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Chlamydia testing in practice – requisitioners and patients

ORIGINAL ARTICLE

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BACKGROUND
Optimising the diagnostic work-up and treatment of genital chlamydia infection requires knowledge of the sampling patterns of those who order chlamydia tests. We wished to determine which groups of doctors collect specimens for chlamydia testing, and to examine the sex and age distribution of patients tested, and the proportion of positive tests, from general practitioners, gynaecologists in private practice, and youth health services.

MATERIAL AND METHOD
The study includes 43 465 specimens analysed for genital infection with *Chlamydia trachomatis* at Vestfold Hospital Trust over the period 1 January 2007 to 31 December 2011. Data from the laboratory information system were used to classify the test requisitioners.

RESULTS
General practitioners requisitioned 60 % of all chlamydia tests and 63 % of all positive tests. Youth health services requisitioned 13 % of all tests and 22 % of positive tests; gynaecologists in private practice, 12 % of all tests and 5 % of positive tests. Overall, 26 % of specimens were from women over the age of 30 with 2.2 % testing positive, and 82 % of these specimens were submitted by general practitioners or gynaecologists in private practice. Twenty-three per cent of specimens were from men, and 78 % of these were collected in general practice.

INTERPRETATION
Knowledge of who requisitions chlamydia testing and of whom is important for planning and improving chlamydia diagnosis, treatment and contact tracing. In this study from Norway, we found that doctors in general practice play a key role in diagnosing and treating chlamydia. The testing of women over the age of 30 by general practitioners and gynaecologists in private practice probably leads to unnecessary use of resources and should be reduced.

Main points

Of specimens analysed by Vestfold Hospital Trust between 1 January 2007 and 31 December 2011 for genital infection with *Chlamydia trachomatis*, 60 % were collected by general practitioners, including 63 % of the specimens that tested positive

Of specimens from female patients, 38 % of those collected in general practice and 45 % of those collected by gynaecologists in private practice were from women over the age of 30; 2.2 % of specimens from this group tested positive

Twenty-three per cent of specimens were from men, and a higher percentage of men than women tested positive in all age groups

The incidence of genital chlamydia infection in Norway has been stable for several years: in 2015, 488 cases were diagnosed per 100 000 inhabitants, a level almost identical to the peak of 2008 (496/100 000) (1). Patients with chlamydia are usually asymptomatic, and both opportunistic testing and contact tracing are thought to be important for preventing complications and reducing infection transmission (2–4). The evidence base in support of these measures is disputed, however, and they are probably less effective than has been assumed (5–7). The effectiveness of organised screening is also subject to debate (8), and in the Netherlands a screening programme was cancelled after a pilot, owing to insufficient evidence of cost-effectiveness (9). Screening for chlamydia is not

recommended practice in Norway. National guidelines recommend testing of persons under the age of 25 upon change of sexual partner, pregnancy or intrauterine device insertion; testing of patients with typical symptoms; women having abortions; men who have sex with men, and persons identified through contact tracing (10),(11).

The Norwegian Institute of Public Health has long known that too many specimens are taken from older women and that too few young men are tested, but initiatives aimed at more targeted testing and increased availability of testing and treatment have not shown the desired results (1),(12). Optimising strategies and recommendations for chlamydia control in Norway will require greater knowledge of real-world clinical practice. We currently lack an overview of who requisitions chlamydia tests in Norway, whom they test, and whether doctors follow professional guidelines for testing, treatment and contact tracing. The purpose of this study was to conduct a survey of requisitioners of chlamydia tests. We present the number of tests requisitioned, the sex and age distribution of patients tested, and the proportion of positive tests from the three major groups that requisition tests in non-hospital settings: general practitioners, gynaecologists in private practice, and youth health services.

Material and method

The study is a retrospective review of urine and swab specimens analysed for genital infection with *Chlamydia trachomatis* at the Department of Microbiology, Vestfold Hospital Trust, over the period 1 January 2007 to 31 December 2011. Information from the requisition (patient data, requisitioner, specimen type and requested analysis) and analysis results were obtained from the laboratory information system Miclis MLx, and from electronic copies of the requisitions.

Sample

A total of 44 548 chlamydia tests were performed over the period in question. Sample selection is shown in Figure 1.

