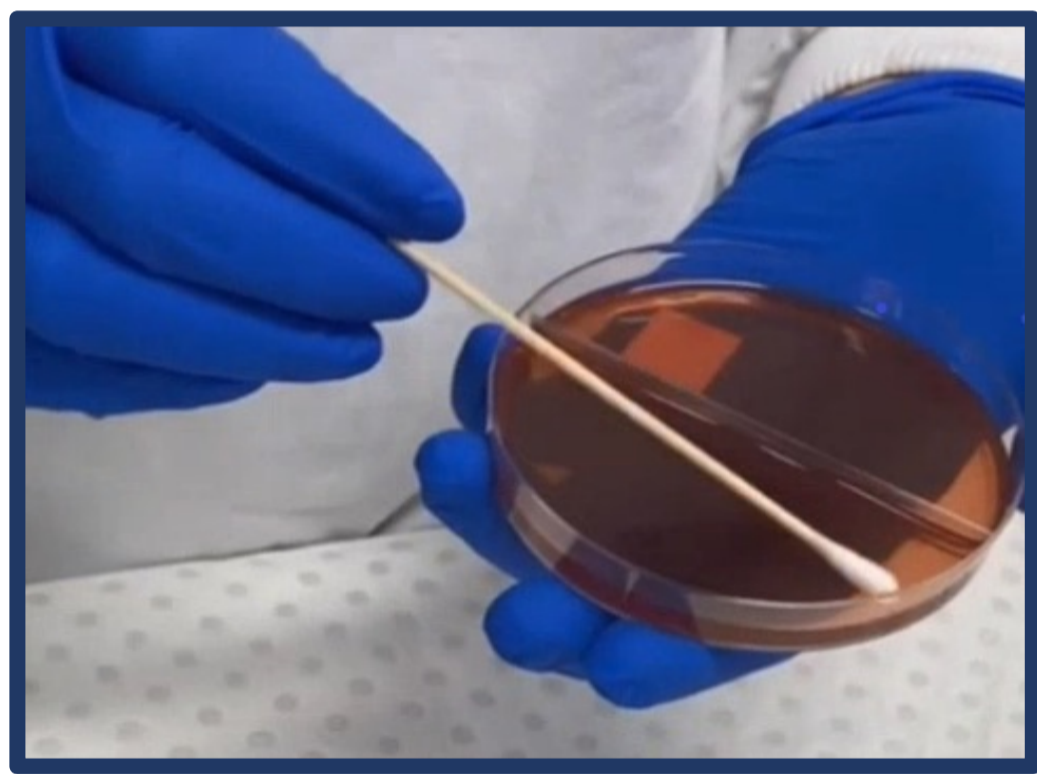


Figure 1: Illustration of inoculating a GC biplate

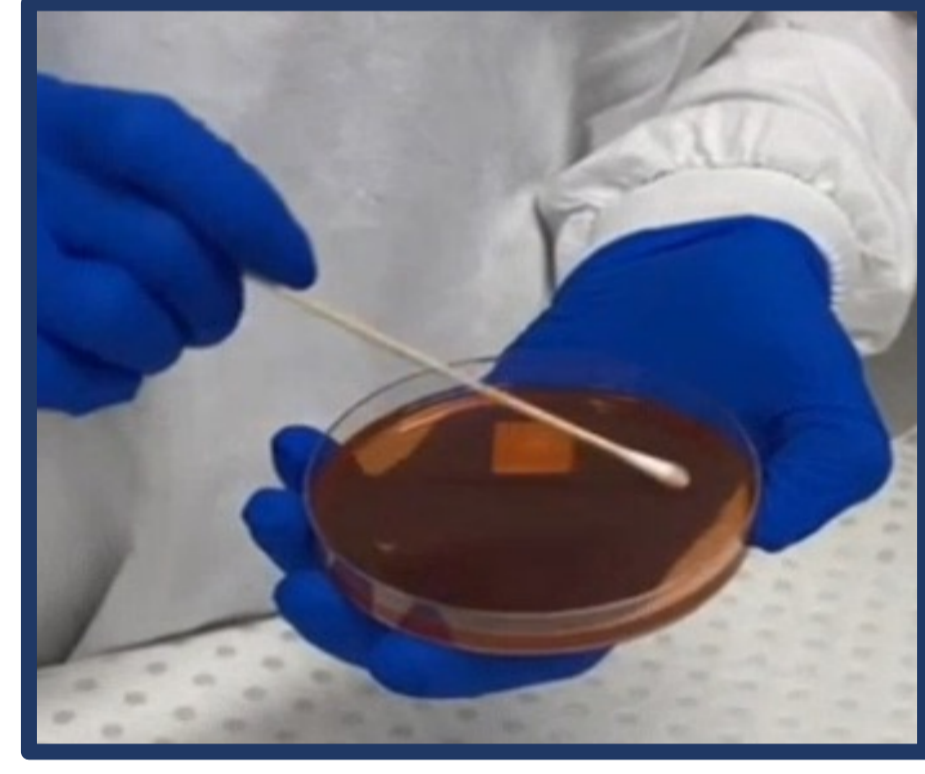


Figure 2: Illustration of inoculating a GC whole plate

METHODS

- We conducted a cross-sectional study at the Melbourne Sexual Health Centre between April and June 2021.
- Over the 8-week study period, clinicians alternated between using GC biplates and GC whole plates for samples for routine culture of *N. gonorrhoeae* following a positive Aptima NAAT test or on the same day for symptomatic clients.
- Training sessions were held before the study began on inoculation technique and the use of the GC whole plate.
- All cultures for gonorrhoea were included for clients with a positive NAAT during the study period.
- Positivity was calculated as the number of positive culture results divided by the number of those who had a culture of the same site.
- Fisher's exact test was used to compare the *N. gonorrhoeae* positivity by culture between two plates, stratified by anatomical sites.

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RESULTS

- 276 clients were included in the study.
- 154 clients (55.8%) had cultures taken with biplate, and 122 clients (44.2%) with whole plate.
- 103 (37.3%) clients had culture performed on the same day as NAAT testing, and 173 (62.7%) had culture performed between 1-14 days after NAAT testing, with a median of 5 days (IQR 3-6 days).
- There was no significant difference in gonorrhoea positivity by culture between GC biplate and GC whole plate across all sites (69.5% vs 64.8%; $p=0.439$), at oropharynx (44.3% vs 36.2%, $p=0.382$), urethra (97.5% vs 95.7%, $p=1.000$), or rectum (69.7% vs 74.0%, $p=0.681$) (Figure 3).
- For clients that had culture done between 1-14 days after NAAT, there was no significant difference in positivity between culture done in 1-5 days versus 6-14 days across all sites ($p=0.428$), at oropharynx ($p=0.623$), urethra ($p=1.000$) and rectum ($p=0.678$).

Figure 3: Positivity of *N. gonorrhoeae* culture, isolated with either with GC biplate or GC whole plate

