

## Corrigendum

### **Clinical significance of questionnaire-elicited or clinically reported anorectal symptoms for rectal *Neisseria gonorrhoeae* and *Chlamydia trachomatis* amongst men who have sex with men**

(Volume 5, issue 1, pages 77–82)

The published paper contained errors on page 77. The third author's correct name is Chee W. Phang; he is affiliated with the Department of Public Health, The University of Melbourne, Melbourne Sexual Health Centre, Carlton, Vic. 3053, Australia.

# Clinical significance of questionnaire-elicited or clinically reported anorectal symptoms for rectal *Neisseria gonorrhoeae* and *Chlamydia trachomatis* amongst men who have sex with men

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**Abstract.** **Background:** Although *Neisseria gonorrhoeae* (*Ng*) and *Chlamydia trachomatis* (*Ct*) are common infections in men who have sex with men, it is unclear from previous studies whether anorectal symptoms are reliable clinical indicators of infection. **Aim:** The objective of the study was to investigate the clinical significance of questionnaire-elicited or clinically reported anal symptoms for rectal *Ng* and *Ct*. **Methods:** During 2002 to 2003, men who have sex with men (MSM) screened or tested for *Ng* or *Ct* according to the national guidelines were invited to participate in a questionnaire. **Results:** During the study period, 366 MSM were enrolled into the study (88% recruitment rate), of whom 20 (5%) and 25 (7%) were diagnosed with rectal *Ng* or *Ct*, respectively. Overall, ‘any’ anorectal symptoms on a questionnaire were reported equally by those with and without rectal *Ng* (75 v. 74%,  $P=0.69$ ), but heavy anal discharge ( $P < 0.01$ ) and anal pain ( $P = 0.04$ ) were more common in those with rectal *Ng*. Symptoms on the questionnaire were not different among those with and without *Ct*. Any anal symptoms were reported substantially more often via questionnaire than in a clinical consultation (75 v. 16%,  $P < 0.01$ ) and symptoms reported in a clinical consultation were not associated with *Ng* or *Ct* detection. **Conclusion:** The weak or absent association between symptoms and the presence of *Ct* or *Ng* highlights the importance of annual sexually transmitted infection screening in MSM regardless of symptoms.

**Additional keyword:** screening.

## Introduction

Rectal *Neisseria gonorrhoeae* (*Ng*) and *Chlamydia trachomatis* (*Ct*) infections are common diagnoses in men who have sex with men (MSM). Although several recent studies have described the symptoms and clinical signs of rectal *Ng* and *Ct* on presentation,<sup>1–7</sup> it is unclear from these studies whether or not symptoms are reliable clinical indicators for *Ng* and *Ct* rectal infection as few studies have reported on anorectal symptoms in MSM with and without rectal *Ng* or *Ct*.<sup>1,4,5</sup> Relatively few MSM with *Ng* or *Ct* rectal infection have reported rectal symptoms in previous Melbourne studies.<sup>8,9</sup>

The present study compares the symptoms of rectal *Ng* and *Ct* with MSM without rectal *Ng* and *Ct* at the Melbourne Sexual Health Centre (MSHC) and examines whether anorectal symptoms can be used as clinical correlates of rectal *Ng* and *Ct*. The study also compares anorectal symptoms reported during a clinical consultation compared with those elicited via a questionnaire.

## Methods

### Study population

MSM who attended the MSHC for clinical consultations for 1 year from November 2002 were eligible for the study if they had testing according to the guidelines,<sup>10,11</sup> which included at least a throat swab for *Ng*, a first-pass urine for *Ct* and a rectal swab for *Ct* and *Ng*. In Australia, asymptomatic urethral gonorrhoea among MSM is rare, and asymptomatic screening is therefore not recommended.<sup>8</sup> We requested clinicians to ask MSM fulfilling these criteria if they were willing to participate in the study. Informed consent was obtained from these clients and a questionnaire was distributed to them after the clinical consultation, during which specimens for *Ng* and *Ct* testing were collected. There were seven questions on anorectal symptoms experienced in the past week. Response options included a five-point scale to measure the severity of symptoms. For the analysis and tables the categories were collapsed to: 1 = no (preserved); 2 = moderate (score 2 or 3 on initial questionnaire);

and 3 = heavy (score 4 or 5 on initial questionnaire). Case records were reviewed to determine if the client had reported any rectal symptoms to the clinician during the consultation. The project was approved by the Victorian Department of Human Services Human Research Ethics Committee.