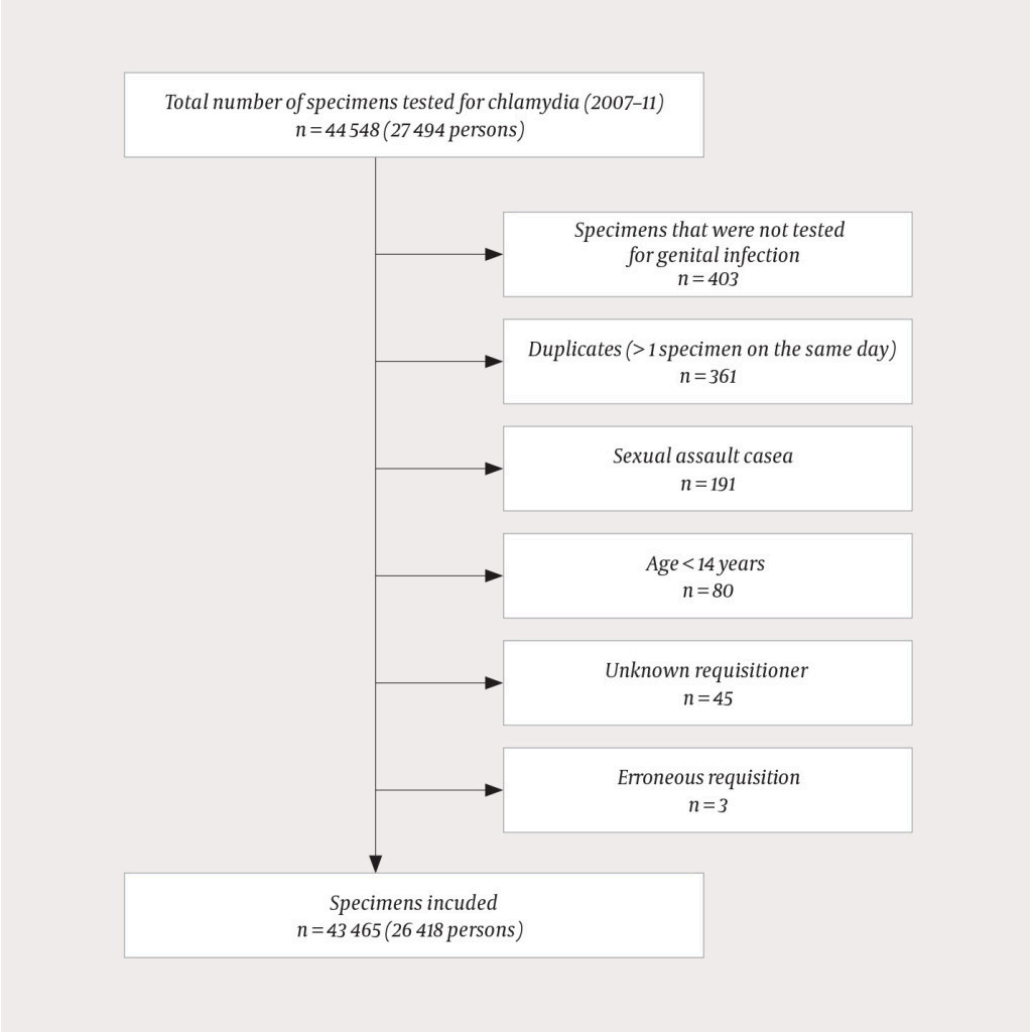

Figure 1 Flowchart showing inclusion and exclusion of specimens analysed for genital infection with Chlamydia trachomatis at Vestfold Hospital Trust in the period 1 January 2007 to 31 December 2011

Classification of test requisitioners

The laboratory performs specimen analysis for the majority of requisitioners in Vestfold, as well as for a small proportion in the primary health service and the hospitals in Telemark.

