SHORT REPORT

National survey of doctors' actions following the diagnosis of a bacterial STD

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Objectives: Little is known about the post-STD diagnosis management practices of community based doctors. The purpose of this study was to describe the reported actions that doctors take after diagnosing gonorrhoea, chlamydia, or syphilis and to determine if these actions differ across the three STDs.

Methods: A random national sample of 7300 doctors (70% response rate) practising in five medical specialties responded to 13 questions related to STD management. Mean differences across STDs were examined using the General Linear Model function of SPSS.

Results: Most doctors reported instructing patients to abstain from sex during treatment, to use condoms, and to inform their sexual partners of their exposure after diagnosing gonorrhoea, chlamydia, or syphilis. For syphilis, however, doctors were less likely to treat the patients presumptively and to give them drugs for their partners; and more likely to collect partner information, to follow up with the patient to see if the partner was referred for treatment and to send patient information to the health department.

Conclusions: Doctors' post-STD diagnosis actions were similar for gonorrhoea and chlamydia compared to syphilis. Study findings suggest low levels of STD case reporting and partner follow up by doctors in the sample. Interventions are needed to educate community based doctors about the importance of partner follow up and case reporting in the management of STDs.

Despite recent declines in the prevalence of gonorrhoea, chlamydia, and syphilis in the United States,[1 2] these sexually transmitted diseases (STDs) continue to pose major public health problems. The first two infections remain the most prevalent bacterial STDs in the United States,[3 4] with sequelae including pelvic inflammatory disease, ectopic pregnancy, infertility, chronic pelvic pain, and tubal scarring.[1 5–7] Syphilis can produce spontaneous abortion, premature births, prenatal death in pregnant women, and congenital neonatal infections.[2 8] Moreover, scientific evidence suggests bacterial STDs facilitate the transmission and acquisition of HIV.[9]

STD management methods include identifying and treating infected people and their sexual partners, and future risk reduction education.[10] Physicians can be major participants in this preventive effort as they can identify asymptomatic infections and provide care to infected people. However, little is known about the STD post-diagnosis practices of doctors in the United States, especially those private providers treating the majority of STDs.[5] The purposes of this paper are to (1) describe the actions of doctors in a national probability sample after they diagnose cases of gonorrhoea, chlamydia, and syphilis; and (2) determine if these actions differ across the three STDs.

METHODS

Participants

Surveys were mailed to a randomly selected sample of 7300 doctors from the American Medical Association's Physician Master File. Eligibility criteria were that doctors (1) practised in one of five medical specialties (obstetrics/gynaecology, internal medicine, general or family practice, emergency medicine, and paediatrics) that provide care for 85% of the STDs diagnosed in the United States, (2) spent at least 50% of their professional time in direct patient care, and (3) provided care for patients 13–60 years of age. Seventy per cent of the sample (4223 doctors) returned completed surveys. A complete overview of the methods is presented elsewhere.[11]

Measures

Each respondent answered 13 different STD management related questions about each of the three STDs. Items were based around STD management techniques, specifically, partner notification and treatment, future risk reduction management, and case reporting. Physicians responded using a Likert scale that ranged from 1, "never" to 5, " always."

Statistical analysis

Descriptive statistics were followed by a repeated measure multivariate analysis of variance (MANOVA) with univariate follow up tests. Dependent variables were the 13 items assessing doctors' actions after diagnosing a bacterial STD. The repeated measure variable had three levels: gonorrhoea, chlamydia, and syphilis. Differences by specialty were entered as a covariate in the MANOVA and the univariate follow up tests.

RESULTS

Descriptive statistics

Table 1 contains the sample demographics. The modal physician was male (71%), in his mid-40s (mean 46 years), white (81%), and in private practice (87%). On average, doctors had practised 18 years since medical school, saw 100 patients per week (63% female), and spent 43 hours per week in direct patient care. Physicians' 2 week diagnosis histories were 2% for syphilis, 12% for gonorrhoea, and 23% for chlamydia. Equivalent 1 year rates were 23%, 54%, and 73%, respectively. The average number of cases diagnosed in the past year was six for gonorrhoea, 10 for chlamydia, and one for syphilis.

