

STD Screening, Testing, Case Reporting, and Clinical and Partner Notification Practices: A National Survey of US Physicians

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More than 15 million sexually transmitted diseases (STDs) occur annually in the United States.^{1,2} Rates of curable STDs in the United States, the highest in the developed world, are higher than in some developing countries.^{1,2} STDs account for 87% of the diseases most frequently reported to public health authorities in the United States³; of the 10 most frequently reported diseases, 5 are STDs.^{2,3} The direct and indirect costs of STDs are also substantial. In 1994 dollars, the total cost for common STDs and their sequelae is estimated to be \$10 billion annually.²

Federal resources for the control and prevention of STDs are largely distributed to state and local health departments, which for more than 50 years have provided disease surveillance, screening of at-risk individuals, partner contact tracing, and STD clinics that offer a safety net for medically underserved populations. The science base that informs STD control and prevention in the United States is generated primarily from research conducted in these publicly funded STD clinics. However, recent evidence suggests that most STD care in the United States takes place in the private sector. The National Health and Social Life Survey, a population-based household survey, revealed that STDs are frequently treated in private practice settings. Almost three quarters (71%) of the respondents diagnosed with an STD in the previous year had received their care from a private practice, community health center clinic, emergency room, or family planning clinic rather than from a publicly funded STD clinic. Only 5% reported that they were treated in an STD clinic. The remaining 24% received their STD care in a variety of settings other than those mentioned above.⁴

Relatively little is known about current STD practices outside of dedicated STD clinics. Although some small regional studies have been

Objectives. This study presents results from a national survey of US physicians that assessed screening, case reporting, partner management, and clinical practices for syphilis, gonorrhea, chlamydia, and HIV infection.

Methods. Surveys were mailed to a random sample of 7300 physicians to assess screening, testing, reporting, and partner notification for syphilis, gonorrhea, chlamydia, and HIV.

Results. Fewer than one third of physicians routinely screened men or women (pregnant or nonpregnant) for STDs. Case reporting was lowest for chlamydia (37%), intermediate for gonorrhea (44%), and higher for syphilis, HIV, and AIDS (53%–57%). Physicians instructed patients to notify their partners (82%–89%) or the health department (25%–34%) rather than doing so themselves.

Conclusions. STD screening levels are well below practice guidelines for women and virtually nonexistent for men. Case reporting levels are below those legally mandated; physicians rely instead on patients for partner notification. Health departments must increase collaboration with private physicians to improve the quality of STD care. (*Am J Public Health.* 2002;92:1784–1788)

conducted, the last national STD survey of physicians was in 1968; it was very limited in scope, containing only 2 questions (number of STD cases that physicians diagnosed and number reported to public health departments).⁵ The health care climate has changed markedly since that time, with shifts toward managed care and advances in STD diagnostics and treatment.⁶ In addition, dwindling resources have closed or limited the hours of operation of publicly funded clinics in several geographic areas, raising concerns that financial constraints might contribute to an increasing prevalence of treatable STDs.

This report presents results from a national survey of US physicians that assessed screening, case reporting, partner management, and clinical practices for syphilis, gonorrhea, chlamydia, and HIV infection.

METHODS

Procedures

Five medical specialties were selected on the basis of evidence that they provide care for 85% of STDs diagnosed in the United States.^{7,8} Surveys were mailed to a randomly selected

sample of 7300 physicians from the Physician Master File of the American Medical Association (AMA). The Physician Master File was used for the sampling frame because it includes all US medical school graduates, provides a less biased sample of physicians than does the AMA Membership File, and is the most comprehensive national list of physicians. We included physicians who reported that they (1) specialized in obstetrics/gynecology, internal medicine, general or family practice, emergency medicine, or pediatrics; (2) spent at least 50% of their professional time in direct patient care; and (3) cared for patients aged between 13 and 60 years.

Each survey, which included a cash incentive of \$15.00 and a postage-paid return envelope, was sent by Federal Express. A reminder postcard was mailed 10 days later, and repeat surveys were sent to nonrespondents 4, 7, and 15 weeks after the initial mailing.

The cumulative response rate was 70.2% after adjustment for surveys that were undeliverable or returned as ineligible. Completed surveys (n=4226) were received from all 50 states and the District of Columbia, with approximately equal regional distribution (North-

east, 21%; South, 32%; Midwest, 25%; West, 22%). Fewer than 9% of the original sample disqualified themselves because they did not see enough STDs in their practices.

