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Feasibility of anorectal chlamydia testing in women: a cross-sectional survey among general practitioners

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Abstract

Background: Anorectal *Chlamydia trachomatis* (CT) may be clinically relevant for women in general practice. Although anorectal CT testing in this setting may prevent underdiagnosis and undertreatment, its feasibility is questioned as GPs currently rarely order anorectal CT tests, for yet unknown reasons.

Objective: To explore the feasibility of anorectal CT testing in women in general practice.

Methods: GPs across the Netherlands were invited directly (n = 1481) and by snowball sampling (n = 330) to join an online cross-sectional survey that asked about the acceptability of and barriers for (standard) anorectal testing in women during CT-related consultations. Data were analysed with univariable and multivariable logistic regression models.

Results: The questionnaire was opened by 514 respondents (28%, 514/1811) and 394 fully completed it. GPs' acceptability of anorectal testing by either self-sampling or provider-sampling was high (86%). Twenty-eight percent of GPs felt neutral, and 43% felt accepting towards standard anorectal testing. Nevertheless, 40% of GPs had never tested for anorectal CT in women, which was associated with a reported difficulty in asking about anal sex (odds ratio [OR]: 3.07, 95% confidence interval [CI]: 1.21–7.80), infrequency of anal sexual history taking (OR: 11.50, 95% CI: 6.39–20.72), low frequency of urogenital CT testing (OR 3.44, 95%-CI: 1.86–6.38) and with practicing in a non-urban area (OR: 2.27, 95% CI: 1.48–3.48). Acceptability of anorectal testing was not associated with the studied factors.

Conclusion: This quantitative survey shows that anorectal CT testing is feasible based on its acceptability, but is likely hindered by a lower awareness of (anorectal) CT in GPs.

Key Messages

- We explored the feasibility of anorectal chlamydia testing in women.
- Most general practitioners thought anorectal chlamydia testing was acceptable.
- Yet, 40% of general practitioners had never tested for anorectal Chlamydia.
- A low awareness of anorectal chlamydia related to never having tested for it.
- More awareness could increase the feasibility of anorectal testing.

Lay Summary

Background: *Chlamydia trachomatis* (CT) is a sexually transmitted disease that occurs both vaginally and anorectally (anally) in women. Testing for anorectal CT may improve treatment outcomes, but GPs currently rarely order anorectal CT tests. It is therefore uncertain whether anorectal CT testing is feasible.

Objective: To find out whether anorectal CT testing in women by GPs is feasible.

Methods: We sent an online survey to GPs across the Netherlands and asked about (1) the acceptability of and (2) barriers for anorectal CT testing in women.

Results: GPs thought anorectal CT testing, either when the patient self-sampled or when the GP sampled, was acceptable (86%). Twenty-eight percent of GPs felt neutral, and 43% felt accepting towards standard anorectal testing. Nevertheless, 40% of GPs had never tested for anorectal CT in women. These GPs were more likely to find it difficult to ask women about anal sex, to do so less frequently, to less frequently offer CT tests all together and to work in a non-urban area. These factors imply a lower awareness of (anorectal) CT.

Conclusion: This study shows that anorectal CT testing is feasible based on its acceptability, but is likely hindered by a lower awareness of (anorectal) CT.

Keywords: *Chlamydia trachomatis*, diagnostic techniques and procedures, general practice, medical history taking, sexually transmitted diseases, women

Introduction

Anorectal *Chlamydia trachomatis* (CT) infections in women may be both prevalent and clinically relevant in general practice. In sexually transmitted infections (STI) clinics, anorectal CT infections regularly occur in CT-positive women, with 4–44% showing anorectal mono-infections and 15–73% presenting with anorectal-vaginal co-infections (1). The anorectal location influences clinical decision making, as it requires treatment with doxycycline (91–98% anorectal clearance) rather than azithromycin (73–84% anorectal clearance) (2–4). As anorectal infections can be viable (5), they could theoretically cause CT sequelae like pelvic inflammatory disease and tubal factor infertility (6,7) by autoinoculation from the anorectal to the vaginal site (8). Currently, however, testing for anorectal CT is rarely done in general practice (9,10), possibly leaving women underdiagnosed and undertreated.