Requisitioners were classified as follows: general practitioners, gynaecologists in private practice (with and without public contracts), youth health services, hospitals (Vestfold Hospital Trust, Telemark Hospital Trust and Betanien Hospital in Skien) and 'other' (Accident and Emergency, prison health service, migration health centres, etc). We classified requisitioners using requisition data from the laboratory information system (name, address and postcode, requisitioner ID, payment code and National Insurance Administration [RTV] code), lists from the Norwegian Medical Association and South-Eastern Norway Regional Health Authority of general practitioners and of specialists with and without public contracts, the telephone directory and the internet. In cases of doubt, we called the medical centre or institution where the specimen was taken. It was not possible to distinguish systematically between different outpatient clinics and departments in hospitals. In the results and discussion, we chose to focus on specimens collected by general practitioners, gynaecologists in private practice, and youth health services. The heterogeneous 'other' group accounts for only a small proportion of specimens, and for the hospitals we assumed that the circumstances surrounding testing are somewhat different, making these data less relevant for discussion in the context of guidelines for diagnosing and treating chlamydia.

Laboratory analysis

Nucleic acid amplification for detection of *C. trachomatis* in urine and swab specimens was performed using COBAS TaqMan 48 (Roche Diagnostics, Oslo).

Statistical analysis

Data were transferred from Miclis MLx to Excel using the statistics module MLxStat. After anonymisation, statistical analysis was performed using IBM SPSS Statistics 19 (IBM Corp., New York). We used the chi-squared test to calculate differences between test requisitioners with respect to patient age, sex and proportion of specimens that tested positive. The numbers of infected (S+) women and men in different age groups were estimated from the number tested (T), the number of positive tests (T+) and the estimated sensitivity and specificity of tests conducted on urine and swab specimens from men and women. These numbers were then used to calculate the values in a 2 x 2 table (true positive, false positive, false negative and true negative). We also calculated the proportion of infected individuals, the proportion of positive tests, and the proportion of infected individuals among those who tested positive (positive predictive value, PPV) with subsequent calculation of positive predictive values. For the first step of the calculations, we used the following formula:

$$S+ = \frac{T \cdot (1 - \text{specificity}) - T+}{(1 - \text{specificity}) - \text{sensitivity}}$$

The formula is derived by combining Bayes' theorem with known formulae for prevalence, sensitivity and positive predictive values (13), published previously in this journal (14). Values for the sensitivity and specificity of polymerase chain reaction (PCR)-based tests for *C. trachomatis* in different specimen types and in specimens from men and women were obtained from a meta-analysis (15). The following values were used for sensitivity/specificity (expressed in %): urine, women: 83.3/99.5; swab, women: 85.5/99.6; urine, men: 84.0/99.3; swab, men: 87.5/99.2. Data from general practice, where the largest number of tests were requested, were used in these calculations.

Research ethics

The Regional Ethics Committee considered the project exempt from the requirement to obtain specific approval. The Norwegian Social Science Data Services pre-approved the project.

Results

Age and sex distribution of chlamydia tests

A total of 43 465 specimens were included from 26 418 persons tested for genital chlamydia infection. An overview of the number of persons, and the number of specimens per person, is shown for both sexes in Table 1. There were 20 613 (47 %) urine specimens; the remainder were swabs. A total of 2 154 (5 %) specimens came from Telemark. The

number of specimens per year ranged from 7 839 (2010) to 10 412 (2011). The sex distribution showed little variation over the study period (21 % men in 2007, 24 % men in 2008–11). Table 2 shows the number of chlamydia tests and the proportion of positive tests for both sexes in different age groups for the various requisitioners and for the entire dataset. Patients under the age of 25 provided 48 % of specimens, and 70 % of all those that tested positive. Eighteen per cent of all specimens and 16 % of positive tests were from patients aged 25–29. Women over 30 years of age provided 26 % of specimens, and 6.5 % of all those that tested positive. Men were more likely than women to have been tested only once (74 % vs. 63 %, p <0.001). More than 5 % of tests from men were positive in all age groups up to 50 years.