#### *Laboratory methods*

*Ng* infection was diagnosed by culture, and *Ct* infection was diagnosed by strand-displacement amplification using BDProbeTecTMET (Becton Dickinson, Microbiology Systems, Sparks, MD, USA) carried out by the Microbiological Diagnostic Unit, Melbourne, Australia.

#### *Statistical analysis*

MSM found to be diagnosed with *Ng* and *Ct* co-infection were not analysed separately ( $n = 6$ ). Participants who were not diagnosed with *Ng* or *Ct* after testing and screening were used as a comparison group. Data from the questionnaire was entered into the Statistical Package for the Social Sciences (SPSS, www.spss.com) version 11.0 for Windows software, and data was analysed using SPSS.

A univariate analysis of *Ng* and *Ct* cases, and MSM tested as being *Ng*- and *Ct*-negative was carried out using  $\chi^2$  test. Odds ratios (OR) are presented with 95% confidence intervals. Variables with a significance level less than 0.05 on univariate analysis were entered into a multivariate logistic regression model. Multivariate logistic regression was used to evaluate the site-specific symptoms using the forced entry procedure. With 25 cases and 330 controls the study had 80% power to detect an OR of more than 3.7 if the characteristic was present in 20% of controls. Cohen's kappa statistic and McNemars test were calculated for agreement between symptoms reported via questionnaire and symptoms reported during clinical consultation.

#### **Results**

A total of 1449 MSM had clinical consultations during the study period:<sup>12</sup> 1119 were asymptomatic, 281 presented with possible symptoms of *Ng* and *Ct* infection or presented as possible *Ng* and *Ct* contacts, and 49 were identified as attending for follow up (e.g. receiving test results or treatment). Of these men, 627 men had *Ng* and *Ct* testing or screening at anatomical sites recommended in the guidelines, of whom 551 (88%) were invited to participate in the questionnaire and 442 (81%) agreed. Twenty-eight men did not return the questionnaire (6% withdrawal rate).

Forty-eight MSM had positive specimens from the throat or urine and were excluded from the study. This left a total of 366 MSM entered into the study of rectal infections. Twenty (5%) MSM were diagnosed with rectal *Ng*, 25 (7%) MSM were diagnosed with rectal *Ct*, and 323 MSM tested negative for *Ng* and *Ct* at all anatomical sites tested and screened. Fifty-nine MSM reported rectal symptoms to the clinician during the clinical consultation.

Table 1 shows the associations of site-specific symptoms of MSM diagnosed with and without rectal *Ng*. Two questionnaire variables were found to be strongly associated with diagnosis of rectal *Ng* on univariate analysis: heavy anal discharge and mild anal pain (experienced in the past week). No symptom

variables were found to be associated with diagnosis of rectal *Ct* on univariate analysis (Table 2).

Questionnaire-reported symptoms were significantly more common than clinician-detected symptoms for all of the different symptoms listed in Table 3 ( $P < 0.01$ ). Cohen's kappa statistic was calculated for questionnaire-reported and clinically reported symptoms (Table 3). The correlation between questionnaire-reported and clinically reported symptoms was poor (kappa  $< 0.24$ ). Sixteen percent (57/365) of MSM reported 'any' rectal symptoms during the consultation, compared with 75% (273/365) via a questionnaire, with a mean concordance of 40%.