The frequency of doctors "always" prescribing presumptive treatment ranged from 50% and 51% for gonorrhoea and chlamydia to 35% for syphilis. Most doctors provided appropriate instructions to infected patients: 78–79% "always" told their patients to avoid sex during treatment, and 76–77% told their patients to use condoms. Physicians routinely practised patient referral techniques (see items 5 and 7 in table 2), with 79–84% "always" engaging in at least one technique. Case reporting was mixed: 38% "always" and 37% "never" reported chlamydia, 44% "always" and 32%

Table 1 Sociodemographic and practice characteristics of the sample (n=4223)

Characteristics	No	%
Specialty:		
Family practice	1262	29.9
Internal medicine	846	20.0
Paediatrics	772	18.3
Obstetrics/gynaecology	647	15.2
Emergency medicine	404	9.6
General practice	146	3.5
Other	146	3.5
Age (years)		
25–29	34	0.8
30–35	575	13.9
36–40	742	17.9
41–45	834	20.2
46–50	760	18.4
51–55	482	11.6
56–60	266	6.4
61–65	219	5.3
66–70	122	2.9
71–75	70	1.7
76–80	21	0.5
80–90	11	0.3
Racial/ethnic heritage:		
White	3273	75.7
Asian	539	12.5
Hispanic/Latino	206	4.8
Black/African-American	173	4.0
Other	80	1.9
American Indian/Alaskan Native	34	0.8
Native Hawaiian/other Pacific Islander	16	0.4
Sex		
Male	2953	70.9
Female	1214	29.1
Practice location		
Primary care office	2864	68.8
Ambulatory care	450	10.8
Hospital emergency	427	10.3
Community health clinic	104	2.5
Urgent care clinic	78	1.9
Abortion clinic	6	0.1
STD clinic	1	0.0
Other	177	4.2
Practice type		
Public	539	12.9
Private	3625	87.1
Size of community primary practice location		
Community (<2500 people)	93	2.3
Small town (2501–10 000 people)	378	9.2
Medium size town (10 001–25 000)	471	11.4
Large town (25 001–50 000)	434	10.5
Small city (50 001–100 000)	551	13.3
City (100 001–250 000)	561	13.6
Large city (250 000+)	1030	24.4
Suburb of larger city	611	14.8

"never" reported gonorrhoea, and 50% "always" and 28% "never" reported syphilis. Laboratories may take up some unreported cases: 52%, 55%, and 58% of doctors reported that laboratories "always" reported cases of chlamydia, gonorrhoea, and syphilis, respectively. Physicians rarely collected partner information for any STD (4–6% "always" did this; 72% "never" did).

Post-diagnosis practices

An ANOVA by specialty revealed differences in doctors' post-STD diagnosis practices, so specialty was entered as a covariate in the repeated measures MANOVA (see table 2). The multivariate main effect for type of STD was statistically significant ($F=18.73$, df = 26, 2578, $p<0001$). Univariate follow up tests showed statistically significant differences in doctors' practices across the STDs on all but one—"tell patient to use condoms"—of the 13 items.

Some doctors' post-diagnosis practices were similar for gonorrhoea and chlamydia but different for syphilis. The most sizeable differences between chlamydia/gonorrhoea responses and syphilis responses were for the likelihood of presumptive treatment (means = 3.80 and 3.84 for gonorrhoea and chlamydia versus 2.87 for syphilis), reporting the patient's name to the health department (means = 3.24 and 3.07 versus 3.43), referring the patient elsewhere for treatment (means = 1.66 and 1.66 versus 2.06), and giving the patient medication for partners (means = 1.81 and 1.91 versus 1.52). Particularly close means, in spite of statistically significant differences, were evident for telling the patient to avoid sex during treatment, to use condoms, and to notify sex partners.

DISCUSSION

This survey provided a portrait of private and public doctors' practices after diagnosing and treating three nationally relevant STDs. Findings show doctors (1) provided appropriate post-treatment instructions to patients, (2) practised patient referral as a means of STD management, (3) reported cases to health departments intermittently, and (4) treated gonorrhoea and chlamydia in similar way, while treating syphilis somewhat differently.

Most doctors told their patients to avoid sex during treatment, use condoms thereafter, and most gave accurate instructions to refer sex partners for treatment and told patients why this was important. Such instruction may have limited effects on STD control, but only a small proportion of patients did not receive this basic information. However, sex partner follow up for all three STDs was confined to alerting patients they should refer their partners for treatment. The efficacy of this practice in private settings has not been evaluated, but its public practice has not matched the efficacy of collecting names and locating information for sex partners, and then contacting them directly.[12 13] Practice related factors, such as patient volume, time constraints, and lack of reimbursement may serve as barriers to provider based partner notification.