Table 1

Overview of specimens tested for chlamydia at Vestfold Hospital Trust from 2007–11 in women and men

	Women		**Men**		**Total**	
Number of specimens (% of all specimens)	**33 282**	**(76.6)**	**10 183**	**(23.4)**	**43 465**	**(100)**
Number of persons (% of all persons)	**19 339**	**(73.2)**	**7 079**	**(26.8)**	**26 418**	**(100)**
Number of specimens per person (% of persons)						
1	12 224	(63.2)	5 266	(74.4)	17 490	(66.2)
2	3 914	(20.2)	1 136	(16.0)	5 050	(19.1)
3–5	2 720	(14.1)	600	(8.5)	3 320	(12.6)
> 5	482	(2.5)	76	(1.1)	558	(2.1)

Table 2

Chlamydia tests requisitioned by general practices, youth health services, gynaecologists in private practice, hospitals and other requisitioners. Numbers of tests, and percentages of specimens that tested positive (%), are shown for women and men in different age groups

	General practice		**Gynaecologist[1]**		**Youth health services**		**Hospital**		**Other**		**Total**	
	No. of tests	**Positive tests**	**No. of tests**	**Positive tests**	**No. of tests**	**Positive tests**	**No. of tests**	**Positive tests**	**No. of tests**	**Positive tests**	**No. of tests**	**Positive tests**
Women												
14–19	2 566	(13.3)	518	(5.2)	3 668	(14.1)	641	(9.8)	88	(9.1)	7 481	(12.8)
20–24	5 179	(12.3)	1 393	(6.5)	710	(14.5)	1 323	(8.5)	105	(12.4)	8 710	(11.0)
25–29	3 583	(6.0)	1 062	(3.5)	14	(14.3)	989	(4.4)	75	(1.3)	5 723	(5.2)
30–34	2 585	(2.7)	742	(2.8)	5	(0.0)	789	(3.3)	59	(0.0)	4 180	(2.8)
35–39	1 981	(2.9)	679	(2.5)	< 5	-	631	(1.4)	31	(6.5)	3 324	(2.6)
40–49	1 828	(1.5)	809	(1.0)	< 5	-	395	(1.3)	28	(3.6)	3 062	(1.3)
50–59	433	(1.6)	156	(0.6)	< 5	-	62	(0.0)	< 5	-	655	(1.2)

	General practice		Gynaecologist[1]		Youth health services		Hospital		Other		Total	
	No. of tests	Positive tests	No. of tests	Positive tests	No. of tests	Positive tests	No. of tests	Positive tests	No. of tests	Positive tests	No. of tests	Positive tests
60–69	83	(0.0)	19	(0.0)	0	-	24	(0.0)	< 5	-	127	(0.0)
70+	16	(0.0)	< 5	-	0	-	< 5	-	0	-	20	(0.0)
All	18 254	(7.4)	5 381	(3.8)	4 402	(14.1)	4 855	(5.3)	390	(6.4)	33 282	(7.4)
Men												
14–19	676	(15.5)	0	-	846	(15.2)	26	(11.5)	28	(21.4)	1 576	(15.4)
20–24	2 411	(18.0)	< 5	-	514	(17.5)	72	(23.6)	128	(13.3)	3 126	(17.9)
25–29	1 806	(16.3)	< 5	-	36	(16.7)	62	(16.1)	110	(11.8)	2 016	(16.0)
30–34	1 076	(10.5)	< 5	-	9	(11.1)	56	(14.3)	51	(13.7)	1 193	(10.8)
35–39	754	(8.6)	< 5	-	< 5	-	43	(2.3)	47	(2.1)	847	(7.9)
40–49	812	(6.7)	< 5	-	< 5	-	70	(1.4)	38	(5.3)	922	(6.2)
50–59	316	(2.5)	0	-	0	-	31	(0.0)	9	(0.0)	356	(2.2)
60–69	107	(5.6)	0	-	0	-	14	(0.0)	< 5	-	123	(4.9)
70+	19	(0.0)	0	-	0	-	< 5	-	< 5	-	24	(0.0)
All	7 977	(13.5)	7	(14.3)	1 407	(16.1)	378	(10.6)	414	(11.1)	10 183	(13.7)
Total	26 231	(9.2)	5 388	(3.8)	5 809	(14.6)	5 233	(5.7)	804	(8.8)	43 465	(8.9)

[1]Gynaecologists in private practice

[2]Accident and Emergency, prison health service, migration health centres, etc.

