

Higher Yet Suboptimal Chlamydia Testing Rates at Community Health Centers and Outpatient Clinics Compared With Physician Offices

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To assess chlamydia testing in women in community health centers, we analyzed data from national surveys of ambulatory health care. Women with chlamydial symptoms were tested at 16% of visits, and 65% of symptomatic women were tested if another reproductive health care service (pelvic examination, Papanicolaou test, or urinalysis) was performed. Community health centers serve populations with high sexually transmitted disease rates and fill gaps in the provision of sexual and reproductive health care services as health departments face budget cuts that threaten support of sexually transmitted disease clinics. (*Am J Public Health*. 2012;102:e26–e29. doi:10.2105/AJPH.2012.300744)

Community health centers can serve as a key health care venue for the provision of quality sexual and reproductive health care services for persons in medically underserved communities. They are public or nonprofit, community-directed health care facilities that increase access to care for persons who experience barriers to quality health care, such as their inability to pay, geographic location, or language or cultural differences.¹

With increasing closure of sexually transmitted disease (STD) clinics

throughout the United States,² greater provision of STD services in community settings will be important for protecting the sexual and reproductive health of men and women in minority populations with high prevalence of STDs and limited access to care.^{3,4} An important STD service is chlamydia testing for persons with symptoms or signs of infection and also for all asymptomatic sexually active women aged 25 years or younger annually, as recommended by the Centers for Disease Control and Prevention and other organizations.^{5–7} An untreated chlamydial infection can result in serious complications, including pelvic inflammatory disease, infertility, or ectopic pregnancy.^{8–10} We estimated the proportion of visits made by women to community health centers, physician offices, and outpatient clinics with a chlamydia screening or diagnostic test.

METHODS

We analyzed data from the 2006 to 2009 National Ambulatory Medical Care Surveys and National Hospital Ambulatory Medical Care Surveys. Methods used in the design, conduct, and analysis of these surveys are fully described elsewhere.^{11,12} Both surveys collected abstracted visit data from patient medical records. The National Hospital Ambulatory Medical Care Survey response rate was approximately 60%; the National Ambulatory Medical Care Survey response rate was about 80%. Clinics were designated as community health centers according to the Health Resources and Services Administration,¹ and outpatient clinics were owned and operated by hospitals.⁹

We estimated the mean annual number of visits made by nonpregnant women aged 15 to 25 years to community health centers, physician offices, and outpatient clinics during

2006 to 2009 by patient age, race/ethnicity, US geographic region, source of payment, provider or clinic specialty, presence or absence of chlamydial symptoms, and type of reproductive health service. Symptomatic visits were identified with *International Classification of Diseases, Ninth Revision*, codes^{13,14} and included visits for pelvic inflammatory disease, cervicitis, vaginitis, vulvitis, endometritis, vaginal discharge or other vaginal symptoms, dyspareunia, pelvic or abdominal pain, postcoital or irregular vaginal bleeding, urinary symptoms, and STD symptoms.^{6,13} We also estimated the frequency of chlamydia testing at these visits. If too few visits were sampled to provide a robust estimate of chlamydia testing, we calculated it by subtracting the proportion of visits without a test from the total visits. With the χ^2 test, a 2-sided *P* value less than .05 was considered statistically significant in bivariate analyses. Characteristics that were statistically significant in bivariate analyses were included in a multivariate logistic regression analysis of chlamydia testing. All analyses were conducted with SAS version 9.2 (SAS Institute, Cary, NC) and SUDAAN version 10.0.1 (Research Triangle Institute, Research Triangle Park, NC).

RESULTS

During 2006 to 2009, 1.75 million annual visits were made to community health centers, 45.05 million to physician offices, and 7.07 million to outpatient clinics (Table 1). Among visits to community health centers, 63.9% were made by women in minority populations ($P < .001$). Women with Medicaid made a higher proportion of visits to community health centers (53.7%) and

TABLE 1—Mean Annual Visits to Community Health Centers, Physician Offices, and Outpatient Clinics by Nonpregnant US Women Aged 15–25 Years: National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2006–2009

