

# Significantly improved detection of pharyngeal and rectal gonorrhoea by NAAT compared to culture in men who have sex with men.

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## INTRODUCTION

Guidelines recommend screening men who have sex with men (MSM) for rectal and pharyngeal gonorrhoea<sup>1,2</sup> which are mostly asymptomatic.<sup>3,4</sup>

In March 2015, the onsite laboratory at the Melbourne Sexual Health Centre, the Microbiological Diagnostic Unit, changed its laboratory method for gonococcal testing from culture to nucleic acid amplification testing (NAAT) using the Aptima Combo 2 (AC2) for screening and Aptima GC (ACG) for confirmation.

## AIM

To measure the impact of a change in testing methods from culture to NAAT on the detection of pharyngeal and rectal gonorrhoea in MSM on a sexual health service level, including the effect on subgroups anticipated to have higher rates of gonorrhoea.

## METHODS

- We compared the proportion of tests positive for rectal and pharyngeal gonorrhoea in MSM using culture in 2014 with those using NAAT in 2015.
- Subgroup analyses were conducted among MSM who reported recent sexual contact with a male with gonorrhoea, among MSM who presented with symptomatic proctitis, and among HIV-positive and HIV-negative MSM.
- In April 2015, MSM were tested using both NAAT and culture, providing an additional comparison to assess the validity of our main comparison.
- Difference in underlying prevalence of gonorrhoea was assessed by comparing positivity of urethral gonorrhoea by culture in each testing period.

## RESULTS

- The proportion of tests positive for rectal gonorrhoea by NAAT was double that obtained by culture (8% vs 3.9%; prevalence ratio (PR) 2.0, 95% confidence interval (CI) 1.8-2.4) and five-fold for pharyngeal gonorrhoea (8.3% vs 1.6%; PR 5.2; 95% CI 4.2-6.4).
- Similar increases in test positivity were observed in HIV-positive and HIV-negative men.
- By NAAT, test positivity for rectal gonorrhoea was higher in HIV-positive compared to HIV-negative men (15.4% vs 7.3%, PR 2.1, 95% CI 1.7-2.6).
- Culture and NAAT had similar test positivity for rectal gonorrhoea among men who reported contact with gonorrhoea (24.9% vs 25.3%, PR 1.0, 95% CI 0.8-1.4) and men who presented with symptoms of proctitis (22.2% vs 27.9%, PR 1.3, 95% CI 0.8-2.0).

TABLE 1: Detection of gonorrhoea by culture and NAAT

	Culture	NAAT		
Gonorrhoea positivity	n/N; % pos	n/N; % pos	Prevalence ratio (95% CI)	
Ng urethritis	157/6409; 2.4	150/7470; 2.0	0.8 (0.7 to 1.0)	
All men	Rectum	230/5863; 3.9	540/6751; 8.0	2.0 (1.8 to 2.4)
	Pharynx	102/6355; 1.6	609/7347; 8.3	5.2 (4.2 to 6.4)
HIV positive	Rectum	55/574; 9.6	95/615; 15.4	1.6 (1.2 to 2.2)
	Pharynx	9/615; 1.5	63/638; 9.9	6.8 (3.4 to 13.5)
HIV negative	Rectum	175/5289; 3.3	445/6136; 7.3	2.2 (1.9 to 2.6)
	Pharynx	93/5740; 1.6	546/6709; 8.1	5.0 (4.0 to 6.2)
Ng contacts	Rectum	53/213; 24.9	103/407; 25.3	1.0 (0.8 to 1.4)
	Pharynx	19/218; 8.7	110/426; 25.8	3.0 (1.9 to 4.7)
Ng proctitis	Rectum	20/90; 22.2	36/129; 27.9	1.3 (0.8 to 2.0)

## CONCLUSIONS

- This study demonstrates the superior sensitivity of the AC2 assay compared to culture for the detection of extra-genital gonorrhoea in MSM on a health service level, particularly for pharyngeal infections, which showed a 5-fold increase in detection by NAAT.
- The improvement in detection by AC2 testing was similar among HIV-positive and HIV-negative MSM.
- HIV-positive MSM had significantly higher rates of rectal gonorrhoea compared to HIV-negative men.

## REFERENCES

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