Test requisitioners

The sex distribution and the distribution of positive and negative results among the specimens submitted by the various requisitioners is shown in Table 3. General practitioners requested the most tests, including 60 % of the total number, 78 % of all tests on men, and 63 % of all positive tests. For women over the age of 30, general practitioners had requested 6 926 (61 %) and gynaecologists in private practice 2 408 (21 %) of the specimens; 1 902 (17 %) specimens had been collected in hospitals. Fewer than 2.5 % of these specimens tested positive across all groups of requisitioners.

Table 3

Specimens analysed for genital chlamydia infection at Vestfold Hospital Trust in the period 1 January 2007–31 December 2011 stratified by requisitioner. For each group, the sex distribution of the patients tested, and the distribution of positive and negative test results, is shown in numbers and per cent.

	General practice		Gynaecologist[1]		Youth health services		Hospital		Other[2]		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	N	(%)
Test result												
Positive	2 433	(63.1)	203	(5.3)	848	(22.0)	299	(7.8)	71	(1.8)	3 854	(100)
Negative	23 798	(60.1)	5 185	(13.1)	4 961	(12.5)	4 934	(12.5)	733	(1.9)	39 611	(100)
Sex												
Woman	18 254	(54.8)	5 381	(16.2)	4 402	(13.2)	4 855	(14.6)	390	(1.2)	33 282	(100)
Man	7 977	(78.3)	7	(0.1)	1 407	(13.8)	378	(3.7)	414	(4.1)	10 183	(100)
All tests	26 231	(60.3)	5 388	(12.4)	5 809	(13.4)	5 233	(12.0)	804	(1.8)	43 465	(100)

[1]Gynaecologists in private practice

[2]Accident and Emergency, prison health service, migration health centres, etc.

Specimen type, positive-test rate, estimated proportion infected, and predictive value

For both sexes, the youngest age groups were those most likely to provide urine specimens rather than swab specimens. Table 4 shows the number and percentage of urine specimens among all specimens collected (urine and swab) by the various requisitioners over the five-year period. The number and proportion of urine specimens increased every year from 2007 to 2011, and the increase was greatest in general practice. Gynaecologists in private practice almost exclusively took swab specimens. For women, significantly fewer swab specimens tested positive than urine specimens (5.0 % versus 11.9 %, $p < 0.001$), with the largest difference seen in general practice (5.3 % versus 11.3 %, $p < 0.001$). The difference was significant in all age groups other than the 30–34 group (2.6 % versus 3.6 %, $p = 0.14$). In men, urine specimens and swab specimens were equally likely to test positive (12.6 % versus 13.8 %, $p = 0.23$).

Table 4

Number of urine specimens tested for genital chlamydia infection and percentage of urine specimens among all specimens (swab and urine) from the various groups of requisitioners in the period 2007–11

	General practice		Youth health services		Gynaecologist[1]		Hospital		Other[2]		All requisitioners	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Urine specimen, women												
2007	1 020	(23.7)	775	(91.6)	<5	-	31	(3.7)	13	(11.8)	1 842	(26.0)
2008	1 119	(31.2)	775	(93.1)	< 5	-	123	(15.0)	17	(19.5)	2 035	(32.8)
2009	1 176	(35.2)	775	(95.4)	5	(0.4)	204	(25.3)	20	(28.6)	2 160	(35.3)
2010	1 228	(40.1)	776	(96.8)	< 5	-	268	(29.5)	14	(26.9)	2 398	(40.2)
2011	1 764	(47.9)	999	(88.3)	78	(5.1)	331	(22.4)	33	(46.5)	3 205	(40.5)

	General practice		Youth health services		Gynaecologist[1]		Hospital		Other[2]		All requisitioners	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
2007–11	6 417	(35.2)	4 080	(92.7)	89	(1.7)	957	(19.7)	97	(24.9)	11 640	(35.0)
Urine specimen, men												
2007	1 220	(80.6)	252	(99.6)	0	-	49	(89.1)	51	(87.9)	1 572	(83.6)
2008	1 295	(82.3)	277	(99.6)	0	-	41	(80.4)	71	(92.2)	1 684	(85.1)
2009	1 280	(85.6)	275	(100)	< 5	-	65	(94.2)	95	(96.9)	1 716	(88.4)
2010	1 309	(87.8)	234	(99.2)	0	-	76	(92.7)	65	(92.9)	1 684	(89.6)
2011	1 733	(91.1)	365	(100)	< 5	-	113	(93.4)	103	(92.8)	2 317	(92.6)
2007–11	6 837	(85.7)	1 403	(99.7)	< 5	-	344	(91.0)	385	(93.0)	8 973	(88.1)

[1]Gynaecologists in private practice

[2]Accident and Emergency, prison health service, migration health centres, etc.