Characteristic	Community Health Centers, No. ^a (%)	Physician Offices, No. ^a (%)	Outpatient Clinics, No. ^a (%)	P
Total	1 751 800	45 046 200	7 066 000	
Age, y				
15–19	674 920 (38.5)	21 023 080 (46.7)	3 164 220 (44.8)	<.05
20–25	1 076 880 (61.5)	24 023 120 (53.3)	3 901 780 (55.2)	
Race/ethnicity				
White, non-Hispanic	633 150 (36.1)	31 478 060 (69.9)	3 897 810 (55.2)	<.001
Black, non-Hispanic	453 270 (25.9)	5 745 010 (12.8)	1 693 640 (24.0)	
Hispanic	558 690 (31.9)	5 660 210 (12.6)	1 158 320 (16.4)	
Other ^b	106 700 (6.1)	2 162 920 (4.8)	316 230 (4.5)	
Geographic region				
Northeast	508 290 (29.0)	8 354 890 (18.5)	1 833 330 (25.9)	<.001
Midwest	309 360 (17.7)	9 500 750 (21.1)	2 363 910 (33.5)	
South	440 650 (25.1)	18 082 900 (40.1)	1 985 700 (28.1)	
West	493 500 (28.2)	9 107 660 (20.2)	883 070 (12.5)	
Source of payment				
Private insurance	218 360 (12.5)	29 424 900 (65.3)	2 544 770 (36.0)	<.001
Medicaid/SCHIP	940 060 (53.7)	8 454 450 (18.8)	2 914 490 (41.2)	
Uninsured ^c	309 890 (17.7)	2 948 340 (6.5)	861 720 (12.2)	
Other ^d	283 500 (16.2)	4 218 500 (9.4)	745 020 (10.5)	
Provider specialty				
Primary care	1 266 300 (72.3)	23 888 540 (53.0)	4 431 030 (62.7)	<.001
Gynecology	448 630 (25.6)	8 693 320 (19.3)	1 666 880 (23.6)	
Other	36 870 ^e (2.1)	12 464 340 (27.7)	968 100 (13.7)	
Chlamydia symptoms ^f				
Yes	281 300 (16.1)	5 997 940 (13.3)	977 750 (13.8)	.44
No	1 470 500 (83.9)	39 048 260 (86.7)	6 088 250 (86.2)	
Pelvic examination				
Yes	298 200 (17.0)	6 463 380 (14.3)	1 008 060 (14.3)	.60
No	1 453 600 (83.0)	38 583 830 (85.7)	6 057 950 (85.7)	
Papanicolaou test				
Yes	168 330 (9.6)	3 780 490 (8.4)	556 410 (7.9)	.59
No	1 583 470 (90.4)	41 265 710 (91.6)	6 509 590 (92.1)	
Urinalysis				
Yes	267 270 (15.3)	4 861 360 (10.8)	1 056 670 (15.0)	<.01
No	1 484 530 (84.7)	40 184 840 (89.2)	6 009 330 (85.0)	
Chlamydia test				
Yes	105 270 (6.0)	1 443 470 (3.2)	386 340 (5.5)	<.001
No	1 646 530 (94.0)	43 602 730 (96.8)	6 679 660 (94.5)	

Note. SCHIP = State Children's Health Insurance Program.

^aWeighted for the probability of selection, nonresponse rate, and population ratio.

^bAsian, Hawaiian/Pacific Islander, American Indian/Alaskan Native, and multiple races.

^cSelf-pay or no charge for visit.

^dMedicare, worker's compensation, and other or unknown.

^eEstimate based on < 30 records or with a relative SE > 30%.

^fMucopurulent cervicitis, pelvic inflammatory disease, abnormal vaginal discharge, dyspareunia, postcoital bleeding, abnormal vaginal bleeding, or dysuria.

to outpatient clinics (41.2%) than to physician offices (18.8%; $P < .001$), where patients with private insurance made 65.3% of the visits. A greater proportion of visits were made to community health centers for preventive care (33.2%) than to physician offices (23.2%) or to outpatient clinics (26.8%) ($P < .01$).

Diagnostic chlamydia testing rates were 16.4% at symptomatic visits to community health centers, 14.9% at outpatient clinics, and 8.8% at physician offices ($P < .05$; Table 2).

At asymptomatic visits, 4.0% were tested in community health centers, 2.3% in physician offices, and 3.9% in outpatient clinics ($P < .05$). Black, non-Hispanic women were more likely to be tested at visits to community health centers (8.9%) and outpatient clinics (8.0%) than at physician offices (3.7%; $P < .05$). At a visit when a Papanicolaou test was performed, chlamydia screening was also done at 36.5% of visits to community health centers, 24.9% of visits to physician offices, and 35.7% of visits to outpatient clinics ($P < .05$). Screening rates were higher at visits to gynecology providers than at visits to primary care or other providers. After we controlled for several variables, including women's race/ethnicity, chlamydia testing was more likely at visits to outpatient clinics (Table 3).

DISCUSSION

Chlamydia testing can prevent pelvic inflammatory disease in young women,^{9,10} but too few women are tested.^{13,15–17} Our findings of suboptimal testing rates confirmed the results of other studies that found underuse of chlamydia testing in women with symptoms or signs of chlamydial infection and in asymptomatic women. Compared with physician offices, community health

TABLE 2—Chlamydia Testing Rates of Symptomatic and Asymptomatic US Women Aged 15–25 Years at Community Health Centers, Physician Offices, and Outpatient Clinics: National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2006–2009