It is unknown why the current anorectal testing frequency is so low. Current (inter)national STI guidelines (11–14) probably contribute to this low testing rate, as they advise to take an anorectal CT test upon mentioning of anal sex or anal symptoms. On the one hand, this may indicate problems with (anal) sexual history taking (15), as the current low anorectal testing rate (<1%) (9) is lower than the amount of women reporting anal sex (13–17%) (16). But more importantly, anorectal CT is unrelated to anal sex and this approach therefore systematically misses infections in women who do not practice it. Finally, other factors like a lack of awareness/knowledge on STIs (17) or a lack of acceptability of anorectal testing in the GP or in the patient may be additional barriers to anorectal testing in general practice.

Given that GPs in the Netherlands identify twice as many chlamydia cases compared to STI clinics (18), adequate anorectal CT management in general practice is desirable. We have therefore sent out a quantitative online survey to a large group of GPs across the Netherlands to assess the feasibility of anorectal CT testing by exploring its acceptability and by researching the extent to which GPs experience barriers for anorectal testing.

Methods

Study design and setting

We distributed an online cross-sectional questionnaire to general practitioners in the Netherlands in 2019. In the Netherlands, STI care is provided by public health services, which provide care for high-STI-risk groups at STI clinics, and GPs, who serve the primary care population as a whole.

Recruitment

We invited GPs via several online routes. All GPs linked to the academic GP networks of Maastricht (n = 848) and Groningen University (n = 633) were invited per email with a link to the survey. In addition, GPs were indirectly recruited (snowball sampling) via email through the GP network specialized in urogynaecology and the expert group of sexual health from the Dutch College of General Practitioners. To estimate response rates, we asked these organizations how many of their GPs forwarded the invitation. GPs were also invited via postings on an online platform solely accessible to Dutch GPs (HaWeb). Based on previous surveys among physicians, we

expected a response rate of approximately 30% (19–22). To ensure a representative sample of the total 11 834 GPs in the Netherlands, at a margin of error of 0.05, an alpha of 0.05 and an estimated proportion of 0.5 per dichotomous outcome, we considered 1243 invited GPs and 373 actual respondents minimally sufficient (23–25).

Questionnaire

The 47-item questionnaire with obligatory questions and skip logic was developed in Qualtrics (SAP, Walldorf, Germany) using the latest Dutch GP guideline on STI management (12). After informed consent was provided, the respondent answered questions on barriers for anorectal testing at a chlamydia-related consultation, i.e. sexual history taking, testing acceptability, testing indication through two hypothetical cases with a low and high a priori STI-risk (Supplementary Data) and actual testing experience. The survey focussed solely on consultations in which the GP already had an indication for CT testing. We investigated both the degree to which GPs anticipated a patient's acceptability for anorectal CT testing ('GP-anticipated acceptability of anorectal testing'), as well as the GP's own acceptability of standard anorectal CT testing in women ('GPs acceptability of standard anorectal CT testing'). We collected data on GPs' demographics (sex, job specification, days practicing and working area postcode). Answering options were Likert-type scores (five options), categorical multiple choice options or open numerical answers. A pilot among GPs was performed to check the questionnaire's face and content validity, the avoidance of priming and the feasibility of its length.

Data analysis

We excluded incomplete questionnaires. To estimate urbanization, we used data of Statistics Netherlands on the average address density per square kilometre per four-digit postal code (26) and dichotomized it for logistic regression into urban (≥1000 address/km^2) and rural (<1000 address/km^2) areas (9,27). A GP's full-time equivalent was approximated by dividing the number of work days per week by the constant of 5.

We applied chi-square and Fisher's exact tests for relations between categorical variables and Pearson and Spearman correlations for relations between ordinal and continuous variables. We further used univariable and multivariable logistic regression to explore factors associated with (i) anorectal testing in women and (ii) acceptability of standard anorectal testing in women (dichotomous; 'not acceptable' versus 'neutral' or 'acceptable') using the following variables: GP gender, GP employment type, degree of ease (in survey: degree of difficulty) in asking women about anal sex, frequency with which the GP asked women about anal sex, frequency of CT testing in women and urbanization. We created dummy variables for several continuous variables to meet the assumptions for logistic regression. We calculated odds ratios (OR) and confidence intervals (CI) and considered *P*-values of <0.05 statistically significant.

