SHORT REPORT

Who is being tested for genital chlamydia in primary care?

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Objectives: To explore current patterns of testing for genital chlamydial infection in primary care, and to identify practice characteristics influencing testing rates.
Method: Aggregate numbers of chlamydia tests and results for each practice in Nottingham Health District were matched to practice characteristics. Age specific testing rates and diagnosed prevalence were calculated, and characteristics of the practice tested for association with chlamydia testing rates.
Results: Most tests (63.1%) were performed on women over the age of 25, but the proportion of positive tests was highest in 15–19 year olds (13.3%) followed by 20–24 year olds (8.2%). A higher ratio of GP principals to female practice population was associated with higher testing rates and more chlamydia isolations, but the ratio of female GP principals to patients was associated with higher testing rates only in 20–24 year olds. Diagnosed incidence was greatest in more socioeconomically deprived practice populations, and this was not explained by higher testing rates. Men were rarely tested.
Conclusion: Current testing practice in primary care does not reflect the known epidemiology of genital chlamydia infection. Practices with lower doctor-patient ratios do less testing, and measures to enable their active participation in the envisaged screening programme will be important in reaching all at-risk groups.

Chlamydia tests have become available to primary care practitioners over the past decade, and in some districts are now widely used. Pilot primary care sites for the implementation of opportunistic testing for chlamydia have recently been announced, following pilot studies in which primary care was the largest contributor to testing.[1] However, in the absence of surveillance for sexually transmitted infections (STIs) in primary care, little is known about current testing practices in this important setting, and guidelines are not in general use. Although a number of practitioner surveys have been undertaken,[2–6] their results are subject to selection bias and social desirability bias, and they do not aim to provide complete descriptive information on testing patterns across a population.

We undertook this study of testing patterns in the Nottingham Health District in order to identify who is currently being tested in primary care, in relation to the known epidemiology of genital chlamydia infection. We also aimed to identify practice characteristics associated with differing testing rates and positive rates, with a view to informing policy makers on likely problems in the implementation of the envisaged screening programme.

METHODS

The setting was 119 general practices served by the Public Health Laboratory Service in Nottingham, UK. The laboratory processes all chlamydia samples for Nottingham Health District, of which approximately 40% are from primary care, 25% from GUM, 25% from other hospital settings, and 10% from family planning clinics. We were provided with an aggregated database of test numbers and diagnostic results for *Chlamydia trachomatis* infection (Murex EIA confirmed by BD Probetec) performed on women during 1999. Repeat tests within 4 weeks of the index test were excluded from the dataset we received, which did not contain patient identifiable information. General practice profiles for all 119 practices, including list sizes, Townsend deprivation scores, total number of principals, number of female partners per 1000 women, and number of full time equivalent practice nurses per 1000 women were obtained from Nottingham Health Authority, and linked to the laboratory database. (The Townsend score is a measure of material deprivation derived from census variables including unemployment, overcrowding, car ownership, and owner occupation—higher scores indicate increasing deprivation.)

Very few men were tested in primary care (less than one in 40 tests) and the study was therefore limited to women.

Descriptive statistics were first calculated, showing the distribution of testing. Rates of testing per 1000 women registered with general practice, the proportion of tests positive, and the number of chlamydia isolations per 1000 registered women (chlamydia isolation rate) were calculated for each of five age bands, and in relation to practice characteristics including Townsend deprivation score, list size of practice, and the number of nurses, GP principals, and female GP principals per head of population. Owing to the non-normality of the data, a non-parametric test (the Spearman rank correlation test) was then used to test for associations between key testing rates and the chlamydia isolation rate, and practice characteristics. Analysis was undertaken using STATA (version 7) statistical software.

RESULTS

A total of 7172 chlamydia tests were taken in primary care. As shown in table 1, the highest proportion of positive results is seen among tests taken in women aged 15–19, followed by women aged 20–24. However, a majority of all tests (63.1%) were taken from women over the age of 25. The proportion of tests found to be positive was considerably lower for patients over the age of 30.

Table 2 summarises the association between key testing rates, chlamydia isolation rate, and practice characteristics. A higher ratio of GP principals to the registered female population was associated with higher testing rates, and with overall chlamydia isolation rate. The ratio of female GP principals to population was associated with higher testing rates only in the age group 20–24, while there was no association with the practice nurse to population ratio.

Townsend scores indicating increasing socioeconomic deprivation of the practice population were highly significantly associated with overall chlamydia isolation rate. This was not explained by higher rates of testing, nor was there an association between Townsend score and the ratio of GP principals to registered practice population.

Table 1 Description of testing patterns, proportion of positives, and chlamydia isolation rate