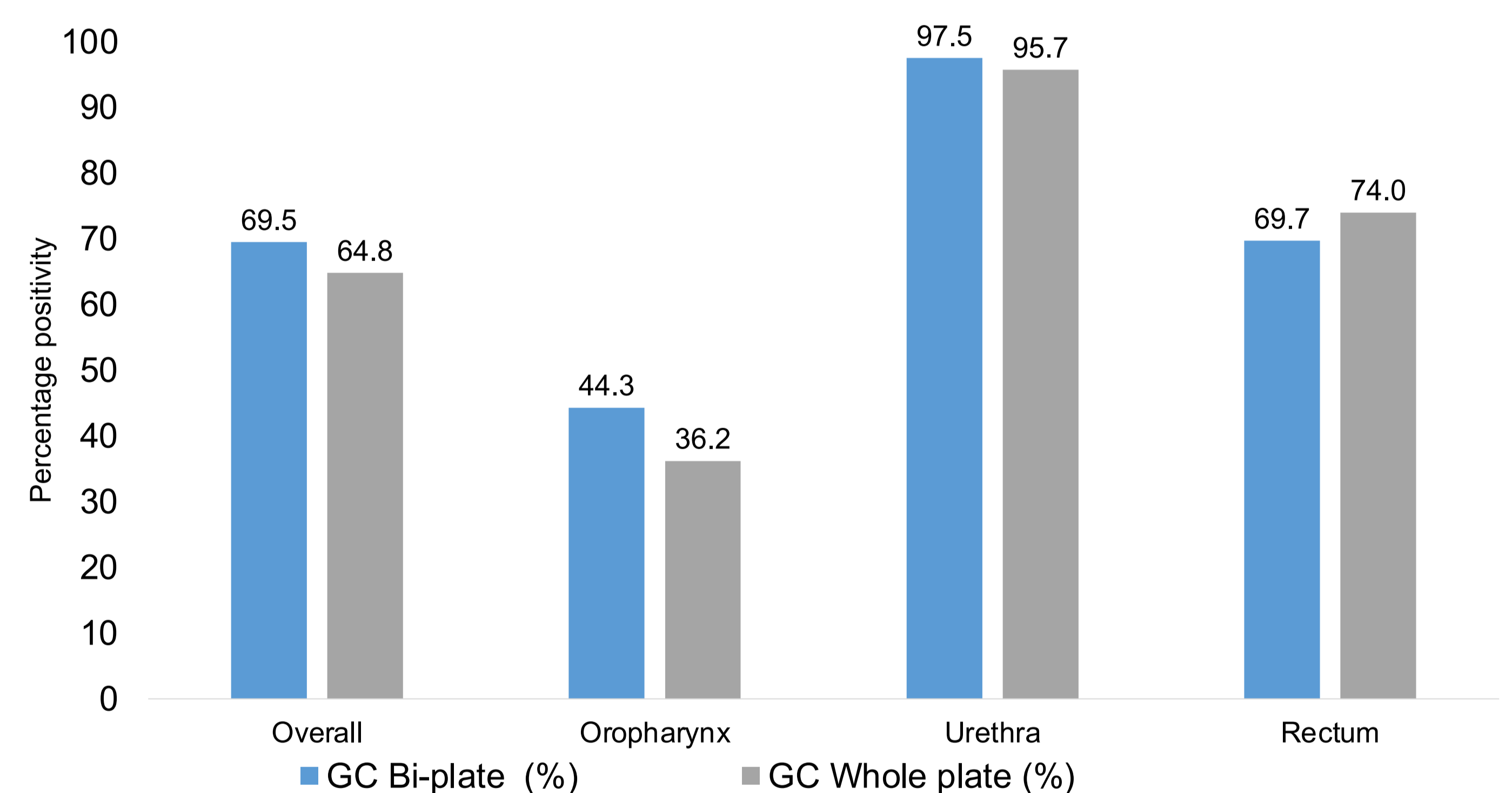
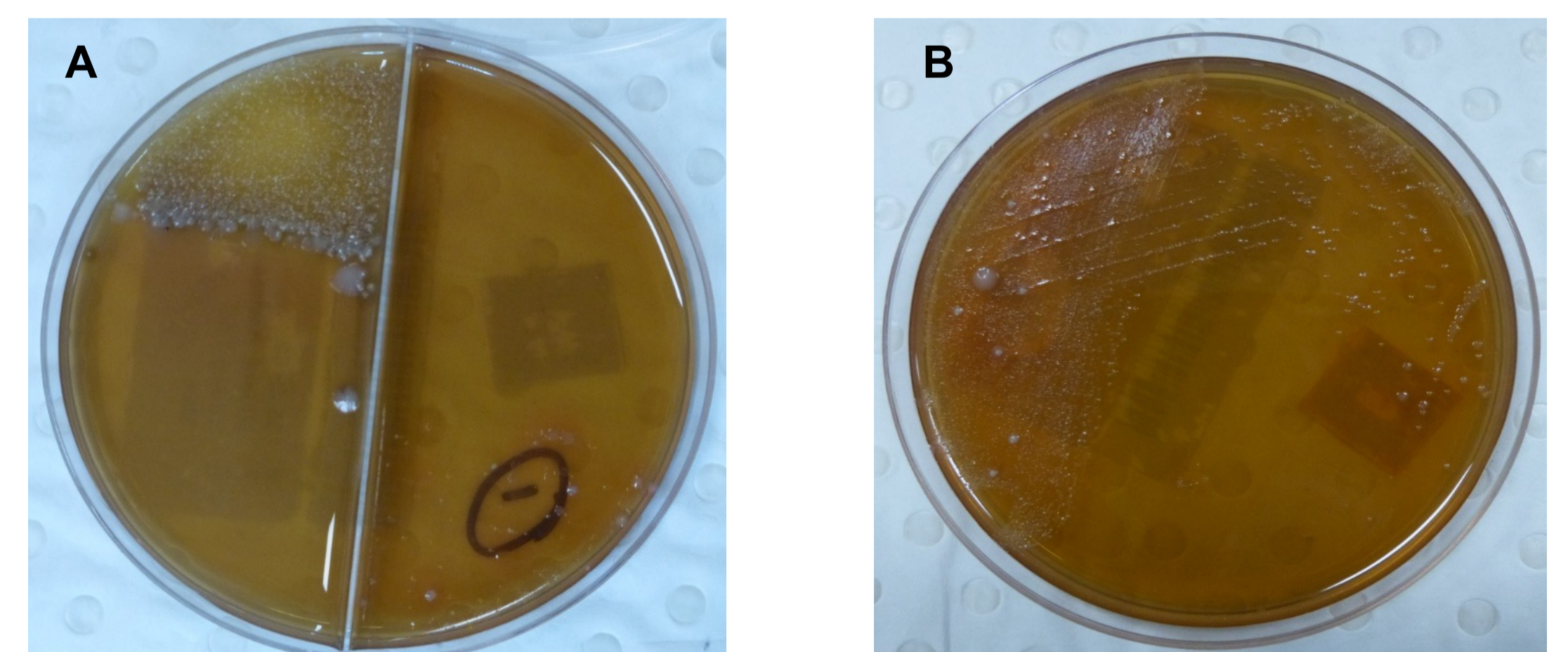


Figure 4: Photographs of oropharyngeal swab inoculated on; (A) GC biplate and (B) GC whole plate.



CONCLUSION

- There was no significant difference in culture positivity of *N. gonorrhoeae* with GC biplate versus GC whole plate.
- More research is needed to optimise culture positivity for *N. gonorrhoeae* for antimicrobial resistance monitoring and surveillance.