Data was analysed using SPSS 25.0 (SAP, Walldorf, Germany).

Results

Characteristics of respondents

A total of 1811 GPs were invited by direct (n = 1481) and snowball (n = 330) invitation. The questionnaire was opened by 514 respondents (28%, 514/1811) and 394 fully completed it. We excluded the data of several respondents (i.e. retired GP [n = 1], GPs in training [n = 2], nurse practitioners [n = 3]), so the data reflected the use of currently practicing Dutch GPs only.

The majority of respondents were female (65%, 251/388), GP partners (76%, 294/388) and worked 3–4 days per week (73%, 282/388; Table 1). GPs from all provinces responded, with highest coverage of the southern provinces, and GP practices were widely spread in terms of urbanization, ranging from rural areas to large cities. General practitioners reported to order a median of four CT tests per month (range 2–50), and 91% (352/388) ordered a CT test for both female and male patients at least once per month on average.

Anal sexual history taking

Most of the GPs (69%, 268/388) indicated to not routinely ask about anal sex in an STI-related consultation (Fig. 1). Asking about anal sex was less frequently done (never or rarely, 45%, 173/388), than asking about other STI risk factors such as the number of sexual partners (never or rarely, 13%, 51/388) or whether the patient had sex with a high-risk partner (never or rarely, 13%, 50/388). GPs who found it difficult to ask female patients about anal sex were also less likely to actually ask about it (r = –0.41, P < 0.001).

Acceptability of anorectal testing

Almost nine out of ten GPs (86.2%, 330/383) who tested for CT in women at least once per month on average (n = 383) estimated that the patient would find it acceptable to have an anorectal sample taken, either by the GP (22.7%, 75/330), by the patient herself (19.1%, 63/330) or by either of them (58.2%; 192/330) (Fig. 1). Similarly, 43% (166/383) of GPs thought routinely ordering both an anorectal and vaginal swab in women with a CT testing indication

Table 1. Characteristics of 383 general practitioner survey respondents (2019)

Characteristic	Number (%) or median (p25–p75)	
	Sample (n = 388)	Population (n = 11.384) (23,26)
No. of women (%)	251 (65)	6035[a] (51)
Employment type		
GP partner	294 (76)	7917 (70)
Locum GP	81 (16)	2036 (18)
Salaried GP	33 (9)	1881 (17)
Full-time equivalent	0.7 (0.2)	0.67
Urbanization grade in (# addresses/km^2)		
Extremely urbanized (≥2500)	59 (15)	2250 (23)
Strongly urbanized (1500–2500)	102 (26)	2894 (30)
Moderately urbanized (1000–1500)	77 (19)	1693 (17)
Hardly urbanized (500–1000)	75 (19)	2072 (21)
Not urbanized (<500)	68 (18)	886 (9)
Invalid postal code	7 (2)	0 (0)
No. of CT tests per month		
Total	4 (3–7)	—
In female patients	2 (1.25–4)	—
In male patients	2 (1–3)	—

CT, *Chlamydia trachomatis*; SD, standard deviation; p, percentile.
[a]Approximation of exact number based on the known percentage.