Physicians' case reporting was inconsistent. Between 44% and 50% of providers "always" reported cases to health departments: notably, the reporting rate for syphilis (50%) was not much higher than for the other two STDs. Knowledge of STD reporting laws may account for some of the deficit, as might reliance on laboratories to report cases. However, although a majority of doctors were aware of laboratory authority to report syphilis and gonorrhoea, most did not know laboratories report chlamydia.

Similarities among the transmission and symptom characteristics of gonorrhoea and chlamydia, plus existing guidelines for presumptive treatment of chlamydia in the presence of gonorrhoea,[14] promote the similar post-diagnosis practices that were found for these two STDs. The prominence of syphilis in public health is consistent with differences in post-diagnosis practices, especially higher reporting rates and more follow up with patients.

CONCLUSIONS

Limitations beyond self report social desirability and memory issues include sample homogeneity with respect to racial heritage, ethnicity, and sex. While this paper may describe doctors accurately, and probably male white doctors, inferences about others are more speculative. The same rule applies to doctors practising in other AMA specialties. Two final questions are (1) do post-STD diagnosis practices by doctors in private practice affect STD rates and, if so, (2) which of these practices are most effective. Possible answers may be creating easier reporting mechanisms or distributing medications for partners. Research is needed in these areas.

Table 2 Means and standard deviations (SD) for items by STD diagnosed

Item	Gonorrhoea		Chlamydia		Syphilis			
	Mean	SD	Mean	SD	Mean	SD	Univariate F	p Value
1 Treat patient presumptively	3.80_a	1.5	3.84_b	1.5	2.87_c	1.8	1009.1	0.0001
2 Refer patient elsewhere	1.66_a	1.2	1.66_a	1.2	2.06_b	1.4	396.5	0.0001
3 Tell patient no sex during tx	4.63_a	0.9	4.61_b	0.9	4.61_b	0.9	3.9	0.035
4 Tell patient to use condoms	4.55_a	1.0	4.57_a	1.0	4.57_a	1.0	0.6	ns
5 Tell patient why to notify partner(s)	4.71_a	0.7	4.70_a	0.7	4.72_b	0.7	6.9	0.004
6 Give patient meds for partner(s)	1.81_a	1.1	1.91_b	1.2	1.52_c	1.0	417.1	0.0001
7 Instruct patient to tell partner to seek diagnosis and tx	4.72_a	0.7	4.71_b	0.7	4.74_c	0.7	13.2	0.0001
8 Collect partner information	1.53_a	1.1	1.53_a	1.1	1.56_b	1.1	12.5	0.0001
9 Follow up with patient to see if referred partner(s)	2.83_a	1.6	2.81_b	1.6	3.03_c	1.6	32.2	0.0001
10 Send pt information to health department	1.87_a	1.4	1.82_b	1.4	1.97_c	1.5	96.5	0.0001
11 Tell patient to notify health department	2.71_a	1.7	2.63_b	1.7	2.79_c	1.7	83.7	0.0001
12 Report patient name to health department	3.24_a	1.8	3.07_b	1.8	3.43_c	1.8	220.4	0.0001
13 Lab contacts health department	3.72_a	1.7	3.58_b	1.7	3.83_c	1.6	135.6	0.0001

Multivariate F = (26, 2578) = 18.73, p<0.0001.
Likert scale 1 = "never", 2 = "sometimes", 3 = "half the time", 4 = "usually", 5 = "always".
Different subscripts denote significant differences on post hoc comparisons.
N=2605 (missing cases excluded listwise).

CONTRIBUTORS

DHMcC was responsible for developing the manuscript concept and design; for the statistical analysis; and for writing, editing and revising the manuscript; NL assisted in the development of the concept for the manuscript and with the writing and editing of the background for the manuscript; MH assisted in the development of the concept for the manuscript and editing and revising the manuscript. He was also lead for the statistical analysis section; JStL initiated the original study from which this manuscript was developed. She supervised the collection and reporting of data for the original study, and assisted in the statistical analysis for this manuscript.

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