Figure 2 shows the proportion of individuals who tested positive, the estimated proportion of infected individuals, and positive predictive values in relation to age, sex and specimen type for specimens collected in general practice. For both sexes and both specimen types, positive predictive values decreased with increasing age. For swab specimens from women aged over 30, the estimated percentage of infected individuals was lower than the percentage that tested positive. For women aged 40 years and above, fewer than 60 % of positive tests were true positive. With the exception of swab specimens in women over 30, and swab and urine specimens in men over 50, the estimated proportion of infected individuals was higher than the proportion that tested positive.

Figure 2 Estimated diagnostic value of testing by general practitioners for genital chlamydia infection in urine and swab specimens from women (2A) and men (2B) in different age groups. The bars show the percentage that tested positive (T+) and the calculated percentage of infected individuals (S+) in the test population (0–20 %, primary y-axis). The lines show the calculated positive predictive values (0–100 %, secondary y-axis). The graphs are based on results from routine diagnostics performed with COBAS TaqMan 48 (Roche Diagnostics) at Vestfold Hospital Trust in the period 2007–11

Discussion

This study demonstrates that general practitioners play a key role in diagnosing and treating chlamydia in Norway, in that they submit the most specimens for testing, and receive the most positive test results. The data suggest that women over the age of 30 are tested too often, and show that most testing in this group is requested by general practitioners or by gynaecologists in private practice.

Highest test volume and positive-test rates in general practice

We found that general practitioners in this study have a substantial role in the diagnosis and treatment of chlamydia, in contrast to their counterparts in many European countries, where sexual health clinics are more widespread (16). The majority of patients who tested positive for chlamydia were diagnosed in general practice, with the remaining positive tests distributed roughly equally between youth health services, gynaecologists in private practice, and hospitals. The drafting and revision of action plans and guidelines for the diagnosis and treatment of chlamydia should focus in particular on general practitioners. Communicating effectively with doctors is vital – it is well-known that, for various reasons, clinical guidelines are not always followed in practice (17).

Patients with chlamydia require treatment, guidance on avoiding infection transmission, and advice on retesting; moreover, contact tracing is required by law (18). A study from another Norwegian county, Sør-Trøndelag, showed that relatively many patients with positive chlamydia tests did not collect antibiotics from a pharmacy. Those who did collect their prescription took on average almost two weeks to do so (19). 'More effective contact tracing and monitoring' is one of several explicitly stated priorities for the Directorate of Health (12), and focusing on strategies for the management of patients with chlamydia may therefore be useful. One pragmatic and common approach is to provide a double prescription for the patient and his/her partner, but this is often an imperfect solution. Contact tracing should include all sexual partners within the past six months, and in some cases, all those within the past year. The partners should be tested and, if they too test positive for chlamydia, should receive treatment, information and guidance, in addition to becoming an index patient for further contact tracing (11).

Over-testing of older women and under-testing of men

A large proportion of all specimens taken in general practice and by gynaecologists in private practice were from female patients over the age of 30, and only 2.2 % of these tests were positive. A targeted and evidence-based testing strategy is required to maximise reliability of results, avoid unnecessary use of health care resources, and avoid subjecting patients to misdiagnoses. Doctors should be aware of the high false positive rate and low positive predictive value in low-prevalence populations, and our results emphasise that this is particularly important with respect to suspected infection in women over the age of 30 (14),(20). Nevertheless, we cannot evaluate sampling practices on the basis of the proportion of positive tests alone. Understanding testing practices also requires understanding the patient populations and the indications for testing observed by the requisitioners (21).