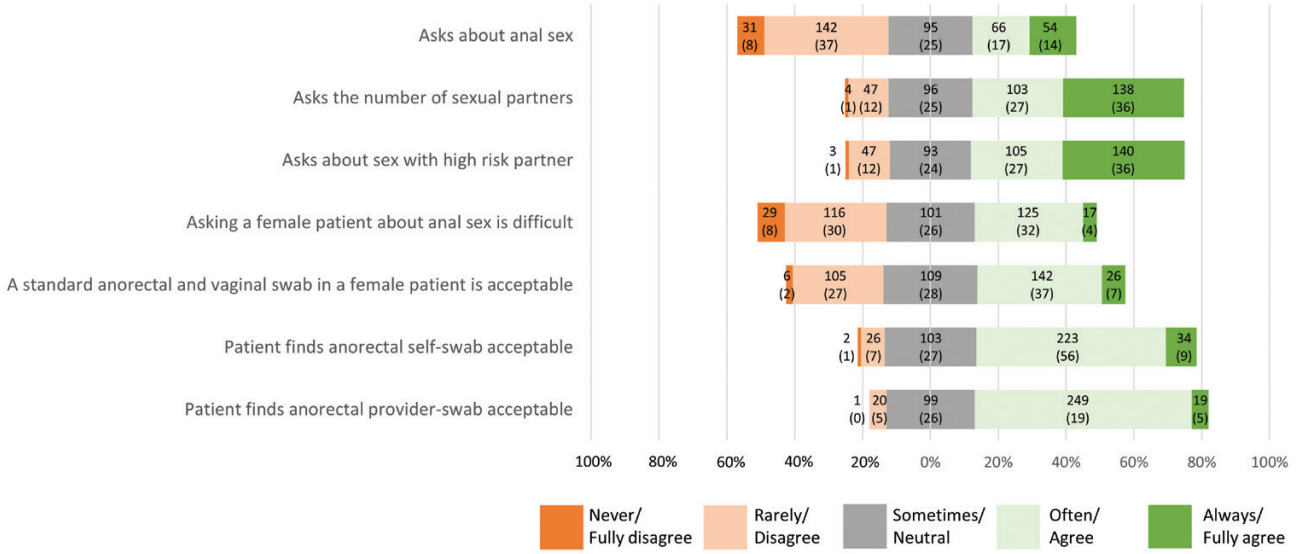

Figure 1. Number (%) of general practitioners with particular practices and attitudes on (anal) sexual history taking and anorectal swab acceptability (2019).

acceptable or felt neutral (27.9%, 107/383) towards this proposition. Of those GPs who thought routinely adding the anorectal swab was unacceptable, 83% (91/110) nevertheless estimated that their patients would find the anorectal test itself acceptable.

Anorectal testing in hypothetical cases

Nearly all GPs (>98%) would request a urogenital swab in both hypothetical STI cases and 66% (255/386) would request an anorectal swab in the high-STI-risk case compared with 6% (25/388) in the low-STI-risk case. GPs requested additional materials for CT testing more often in the high-STI-risk case (45%, 174/386: oropharyngeal swab and 44%, 169/386: serology) than in the low-STI-risk case (4%, 16/388: oropharyngeal swab and 2%, 8/388: serology).

Actual anorectal chlamydia testing experience

Four of 10 GPs (40%, 155/383) who tested for CT in women at least once per month on average (n = 383) had never tested for anorectal CT in women. Of those also testing for CT in men at least once per month (n = 352), 26% (90/352) had never tested for anorectal CT in either sex. Of GPs who had never tested for anorectal CT, 82% (74/90) nevertheless thought a patient would find an anorectal test acceptable and 32% (29/90) had indicated to order an anorectal swab in the hypothetical high-STI-risk case.

Factors associated with anorectal testing and its acceptability

Factors independently associated in multivariable analyses with a higher odds of having tested for anorectal CT in women were working in an urbanized area (Table 2, OR: 1.97, 95% CI: 1.18–3.38) and more frequently asking female patients about anal sex (OR: 7.91, 95% CI: 4.22–14.83 rarely versus regularly and OR: 10.65, 95% CI: 5.57–20.37 rarely versus often or always). In univariable analyses, having tested for anorectal CT was also related to a higher CT testing frequency (>1 test/month versus 1 test/month) and less difficulty in asking about anal sex. For GPs' acceptability of standard anorectal CT testing, univariable analyses showed that this was lower for female GPs than male GPs. More specifically, female GPs were as likely as male GPs to find standard anorectal testing acceptable, compared with finding it unacceptable (OR: 0.70, 95% CI: 0.41–1.18), but male GPs more often felt neutral (35%, 47/135) than female GPs (24%, 60/248). No other factors were significantly associated with standard anorectal testing acceptability.