Sample

The mean age of the physicians who completed the survey was 46.2 (SD=10.3) years, and 72% were male. Most of the sample was White (81%), with few Asian (13%), African American (4%), and Native American or Hawaiian/Pacific Islander physicians (<1%). Five percent of the sample was of Hispanic or Latino ethnicity. On average, the physicians had been in practice 17.8 (SD=10.5) years, spent 42.6 (SD=16.4) hours a week in direct patient care, and saw 98.1 (SD=72.1) patients per week. Most worked in private practice settings (87%), although 13% were in publicly funded settings such as the military, correctional care, veterans facilities, public health departments, or community health centers. Fewer than 1% practiced in dedicated STD clinics. Physicians' work settings included solo practices (24%), single-specialty group practices (45%), multispecialty group practices (20%), staff model health maintenance organizations (HMOs) or other managed care organizations (6%), and other types of office practices (5%). The communities in which their practices were located were equally distributed between urban cities of more than 250 000 residents (25%), suburban communities and cities with 100 000 to 250 000 residents (28%), smaller cities of 25 000 to 100 000 residents (24%), and small towns and rural areas (23%).

The majority of the sample (77.6%; n=3239) had diagnosed and treated STDs in their practices within the past year. The percentages of physicians who reported having di-

agnosed each disease in the past year were as follows: syphilis, 18.8%; gonorrhea, 53.8%; chlamydia, 73.4%; and HIV, 23.6%.

RESULTS

Screening Practices

STD screening was examined separately for the total sample and for those who had diagnosed each STD within the past year. As shown in Table 1, physicians who saw male patients rarely screened for syphilis, HIV, gonorrhea, or chlamydia, despite the frequently asymptomatic nature of these diseases in males. Screening rates of nonpregnant women ranged from 20% to 35% of physicians; not surprisingly, a higher percentage (30%–32%) reported screening pregnant women. Among physicians who had diagnosed STDs in the past year, screening rates ranged from 15% for chlamydia to 27% for HIV, figures similar to those for the total sample. The percentage of physicians screening nonpregnant women was slightly higher for physicians who had treated STDs in the last year (22%–40%). The percentage of physicians screening pregnant women was 5% to 6% higher for those who had recently diagnosed STDs in their practices, ranging from 36% for gonorrhea to 39% for syphilis.

Screening for STDs is of special importance in the care of pregnant women. Because most obstetricians/gynecologists can be assumed to provide prenatal care, we examined screening practices by obstetricians/gynecologists (n=661) separately (Table 1). Obstetricians' screening of nonpregnant women ranged from a low of 23% for syphilis to a high of 54% for chlamydia. The percentage of obstetricians/gynecologists who screened pregnant women was

higher for all 4 diseases (78%–85%), although still below the universal screening of pregnant women that is recommended in the *1998 Guidelines for Treatment of Sexually Transmitted Diseases* and the *Guide to Clinical Preventive Services*.^{9,10}

Case Reporting

Table 2 presents physicians' knowledge of disease-reporting requirements in their states, their frequency of reporting, beliefs about whether reporting was done by laboratories, and attitudes about whether case reporting is a worthwhile activity. Analyses of physicians' reporting practices for chlamydia and HIV were adjusted to include only those physicians who practiced in states where chlamydia or HIV reporting was legally mandated and, for each disease, included only physicians who reported diagnosing that specific disease within the past year in each analysis.

A substantial proportion of the sample was uncertain as to whether reporting was required from either physicians or laboratories (23%–49%, depending on disease). The frequency of case reporting was lowest for chlamydia (37% in states where chlamydia reporting was required), intermediate for gonorrhea (44%), and highest for syphilis, HIV, and AIDS (53%–57% in states where required). A larger percentage of physicians believed that HIV and AIDS reporting is very worthwhile (60%) compared with the response for reporting of the other diseases (39%–53%). The same proportion reported HIV and AIDS, yet it is worth noting that about 40% stated that they never reported HIV or AIDS diagnoses to public health authorities. Although 38% to 49% were uncertain whether laboratories were required to report positive tests to the health department, 72% to 86% assumed that their laboratories were doing so.