	Number of samples taken	Tests per 1000 women (SD)	Percentage of tests positive (SD)	Chlamydia isolation rate per 1000 women
All	7172	66.1 (81.4)	5.0 (4.6)	1.3 (1.5)
Under 15	46	1.0 (1.9)	1.1 (6.0)	na
15–19	829	47.0 (71.3)	13.3 (18.2)	5.5 (8.2)
20–24	1775	81.7 (103.0)	8.2 (9.1)	8.2 (10.6)
25–29	1320	65.8 (62.5)	4.9 (9.1)	3.5 (6.7)
30+	3202	19.9 (19.4)	1.4 (3.2)	0.2 (0.6)
Townsend category*				
−3.4–0	2951	22.3 (19.6)	4.7 (4.8)	0.8 (1.0)
0–3.9	2953	24.5 (25.4)	4.1 (3.4)	1.3 (1.7)
3.9–5.3	962	34.2 (22.7)	7.5 (4.8)	2.4 (1.8)
List size*				
758–1263	669	33.1 (31.6)	5.0 (5.4)	1.6 (2.0)
1263–1773	774	24.7 (21.8)	5.3 (5.0)	1.4 (1.8)
1774–2565	673	16.3 (19.4)	3.4 (4.3)	0.7 (0.8)
2566–3924	1385	21.8 (15.8)	6.0 (3.4)	1.3 (2.1)
3925–11293	3039	28.3 (22.0)	4.7 (3.7)	1.2 (1.3)
Ratio of full time equivalent nurses per 1000 female practice population*				
0–0.44	1483	18.5 (10.8)	6.4 (4.4)	1.1 (1.7)
0.45–0.54	1504	23.6 (17.8)	4.1 (3.2)	0.9 (0.8)
0.55–0.69	1058	18.8 (16.8)	4.6 (5.0)	1.0 (1.4)
0.69–0.90	1571	31.6 (29.3)	5.8 (4.1)	1.8 (2.1)
0.90–2.08	782	32.2 (33.3)	3.3 (4.8)	1.2 (1.9)
Ratio of female GP partners per 1000 female practice population*				
0–0.32	1927	20.1 (22.6)	4.8 (5.0)	1.1 (1.7)
0.33–0.49	1667	21.5 (18.9)	4.2 (3.2)	1.0 (0.8)
0.50–0.69	1383	27.3 (15.1)	5.2 (3.9)	1.4 (1.5)
0.70–2.12	1563	34.9 (30.3)	5.2 (5.0)	1.6 (1.7)
Ratio of all GP partners per 1000 female practice population*				
0.596–0.890	1349	22.1 (24.8)	4.4 (4.6)	0.9 (1.3)
0.900–1.001	914	16.9 (9.9)	6.8 (4.5)	1.0 (0.8)
1.002–1.160	1416	19.5 (12.9)	4.7 (3.8)	1.1 (1.2)
1.161–1.428	1338	24.0 (17.5)	4.4 (4.9)	1.1 (1.5)
1.429–4.300	1519	43.1 (33.2)	4.5 (4.1)	2.1 (2.2)

*Sum of all tests by category may not equal 7172 where practice characteristic data are missing.

Table 2 Testing rates and chlamydia isolation rate in relation to practice characteristics*

	p Value			
	Total testing rate per 1000 women	Testing rate in women aged 15–19	Testing rate in women aged 20–24	Chlamydia isolation rate per 1000 women
List size	0.79	0.65	0.28	0.85
Townsend deprivation score	0.26	0.43	0.76	0.004
Ratio of GP partners to female practice population	0.004	0.006	0.002	0.04
Ratio of female GP partners to female practice population	0.02	0.24	0.01	0.2
Ratio of full time equivalent nurses to female practice population	0.45	0.67	0.80	0.73

*All p values are for the Spearman rank correlation test for non-parametric data.
Owing to the need to use non-parametric tests, 95% confidence intervals cannot be given.

DISCUSSION

Our findings, which confirm recent survey data,[4] have important implications for the control of genital chlamydia infection and its cost effectiveness.

Although the percentage of positive tests was highest in younger women, the majority of tests sampled women over 25 who are at statistically lower risk of chlamydial infection.[7 8] The use of tests for *C trachomatis* appears to be poorly targeted in primary care. It is likely that many of these tests were used appropriately for the investigation of symptoms, such as vaginal discharge or the investigation of infertility, and this may partly explain the large number of tests in higher age groups. However, the low positive rates in women over 30 and the fact that the majority of testing takes place in women over 25 represents an opportunity cost given limited availability of testing facilities. At the time of our study, a year on year increase of approximately 35% in the number of tests in primary care was seen. The reasons for this need further exploration, as public awareness of chlamydia appears not to be related to age.[9]

The presence of female GP principals appears to be important in delivering testing to women in the 20–24 age group, as suggested by other research.[10] However, it is worrying that this finding did not extend to women aged 15–19, and this suggests that their main influence may be on the threshold for screening at the time of first cervical smear test aged 20. It is possible that younger women access sexual health services elsewhere, which could explain the taking of fewer tests in this age group, but other recent data from Nottingham suggest substantial usage of primary care by young people for contraceptive services.[11]

Men are rarely tested for chlamydia in primary care. The reasons for this finding, and its implications for disease control, need further investigation.

Our study has a number of limitations, mainly relating to the age specific data. Data were not available at the level of practitioners, and the relative roles of nurses, male doctors, and female doctors cannot be fully described. Data on age are in a single band above 30 years, which precludes inference about age specific patterns of testing above 30, and we did not have access to data on reasons for testing, which would have been helpful in understanding testing patterns in older women.

Nevertheless, our study shows that well doctored populations experienced higher rates of testing, and benefited from a higher chlamydia isolation rate. This has important implications for planned screening in primary care. Low doctor-patient ratios appear to inhibit testing, and this suggests that personnel resources may be a significant barrier to testing. The process of explaining the implications of a chlamydia test to a patient unaware of the disease takes time, and it may be that busy practices do not prioritise sexual health. The chlamydia screening pilot studies in England paid practices for tests undertaken, and recompense may be important in enabling screening in medically understaffed practices. It is important that such practice populations are not further marginalised by a screening programme which fails to take into account the problems of understaffed practices. The higher chlamydia isolation rate in practices with high Townsend score populations suggests that their participation will be important in the control of chlamydia.

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