#### **Discussion**

The present study shows that self-reported, questionnaire-elicited anorectal symptoms were common in MSM who attended the MSHC during 2002 and 2003 regardless of the presence of *Ng* and *Ct*. In contrast, clinician-reported symptoms were uncommon. Two specific questionnaire-elicited anorectal symptoms predicted the presence of rectal *Ng* (heavy anal discharge and anal pain), but their sensitivity to detect *Ng* was low ( $< 50\%$ ). No symptoms predicted rectal *Ct*, and no clinically reported symptoms were predictive of infection with *Ng* or *Ct*. Overall, anorectal symptoms cannot be used to determine *Ng* and *Ct* infections.

Our study had several weaknesses. It was only able to detect relatively high OR for specific symptoms (3.7 or greater). However, even high OR were associated with relatively low sensitivities (data not shown) so it would have been inappropriate to conduct a larger study that was able to detect lower OR because they would have been of limited clinical value. In addition, the use of the  $\chi^2$ -test for trend increased our statistical power to detect an association.

Previous studies have described anorectal symptoms in MSM without *Ng* or *Ct* ranging from 5<sup>5</sup> to 49%.<sup>1</sup> Similarly, in MSM with *Ng* or *Ct* the proportion with anorectal symptoms is reported to be between 8<sup>3</sup> and 68% (anogenital symptoms).<sup>13</sup> Several factors may account for this range and for the higher prevalence noted in the present study. First, different study populations may have different proportions of symptomatic MSM with *Ng* or *Ct* infections. In general, more MSM diagnosed in sexually transmissible infection (STI) clinics are symptomatic,<sup>2,14-16</sup> compared with men diagnosed in screening and community studies.<sup>3,8,17-19</sup> Anorectal symptoms may have prompted men to attend STI clinics, resulting in an over-representation of symptomatic cases in clinic attendees. Second, it is likely that different methods for collecting symptom data have contributed to the wide range of symptom prevalence in studies. Most of the previous studies have used a combination of clinically observed signs and patient-reported symptoms, largely collected by review of patient files. These methods may not have detected mild or general anorectal symptoms.

Only three recent studies in the literature have reported on anorectal symptoms of MSM diagnosed with and without rectal *Ng* and *Ct*,<sup>1,4,5</sup> and none of these studies reported on the severity of symptoms. Our study was prospective and used a self-completed survey with a variety of questions on rectal symptoms, including response options to assess symptom severity. This

**Table 1. Analysis of anorectal symptoms experienced in the past week reported on questionnaires and clinically reported symptoms by men who have sex with men diagnosed with and without rectal *Neisseria gonorrhoeae* (*Ng*) infection at the Melbourne Sexual Health Centre, 2002–2003**CI, confidence interval; *Ct*, *Chlamydia trachomatis*; nc, not calculable; OR, odds ratio