Partner Notification and Clinical Actions

Table 3 lists patient management actions, actions to prevent partner infection, and public health actions related to infection control that physicians might take when they diagnose an STD, and displays the percentages of physicians who indicated that they "always" take each action for each STD. Few physicians always referred patients with gonorrhea, chlamydia, or syphilis elsewhere for medical management

TABLE 1—Screening of Sexually Transmitted Diseases (STDs) by US Physicians

STD Screening	Screening of Men by All Physicians Who Treat Men (n = 3509), %	Screening of Women by All Physicians Who Treat Women (n = 4136), %		Screening of Women by OB/GYNs Only (n = 661), %	
		Nonpregnant	Pregnant	Nonpregnant	Pregnant
Syphilis	18.9	19.6	32.0	23.0	84.6
Gonorrhea	13.4	30.0	31.2	50.8	78.5
Chlamydia	12.8	34.7	31.7	54.3	78.2
HIV	24.0	25.6	30.2	34.3	81.4

Note. N values in column heads are the number of physicians who saw patients of that gender in their practices. OB/GYN = obstetrician/gynecologist.

TABLE 2—Physicians’ Knowledge, Beliefs, Attitudes, and Behavior (%) Regarding Case Reporting of Sexually Transmitted Diseases (n = 4223)

Disease	Knowledge: Reporting Required by Physician		Behavior ² : Disease Reported		Knowledge: Reporting Required by Laboratory		Belief: Laboratory Always Reports	Attitude: Reporting Worthwhile
	Agree	Uncertain	Always	Never	Agree	Uncertain		
Syphilis	73.2	23.4	56.0	35.4	60.5	38.4	85.5	53.2
Gonorrhea	65.3	28.2	44.4	40.8	55.9	41.9	80.3	46.0
Chlamydia ^b	49.8	37.3	36.7	48.4	45.8	49.0	72.0	39.2
HIV ^b	61.6	29.9	56.4	38.3	50.5	45.6	78.7	60.8
AIDS	62.6	29.8	53.4	41.5	48.3	47.2	76.9	59.8

Note. “Knowledge” columns gives figures for physicians’ knowledge of disease-reporting requirements in their states; “Behavior” columns indicate whether physicians always or never reported indicated diseases; “Belief” column gives percentage of physicians who report that their laboratories always report indicated diseases; “Attitude” column gives percentage of physicians who agree that reporting is worthwhile. Row percentages within each category do not sum to 100 because some physicians who answered on intermediate points of a 5-point scale are omitted.

^aPercentages in the behavior column include only physicians who ever diagnosed the disease (HIV, n = 1454; AIDS, n = 1973; syphilis, n = 2473) or treated the disease within the past year (gonorrhea, n = 2178; chlamydia, n = 2786).

^bChlamydia and HIV reporting are not required in all states. Reported results for these diseases are based on responses from physicians located in states where chlamydia (n = 3917) or HIV (n = 3101) are reportable.

TABLE 3—Providers’ Partner Notification and Clinical Actions (%)^a Following Diagnosis of Sexually Transmitted Disease

Clinical Action	Gonorrhea	Chlamydia	Syphilis	HIV
Patient management				
Treat patient presumptively	56.7	54.2	38.0	—
Refer patient elsewhere for management	6.9	5.4	12.2	58.8
Partner management				
Tell patient not to have sex during treatment	79.9	78.5	78.9	—
Tell patient to use condoms	76.2	77.0	76.8	88.0
Tell patient to inform partners of exposure	79.6	79.4	81.3	88.5
Instruct patient to tell partners to seek care for diagnosis and treatment	81.6	80.5	83.5	88.8
Follow-up inquiry whether patient referred partners for treatment	19.7	20.3	23.3	29.5
Collect partner information and have office contact partners	4.1	4.0	4.8	6.8
Give patient medication for partners (not permissible in all states)	4.3	5.6	3.0	—
Report patient name to health department	44.3	38.3	50.4	48.2
Instruct patients to notify health department and provide them with partner information	25.2	23.1	29.3	34.0
Send partner information to health department	10.6	9.2	14.1	15.8

^aThe percentage of physicians who indicated that they “always” took the indicated action for each sexually transmitted disease. The number of physicians who had diagnosed each infection in the last year (gonorrhea, n = 2178; chlamydia, n = 2972) or had ever diagnosed it (syphilis, n = 2340; HIV, n = 1973) is the denominator for calculating each column’s percentages.

(7%–12%), but nearly 60% routinely referred patients with HIV elsewhere for treatment and management. More than half of physicians presumptively treated gonorrhea and chlamydia, and nearly 40% presumptively treated syphilis.

The most common infection control strategies were patient counseling (telling patient to remain abstinent or to use condoms) and en-

couraging patients to inform their sexual partners to seek treatment (80%–89%). Only a minority of physicians (20%–30%) ascertained whether their patients did refer partners for diagnosis and treatment. Physicians rarely gave medication to the patient to deliver to their sexual partners (a practice that is not allowed in some states) or collected information about the

patient’s partners and contacted them directly (4%–7%).