Discussion

We explored whether standard anorectal chlamydia testing in women is feasible in general practice by surveying its acceptability and barriers to its implementation. The GP-anticipated patient acceptability for anorectal testing was high (86%), and most GPs felt neutral or accepting (71%) toward standard anorectal testing. Nevertheless, many GPs (40%) had never tested for anorectal CT in women. Never testing was associated with experiencing difficulty in asking about anal sex, an infrequency of anal sexual history taking, infrequent CT testing and practicing in a non-urban area.

Responding GPs were representative of the Dutch GP population in terms of sample size, location, urbanization and employment type (Table 1) (23,28). GPs with affinity for sexual health were oversampled by using specialized networks to distribute the survey and through self-selection (29) given the low response rate (22%). On the other hand, this response rate is commonly observed for physicians receiving online questionnaires without incentives (19,22). Social desirability bias was kept to a minimum by securing responders' anonymity, but survey answers may still overestimate performance in actual practice. Based on our overrepresentation of GPs with affinity for sexual health, the situation for real-life anorectal CT testing is therefore probably even more dire. As a consequence, it is important to take into account that we might have overestimated the acceptability of anorectal testing, but more specifically mainly overestimated the number of GPs who had tested for anorectal CT. In turn, we might have underestimated difficulties with and infrequency of anal sexual history taking. For example, barriers that relate to the patient, laboratory services or financial aspects of testing were not taken examined here, but may be of influence.

Table 2. Logistic regression models of acceptability of and actual testing experience with anorectal chlamydia in women of 383 general practitioners (2019)

Variable	Having tested for anorectal CT		GPs acceptability of standard anorectal CT testing	
	Univariate	Multivariate	Univariate	Multivariate
	OR (95% CI), *n* = 383	OR (95% CI), *n* = 376	OR (95% CI), *n* = 383	OR (95% CI), *n* = 376
GP Gender (female)	1.35 (0.89–2.07)	1.24 (0.70–2.19)	**0.59 (0.36–0.95)**	0.66 (0.39–1.12)
GP Job specification				
GP partner	0.79 (0.36–1.75)	1.23 (0.48–3.16)	0.83 (0.36–1.91)	0.64 (0.26–1.61)
Salaried GP	Reference	Reference	Reference	Reference
GP locum	0.45 (0.18–1.13)	0.72 (0.24–2.11)	0.61 (0.23–1.59)	0.56 (0.20–1.56)
GP working in urban region (*n* = 376)	**2.27 (1.48–3.48)**	**1.97 (1.18–3.38)**	0.75 (0.47–1.20)	0.82 (0.50–1.35)
Average no. of ordered CT tests per month in female patients				
1 Test/month	Reference	Reference	Reference	Reference
1–4 Tests/month	**2.41 (1.45–3.98)**	1.88 (1.00–3.52)	0.72 (0.41–1.25)	0.91 (0.50–1.67)
>4 Tests/month	**3.44 (1.86–6.38)**	1.87 (0.87–4.09)	0.71 (0.37–1.37)	0.98 (0.47–2.04)
Difficulty in asking female patients about anal sex				
(Very) difficult	Reference	Reference	Reference	Reference
Neutral	1.42 (0.89–2.30)	1.45 (0.81–2.60)	1.12 (0.67–1.88)	1.06 (0.62–1.81)
(Very) easy	**3.07 (1.21–7.80)**	1.40 (0.48–4.41)	0.91 (0.40–2.10)	0.89 (0.36–2.17)
Frequency of asking female patients about anal sex				
Never or rarely	Reference	Reference	Reference	Reference
Regularly	**8.83 (4.85–16.10)**	**7.91 (4.22–14.83)**	0.76 (0.44–1.32)	0.89 (0.47–1.67)
Often or always	**11.50 (6.39–20.72)**	**10.65 (5.57–20.37)**	0.82 (0.490–1.38)	0.86 (0.46–1.62)
GPs acceptability of standard anorectal CT testing	0.83 (0.53–1.31)	0.86 (0.49–1.51)	N/A	N/A
GP-anticipated patient acceptability of anorectal testing				
Neutral or not acceptable	Reference	Reference	Reference	Reference
Acceptable by either patient or GP	1.62 (0.85–3.10)	1.20 (0.54–2.68)	1.65 (0.64–3.25)	1.43 (0.68–3.03)
Acceptable by both patient and GP	1.67 (0.90–3.05)	1.21 (0.56–2.62)	1.17 (0.62–2.20)	1.09 (0.54–2.22)
GP has ever tested for anorectal CT in women in actual practice	N/A	N/A	0.83 (0.53–1.31)	0.88 (0.50–1.54)