Variable	Rectal <i>Ng</i> ( <i>n</i> = 20)	Negative for <i>Ng</i> and <i>Ct</i> ( <i>n</i> = 323)	<i>P</i> -trend	Crude OR (95% CI)	Adjusted OR (95% CI)
Anorectal symptoms (any)			0.69		
No	5 (25%)	79 (24%)		1	
Yes, mild symptoms	10 (50%)	184 (57%)		0.9 (0.3, 2.5)	
Yes, overt symptoms	5 (25%)	60 (19%)		1.3 (0.4, 4.5)	
Clinically reported					
No	16 (80%)	272 (85%)		OR Yes/No	
Yes	4 (20%)	50 (15%)		1.4 (0.2, 2.2)	
Anal discomfort			0.16		
No	9 (45%)	205 (64%)		1	
Mild discomfort	9 (45%)	91 (28%)		2.2 (0.9, 5.7)	
Extreme discomfort	2 (10%)	26 (8%)		1.7 (0.4, 7.7)	
Unknown (missing data)	0	1			
Clinically reported					
No	Not done				
Yes					
Anal discharge			<0.01		
No	15 (75%)	290 (90%)		1	1
Moderate discharge	2 (10%)	30 (9%)		1.3 (0.3, 5.3)	7.0 (0.3, 147.8)
Heavy discharge	3 (15%)	2 (1%)		29.0 (5.3, 156.5)	8.5 (0.2, 323.7)
Unknown (missing data)	0	1			
Clinically reported					
Yes	1 (5%)	4 (1%)		4.2 (0.0, 2.2)	
No	19 (95%)	319 (99%)			
Anal itch			0.89		
No	11 (55%)	164 (51%)		1	
Mild itch	6 (30%)	129 (40%)		0.7 (0.3, 1.9)	
Extreme itch	3 (15%)	29 (9%)		1.5 (0.4, 5.5)	
Unknown (missing data)	0	1			
Clinically reported					
Yes	0	18 (5.6%)			
No	20	305 (94%)		nc	
Anal pain			0.04		
No	10 (50%)	239 (74%)		1	1
Mild pain	9 (45%)	70 (22%)		3.1 (1.2, 7.7)	0.0 (0.0, nc)
Extreme pain	1 (5%)	13 (4%)		1.8 (0.3, 12.2)	0.0 (0.0, nc)
Unknown (missing data)	0	1			
Clinically reported					
Yes	2 (10%)	16 (5%)			
No	18 (90%)	307 (95%)		2.1 (0.1, 11)	
Anal bleeding			0.05		
No	18 (90%)	222 (69%)		1	
Moderate bleeding	2 (10%)	91 (28%)		0.3 (0.1, 1.1)	
Heavy bleeding	0	9 (3%)		0.0 (0.0, 5.9)	
Unknown (missing data)	0	1			
Clinically reported					
Yes	1 (95%)	17 (5%)			
No	19 (95%)	306 (95%)		0.9 (0.1, 8.3)	
Constipation			0.07		
No	11 (55%)	235 (73%)		1	
Moderate symptoms	8 (40%)	78 (24%)		2.2 (0.9, 5.5)	
Extreme symptoms of constipation	1 (5%)	7 (2%)		3.0 (0.5, 21.3)	
Unknown (missing data)	0	3			
Clinically reported					
Yes	0	5 (2%)			
No	20	318 (99%)		nc	
Loose bowel actions			0.45		
No	10 (53%)	192 (60%)		1	
Moderate	7 (37%)	108 (34%)		1.2 (0.5, 3.3)	
Extreme (diarrhoea)	2 (10%)	21 (6%)		1.8 (0.4, 8.0)	
Unknown (missing data)	1	2			
Clinically reported					
Yes	1 (5%)	5 (2%)			
No	19 (95%)	318 (99%)		3.3 (0.3, 34)	

**Table 2.** Analysis of anorectal symptoms experienced in the past week reported on questionnaires and clinically reported symptoms by men who have sex with men diagnosed with and without rectal *Chlamydia trachomatis* (Cr) infections at the Melbourne Sexual Health Centre, 2002–2003  
CI, confidence interval; Ng, *Neisseria gonorrhoeae*; nc, not calculable; OR, odds ratio