The most common public health action was to report the patient’s name to the health department. This was done more often for syphilis and HIV (48%–50%) than for gonorrhea and chlamydia (38%–44%). One quarter (chlamydia and gonorrhea) to one third (syphilis and HIV) of physicians instructed patients to self-notify the health department of their diagnosis and to provide the health department with partner information. Only 9% to 16% of physicians obtained information about partners and sent this information to the health department.

Use of Newer Diagnostic Tests

For the items assessing physicians’ preferred diagnostic tests, response alternatives on a 5-point scale ranged from “never use” to “always use.” Table 4 presents the percentage of physicians who indicated they “always” used a given test. Preferences of physicians with and without recent STD diagnosis experience were compared, but they did not differ. As shown in Table 4, physicians who tested for either gonorrhea or chlamydia were most likely to be using DNA probe (gonorrhea, 36%; chlamydia, 42%) or laboratory culture (gonorrhea, 31%; chlamydia, 18%). Clinicians rarely used the newer urine-based tests (gonorrhea, 1.3%; chlamydia, 1.8%).

The DNA probe test is easier to implement clinically for females because pelvic examinations and vaginal/cervical swabs are accepted

TABLE 4—Diagnostic Tests Preferred by Physicians Who Had Tested Patients for Gonorrhea or Chlamydia in the Past Year

Test	Gonorrhea, % (n=3681)	Chlamydia, % (n=3635)
DNA probe	36.0	41.7
Laboratory culture	31.2	17.7
Gram stain	9.9	3.1
Urine-based PCR/LCR tests	1.3	1.8
EIA-ELISA/DFA	–	5.1
OIA	–	0.4

Note. PCR/LCR = polymerase chain reaction/ligase chain reaction; EIA-ELISA/DFA = enzyme immunoassay–enzyme-linked immunosorbent assay/direct fluorescent antibody; OIA = optical immunoassay. Figures represent the percentage of physicians who indicated that they “always” used a given test. The percentages for each test are not mutually exclusive, because physicians may have indicated consistent use of more than 1 test. For example, they may have indicated that they used Gram stain for presumptive diagnosis and DNA probe for definitive diagnosis.

clinical practices during women’s reproductive health care visits. Few physicians screened males, but it is possible that the clinicians who reported that they screened males might be more likely to use urine tests. This possibility was examined separately, but it did not reveal markedly different patterns of test use.

DISCUSSION

These results provide an updated view of current STD practices in the United States, with important implications for public health policy and practice, clinical practice, and medical education. They confirm that a substantial proportion of STD care is provided outside of dedicated STD clinics; hence, physicians in community-based practices are essential links in partner management and public health surveillance.

Physicians’ rates of encounters with syphilis and HIV appear to be higher than would be expected from current surveillance data; several possible interpretations suggest themselves. One possibility is that the burden of disease is considerably higher than current surveillance

estimates. Another is that respondents may have equated previously diagnosed cases with incident infection. In addition, physicians who felt that they did not see STDs self-selected out of the survey.

This study documents considerable diversity in how physicians handle STD screening, testing, case reporting, and partner notification. Programs designed to influence the care that they provide will need to take into consideration this diversity and the factors that underlie it. No single intervention will be equally appropriate for all physicians. STD prevention and control is widely dispersed across a variety of practice settings and will require linkages between health departments and private physicians for optimal results.

The prevalence of STD screening was surprisingly low for men and for nonpregnant women, as was the percentage of physicians who screened pregnant women. Although the percentage of obstetricians/gynecologists who screened pregnant women was higher, it was still lower than the recommendations in standard practice guidelines, such as the STD Treatment Guidelines or the *Guide to Clinical Preventive Services*, that all pregnant women should be screened.^{9,10}

Community-based physicians play an important role in case finding and reporting, but these behaviors are less frequent than might be assumed by public health authorities. From 23% to 49% of physicians lacked awareness of reporting requirements for either clinicians or laboratories. Twenty years ago, a smaller survey of physicians in New York State found that only about 30% to 37% knew which diseases they were required to report.¹¹ This current survey reflects little improvement in providers’ knowledge of reporting requirements in the intervening years.

Reporting has improved since the last survey in 1968, when only 19% of physicians reported infectious syphilis and 30% of physicians reported gonorrhea.⁵ However, reporting remains well below optimal levels or state-mandated requirements. Policy-level interventions to increase case reporting may be beneficial. Further research to better clarify facilitators and barriers to case reporting could inform the development of interventions to improve case-reporting practices. Given the heavy reliance on laboratory reporting by many physicians,

studies to document the actual reporting behavior of laboratories are essential to justify physicians’ dependence on this strategy.