OR, odds ratio; CI, confidence interval; CT, *Chlamydia trachomatis*; N/A, not applicable.
Bold values indicate statistically significant ($P < 0.05$) factors.

The GP-anticipated acceptability of anorectal testing was high for both self-collection and/or provider collection, in line with previous acceptability estimates from patients themselves (30,31). Twenty nine percent of GPs, however, nevertheless opposed to anorectal CT testing on a routine basis in women with an indication for CT testing. This implies that is it not the act of anorectal testing itself, but the reason for its request that impedes anorectal testing.

It may seem illogical to both the patient and GP to test for anorectal CT when the patient history was negative for anal sex or symptoms, especially given the current guidelines. In addition, anorectal CT testing may be hindered by a lack of anorectal STI awareness. Here, factors that convey an awareness of anorectal CT, like asking about anal sex, a higher frequency of CT testing and practicing in urban areas, where STI prevalence is generally higher (32,33), were significantly associated with having tested for it.

Several factors may aid anorectal CT testing in women in general practice. First, providing GPs with the information that there is no relation between anal sex and anorectal CT could aid the GP in routinely ordering an anorectal test. Second, informing GPs on the prevalence of anorectal CT and its treatment implications with doxycycline might further raise their awareness. Finally, barriers for (anal) sexual history taking, like time constraints or knowledge deficits, could be removed by the employment of specialized STI practice nurses or intensifying collaborations with STI clinics (15,34). In non-urban areas, however, patients may not have access to an STI clinic and depend solely on their GP for sexual health. Alternatively one may question the rationale for history taking for anal sexual intercourse when no clear relation between anal sexual intercourse and the risk for anorectal chlamydia can be given.

Our data further confirm that not all doctors take a full sexual history (35–37) and add that anal sex is a particularly problematic and infrequently discussed topic. If asking about anal sex is seen as difficult, requesting an anorectal test may additionally pose barriers. Furthermore, discussing anal sex and symptoms is vital to a patient's general sexual health, considering condom use during anal sex is generally lower (38), STIs other than CT have been correlated with anal sex and patient-reported information may not be sufficient to guide testing (16). GPs should not shy away from asking about anal sex and symptoms in an STI consultation. If GPs do experience barriers in taking a sexual history, using a printed or digital form in patient consultations on type of sexual intercourse, number of partners in the past 6 months, origin of partners and patients and gender of the partners might support them.

Finally, standard anorectal testing in women with an indication for urogenital CT testing could be an alternative or additional strategy to optimize CT management in women in general practice. Recently,

several STI centre guidelines in the UK and the Netherlands changed their first choice antibiotic for urogenital CT from azithromycin to doxycycline due to higher efficacy against *Mycoplasma genitalium* and anorectal CT (39). Adding standard anorectal CT testing would identify anorectal mono-infections that are missed by urogenital testing alone. Moreover, adding anorectal testing could increase treatment efficacy of patients with vaginal CT mono-infections through the reduction of compliance issues, as vaginal CT infections are effectively treated with a one-time dose of azithromycin rather than a 7-day twice daily regimen of doxycycline (8).

Conclusions

This quantitative survey shows that, in women with an indication for CT testing in general practice, GPs deem anorectal CT testing largely acceptable. The infrequency of anorectal testing in current practice seems to rather be explained by factors relating to a lack of awareness of (anorectal) CT, than by its acceptability. Qualitative research and exploration of patient- and finance-related factors may uncover other barriers to anorectal testing.

Supplementary material

Supplementary material is available at *Family Practice* online.

Declaration

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Conflict of interest: none.

Data availability

The data underlying this article will be shared on reasonable request to the corresponding author.

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