Variable	Rectal Cr (n = 25)	Negative for Ng and Cr (n = 323)	P-trend	Crude OR (95% CI)
Anorectal symptoms (any)				
No	8 (32%)	79 (24%)	0.18	1
Yes, mild symptoms	15 (60%)	184 (57%)		0.8 (0.3, 1.9)
Yes, overt symptoms	2 (8%)	60 (19%)		0.3 (0.1, 1.4)
Clinically reported				
No	22 (88%)	272 (85%)		0.7 (0.4, 4.6)
Yes	3 (12%)	50 (16%)		
Anal discomfort				
No	19 (76%)	205 (64%)	0.21	1
Mild discomfort	5 (20%)	91 (28%)		0.6 (0.2, 1.6)
Extreme discomfort	1 (4%)	26 (8%)		0.4 (0.1, 2.6)
Unknown (missing data)	0	1		
Not clinically reported				
Anal discharge				
No	21 (84%)	290 (90%)	0.18	1
Moderate discharge	3 (12%)	30 (9%)		1.4 (0.4, 4.6)
Heavy discharge	1 (4%)	2 (1%)		6.9 (0.8, 55.5)
Unknown (missing data)	0	1		
Clinically reported				
No	24 (96%)	319 (99%)		0.3 (0.0, 4300)
Yes	1 (4%)	4 (1%)		
Anal itch				
No	14 (56%)	164 (51%)	0.29	1
Mild itch	11 (44%)	129 (40%)		1.0 (0.4, 2.2)
Extreme itch	0 (0%)	29 (9%)		0.0 (0.0, 1.6)
Unknown (missing data)	0	1		
Clinically reported				
No	25	305 (95%)		nc
Yes	0	18 (5.6%)		
Anal pain				
No	21 (84%)	239 (74%)	0.39	1
Mild pain	3 (12%)	70 (22%)		0.5 (0.2, 1.6)
Extreme pain	1 (4%)	13 (4%)		0.9 (0.1, 5.5)
Unknown (missing data)	0	1		1.7 (0.1, 2.8)
Clinically reported				
No	23 (92%)	307 (95%)		
Yes	2 (8%)	16 (5%)		
Anal bleeding				
No	17 (68%)	222 (69%)	0.84	1
Moderate bleeding	7 (28%)	91 (28%)		1.0 (0.4, 2.4)
Heavy bleeding	1 (4%)	9 (3%)		1.4 (0.2, 9.6)
Unknown (missing data)	0	1		
Clinically reported				
Yes	0	17 (5%)		nc
No	25	306 (95%)		
Constipation				
No	18 (72%)	235 (73%)	0.75	1
Moderate symptoms	6 (24%)	78 (24%)		1.0 (0.4, 2.7)
Extreme symptoms of constipation	1 (4%)	7 (2%)		2.0 (0.3, 13.3)
Unknown (missing data)	0	3		
Clinically reported				
No	0	318 (99%)		nc
Yes	25	5 (2%)		
Loose bowel actions				
No	15 (63%)	192 (60%)	0.47	1
Moderate	9 (37%)	108 (34%)		1.1 (0.5, 2.5)
Extreme (diarrhoea)	0	21 (6%)		0.0 (0.0, 2.4)
Unknown (missing data)	1	2		
Clinically reported				
No	25	318 (99%)		
Yes	0	5 (2%)		nc

**Table 3. Anorectal symptoms experienced in the past week reported on questionnaire compared with clinically reported symptoms at the Melbourne Sexual Health Centre, 2002–2003**

For clinically reported and questionnaire reported symptoms, 'yes' was considered as the presence of any symptoms (mild, moderate or severe)

Symptom	Yes	No	Total	Kappa statistic	Concordance	McNemar test
Any anal symptoms						
Yes	55	2	57			
No	218	90	308		145/365	
Total	273	92	365	0.101	40%	$P < 0.01$
Discharge						
Yes	6	0	6			
No	35	324	408		376/414	$P < 0.01$
Total	41	324	365	0.233	90%	
Anal itch						
Yes	14	4	20			
No	163	184	394		198/365	$P < 0.01$
Total	177	188	365	0.059	54%	
Anal pain						
Yes	17	3	20			
No	81	264	345		281/365	$P < 0.01$
Total	98	267	365	0.217	77%	
Anal bleeding						
Yes	15	3	18			
No	95	252	347		267/365	$P < 0.01$
Total	110	255	365	0.163	73%	
Constipation						
Yes	3	2	5			
No	96	262	407		265/363	$P < 0.01$
Total	99	264	363	0.032	73%	
Loose bowel actions						
Yes	6	0	6			
No	140	217	357		223/363	$P < 0.01$
Total	146	217	363	0.101	61%	

questionnaire revealed that most MSM attending the MSHC reported mild anorectal symptoms.

Overall, anorectal symptoms are not clinically useful as predictors of rectal *Ng* or *Ct*. Therefore, annual STI screening of MSM is essential regardless of anorectal symptoms. The results of our study support the national screening guidelines for MSM.

### Conflict of interest

None declared.

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Manuscript received 31 August 2007, accepted 30 January 2008