About half of the physicians treated presumptively for gonorrhea (56.7%) and chlamydia (54.2%), and, surprisingly, almost 40% did so for syphilis. This has implications for disease surveillance, as presumptive treatment may not be accompanied by confirmatory diagnostic tests and physicians are relying on their laboratories to report cases. In addition, according to Centers for Disease Control and Prevention case definitions, presumptive diagnoses based only on clinical signs and symptoms are not reportable by physicians.⁹

The newer urine-screening diagnostic tests are rarely used by community-based physicians, although these tests are less invasive, more acceptable to patients, allow screening to be conducted in nontraditional settings, and are easier to implement for both men and women.¹² Failure to use the newer testing technologies may be related to higher cost.

The results of this survey suggest that there are many missed opportunities to diagnose, treat, or prevent STDs in the United States.¹³ Another survey of primary care physicians found that only 49% reported that they asked their adult patients about STDs.¹⁴ Another national survey reported that only 40% of internal medicine physicians asked patients about sexual behaviors.¹⁵ Although consistent screening could compensate for the infrequency of taking a sexual history, rates of screening reported in this survey were insufficient to fill the gap.

Few physicians engage in partner notification, and most instruct patients to self-report to the health department or to notify their partners themselves. This reliance on patient notification represents a gap between common practice and our knowledge of its effectiveness. A better understanding is needed of what patients actually do when they are advised to inform their partners or the health department of their STD infection.

This study has several limitations. First, there may be an implicit sample bias if physicians who saw STDs were more likely to return the surveys. However, fewer than 9% of the original sample of 7300 physicians disqualified themselves because they did not see enough STDs in their practices to respond to the questionnaire. Second, this survey relied on physi-

cian self-report, and the accuracy of self-reported information is not known. However, other evidence suggests that physicians overstate their compliance with clinical guidelines and that when physician and patient reports are compared, physicians provide higher reports of adherence to clinical guidelines than do patients.^{13,16–18} This suggests that any inherent bias would be in the direction of overreporting. Third, this study did not assess whether STDs were more likely to be diagnosed during an initial patient visit. Other research suggests that the frequency of STD discussions is different with new patients and with established patients.¹⁷

Finally, these data do not reflect a lack of dedication by practicing physicians. Some of the findings may arise from a lack of understanding, training, or resources that would allow physicians to more fully address STD issues in their practices. Limited time to counsel or to assess patients' STD risk is another constraint. In addition, some physicians may consider STD to be of lesser concern than other health risks associated with chronic diseases, such as smoking or substance abuse. Prioritizing risk may be an even greater issue in managed care settings, where providers' time is even more limited than in other practice settings. In addition, some providers may not feel that they have the skills or training needed to conduct sexual histories, diagnose and treat STDs, engage in effective risk reduction counseling, or provide partner services, or they may not feel comfortable performing these activities.

Further research to assess these issues, and to evaluate interventions to overcome barriers to more effective STD control, is needed. At a policy level, existing public health mandates clearly are insufficient to accomplish their public health objectives; providers were often unaware of the legal requirement for case reporting, and even when they were aware, they were not necessarily following through to report cases. At an institutional level, the findings have clear implications for medical education and continuing medical education programs. At a provider level, additional research to depict the barriers and facilitators that influence screening, presumptive treatment, test utilization, case reporting, and partner services would be helpful and could inform the development of interventions to address these issues. Re-

search to identify alternative methods of gathering sexual history data, such as computerized health histories, would be helpful in identifying alternatives to personal inquiry by the physician. At a community level, research addressing awareness of the need for improved STD control, the importance of timely health care seeking, and compliance with treatment and implementation of partner referral could be useful. In view of physicians' reliance on laboratory reporting, it would also be useful to conduct a parallel survey that focuses on laboratory reporting practices. Finally, repeat administration of this survey could be helpful in providing a "report card" of progress in the future. ■

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Contributors

J.S. St. Lawrence, D.E. Montano, and D. Kasprzyk designed the study in consultation with W.R. Phillips and participated in the data analysis, interpretation of results, and writing of the article. K. Armstrong and J.S. Leichter analyzed the data and participated in writing the article.

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This study was reviewed and approved by the institutional review boards at the Centers for Disease Control and Prevention and the Battelle Centers for Public Health Research and Evaluation and by the federal Office of Management and Budget. A letter enclosed with each survey explained that the return of a completed survey constituted consent for research participation.

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