For women in most age groups, a significantly higher percentage of urine specimens tested positive than swab specimens. For specimens collected by gynaecologists in private practice (mainly swabs), the percentage of positive tests was significantly lower than for specimens collected in general practice and by youth health services, for all age groups. A large laboratory-based study in the Norwegian county Sør-Trøndelag showed that young girls who provide urine specimens are more likely to test positive for chlamydia than girls tested via a cervical swab (22). Together, these findings may indicate that urine specimens

are more often used in targeted testing for chlamydia, and for test of cure, whereas swab specimens tend to be collected in association with cervical smear tests and in other scenarios where a gynaecological examination is already being performed.

For the 25–29 age group, the picture is somewhat different. The majority of cases of chlamydia in Norway are diagnosed in those aged under 25, and the Norwegian Institute of Public Health (NIPH) guidelines recommend restrictive testing of patients above this age (11). There are few population-based prevalence studies among persons over 25 (23). Our study alone is an insufficient basis on which to recommend changes to the age cut-off in the guidelines, but the large number of specimens from women aged 25–29 in this study does indicate that doctors test patients in this age group more liberally than the guidelines recommend. The high rate of positive tests in this age group in general practice suggests that the sampling practices of general practitioners may be justified. Gynaecologists in private practice, who have a somewhat different patient population, should pay more heed to the low pretest probability of chlamydia in women aged 25–29.

For men, the proportion of positive tests exceeds 10 % up to age 35, which may be an argument for reassessing and possibly broadening the guidelines for testing of men over 25. The same pattern can be seen in the Sør-Trøndelag study and in the national statistics (20),(22). Our patient-level figures also show that only one in four men has been tested more than once in five years. Increased awareness of the importance of chlamydia testing in men, and especially younger men, is required in both the general population and among doctors, especially perhaps among general practitioners who have the largest patient base. Providing general practitioners with information and displaying posters in general practice surgeries could help to increase opportunistic screening of men attending with other health issues.

Representativeness, strengths and weaknesses

This study adds to the picture of testing practices in the catchment area of a large Norwegian routine diagnostics laboratory. This is not a prevalence study; the sample is limited to those patients who consulted a doctor or the youth health services or were referred to hospital, and to those patients whom doctors chose to test. The majority of test requisitions did not include clinical information. The indication for the test, any symptoms, and whether the test was taken at the request of the patient or on the doctor's own initiative are therefore not included in the study, which limits the conclusions that can be drawn.

Our calculations with respect to positive predictive values and the proportion of infected individuals (Fig. 2) presuppose that the values chosen for sensitivity and specificity are representative of the laboratory test used and of conditions in Norway (14). We have not presented or discussed the rates of positive tests stratified by age and sex in hospital patients, because the circumstances here are assumed to be somewhat different from those of screening in a non-hospital setting.

All microbiological laboratories that perform chlamydia diagnostics report the number of specimens tested for chlamydia, as well as the number, sex, year of birth, county of residence, and date for all positive tests to the Norwegian Surveillance System for Communicable Diseases. Vestfold and Telemark are just below the national average in terms of the number of reported cases of chlamydia infection (1). The sex and age distributions of the patients tested and of the cases diagnosed in our dataset are similar to the national chlamydia figures from the NIPH (1),(20). In the NIPH statistics from 2012, women accounted for 60 % of all positive tests; in our study, the corresponding figure is 64 % (24). In the NIPH statistics, 33 % of specimens from women were from those over the age of 30, with 2 % testing positive. In our dataset, the corresponding figures are 34 % and 2.2 %. The Sør-Trøndelag chlamydia study showed similar results (22). Our study adds to the picture of unnecessary testing of older women and under-testing of younger men by revealing which care providers are requesting these tests. We have no particular reason to suspect that requisitioners in our county differ markedly from their counterparts

across the country as a whole. We therefore believe that our results provide a good foundation for measures aimed at achieving more targeted chlamydia testing in Norway, with a specific focus on those doctors who conduct such testing in practice.

Conclusion

The highest test volume and highest proportion of positive tests were seen in general practice. The results of the study indicate that in general practice and in private gynaecology practice, too many specimens are taken from women over the age of 30 with low pretest probability, while men, and especially young men, should be tested more often. Data on who requests chlamydia testing and of whom, is important information for health authorities, for the care providers who request tests, and for individual doctors – as part of the effort to promote more targeted and cost-effective diagnostic work-up and improved treatment and contact tracing for chlamydia.

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