Characteristic	Community Health Centers		Physician Offices		Outpatient Clinics		P
	Visits ^a	Chlamydia Test, ^a No. (%)	Visits ^a	Chlamydia Test, ^a No. (%)	Visits ^a	Chlamydia Test, ^a No. (%)	
Symptomatic^b visits							
Subtotal	281 300	46 230 (16.4)	5 997 940	530 130 (8.8)	977 750	145 150 (14.9)	<.05
Reproductive health care service ^c	39 580	25 630 (64.8)	968 120	290 130 (30.0)	140 890	58 700 (41.7)	.11
Asymptomatic visits							
Subtotal	1 470 500	59 040 (4.0)	39 048 260	913 340 (2.3)	6 088 250	241 200 (4.0)	<.05
Race/ethnicity							
White, non-Hispanic	568 610	3210 (0.6)	27 340 070	539 070 (2.0)	3 408 400	70 730 (2.1)	.07
Black, non-Hispanic	350 400	31 140 (8.9)	4 912 890	182 960 (3.7)	1 398 150	111 550 (8.0)	<.05
Hispanic	459 960	22 520 (4.9)	4 823 250	134 630 (2.8)	995 100	35 980 (3.6)	.62
Other	91 540 ^d	2160 (2.4)	1 972 050	56 690 (2.9)	286 600	22 940 (8.0)	.09
Provider specialty							
Primary care	1 068 930	21 700 (2.0)	20 640 170	331 620 (1.6)	3 810 110	87 750 (2.3)	.45
Gynecology	373 940	37 340 (10.0)	6 459 870	581 720 (9.0)	1 338 290	153 250 (11.5)	.51
Other	27 630 ^d	0 (0)	11 948 230	0 (0)	939 850	200 (0.02)	.38
Reproductive health care service ^c							
Pelvic examination	213 420	47 310 (22.2)	4 352 380	670 180 (15.4)	697 380	154 960 (22.2)	.09
Papanicolaou test	128 760	46 960 (36.5)	2 812 370	699 380 (24.9)	415 520	148 400 (35.7)	<.05
Urinalysis	168 610	25 220 (15.0)	3 285 220	333 410 (10.1)	704 210	106 230 (15.1)	.38

^aWeighted for the probability of selection, nonresponse rate, and population ratio.

^bMucopurulent cervicitis, pelvic inflammatory disease, abnormal vaginal discharge, dyspareunia, postcoital bleeding, abnormal vaginal bleeding, or dysuria.

^cPelvic examination, Papanicolaou test, or urinalysis.

^dEstimates based on < 30 records or with a relative SE > 30%.

centers and outpatient clinics had higher rates of both diagnostic testing and asymptomatic screening for chlamydia during gynecological procedures, but these rates also were too low. Achieving recommended testing coverage of all sexually active young women is challenging, and interventions are needed to improve implementation of this important reproductive health preventive service.

Providers in community health centers are poised to serve the health care needs of an increasing number of men and women. The community health center is a health care setting that is expected to double its capacity to serve 40 million patients over the next several years.¹⁸ Community health centers provide quality primary and preventive health

care services for medically underserved areas and populations that have historically had poor access to care.^{1,18,19} Community health centers will likely become an increasingly important health care setting for provision of sexual and reproductive health care services and will play a more important role in STD prevention and control by serving populations that were previously uninsured and populations that have high rates of reported STD morbidity. ■

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Contributors

J. M. Eugene conducted analyses, drafted the article, and contributed to interpretation of the study. K. W. Hoover designed the study and contributed to analyses and interpretation of the study and drafting of the article. G. Tao contributed to analyses and interpretation of the study and drafting of the article. C. K. Kent contributed to interpretation of the study and drafting of the article.

Human Participant Protection

Survey protocols were approved by the Centers for Disease Control and Prevention's National Center for Health Statistics Research Ethics Review Board.

TABLE 3—Multivariate Logistic Regression Analysis of Chlamydia Testing of US Women Aged 15–25 Years at Visits to Community Health Centers, Physician Offices, and Outpatient Clinics: National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2006–2009

Characteristic	Visits With a Chlamydia Test, ^a %	AOR (95% CI)
Symptomatic ^b visits		
Yes	9.9	3.09 (2.03, 4.70)
No (Ref)	2.6	1.00
Race/ethnicity		
White, non-Hispanic (Ref)	2.6	1.00
Black, non-Hispanic	7.2	2.25 (1.41, 3.57)
Hispanic	4.4	1.59 (1.00, 2.53)
Other	4.7	2.14 (1.03, 4.46)
Papanicolaou test		
Yes	28.2	25.63 (17.35, 37.87)
No (Ref)	1.4	1.00
Health care venue		
Physician office (Ref)	3.2	1.00
Community health center	6.0	1.61 (0.93, 2.80)
Outpatient clinic	5.5	1.82 (1.33, 4.46)

Note. AOR = adjusted odds ratio; CI = confidence interval.

^aWeighted for the probability of selection, nonresponse rate, and population ratio.

^bMucopurulent cervicitis, pelvic inflammatory disease, abnormal vaginal discharge, dyspareunia, postcoital bleeding, abnormal vaginal bleeding, or dysuria

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