Management of Sexually Transmitted Infections in New York State Health Care Organizations: Who Is Thinking About the Quality of STI Care?

John Patrick B. Janowski, AB, William S. Garrett, BS,* Daniel J. Feller, MPA,* Rebecca Hathaway, MPA,† John Kushner, BA,† Matthew Pelish, PhD, MPA,‡ and Bruce D. Agins, MD, MPH**

Background: Rising rates of sexually transmitted infections (STIs) warrant a renewed focus on the management of STIs in health care organizations. The extent to which hospitals and community health centers (CHCs) have established processes and allocated staff for the management of STIs within their organizations remains poorly understood.

Methods: A New York State Department of Health survey was distributed electronically through a closed state communication network to targeted administrators at New York State hospitals and CHCs. The survey asked if STI management in their facilities included the following: the ability to measure and report rates of STIs, a process to assess the quality of STI care and treatment outcomes, and a centralized person/unit to coordinate its work throughout the facility. Multivariate analysis was performed to identify whether organizational characteristics were associated with survey findings.

Results: Ninety-five percent (243/256) of hospitals and CHCs responded to the survey. Fifty percent of respondents had a person or unit to report rates of STIs; 30% reported an organization-wide process for monitoring the quality of STI care, which, according to the multivariate analysis, was associated with CHCs; only 23% reported having a centralized person or unit for coordinating STI management.

Conclusions: Most facilities report STI cases to comply with public health surveillance requirements but do not measure infection rates, assess the quality of STI care, or coordinate its work throughout the facility. The development of this organizational capacity would likely decrease STI rates, improve treatment outcomes, and address local public health goals.

From the *Office of the Medical Director, New York State Department of Health (NYSDOH) AIDS Institute, New York, NY; †Office of Health Emergency Preparedness, NYSDOH, Menands, NY; and ‡NYSDOH, Bureau of Healthcom Network Systems Management, Menands, NY

Acknowledgments: The authors gratefully acknowledge Meredith Baumgartner, Christopher Delker, Rachel deLong, Laura Fitzpatrick, Kristen Magnuson, Alison Muse, Julia Schillinger, Thomas Tallon, and Kameron Wells for their contributions to survey implementation, data collection from NYCDOHMH and NYSDOH sources, manuscript review, and administrative support.

Current affiliation of John Patrick B. Janowski, MD candidate: Albert Einstein College of Medicine, Bronx, NY.

Correspondence: Bruce D. Agins, MD, MPH, NYSDOH AIDS Institute, 90 Church St, 13th Floor, New York, NY 10007-2919. E-mail: bruce.agins@health.ny.gov.

Conflict of interest: The authors have declared that there is no conflict of interest.

Received for publication November 9, 2013, and accepted July 3, 2014.

DOI: 10.1097/OLQ.0000000000000171

The Centers for Disease Control and Prevention (CDC) estimates that 20 million new cases of sexually transmitted infections (STIs) are diagnosed annually in the United States.[1] The latest national reports suggest that bacterial STI rates are rising; from 2010 to 2011, the chlamydia and gonorrhea case rates per 100,000 increased by 8% and 4%, respectively. The syphilis case rate per 100,000 decreased in women but increased in men who have sex with men.[2] This STI resurgence presents an enormous burden to the US health care system, especially because many STIs are asymptomatic and, if left untreated, can cause serious and costly medical complications.[3]

When considering these rising national STI rates, we note several current aspects of STI management in New York State (NYS). Most STIs are diagnosed and treated at health care facilities other than public health sexually transmitted disease (STD) clinics operated by local health departments (Table 1). These health care facilities, including hospitals and community health centers (CHCs), inevitably will assume expanded clinical and public health roles following reductions in health department expenditures and direct service provision.[4] In 2010, we conducted an informal pilot study of 38 NYS hospitals and CHCs to determine facility rates of syphilis, chlamydia and gonorrhea, and whether the quality of STI care was monitored. We learned that these facilities had no manner to easily or uniformly collect STI data both within and across departments to calculate infection rates or assess appropriateness of care.

Given these findings, we became further convinced of the need to better understand how facilities are organized to obtain and use STI data. In 2011, we undertook a formal survey of NYS hospitals and CHCs to determine whether organizational processes for monitoring STI infection rates and assessing the quality of STI care currently existed. We sought to learn where STIs were treatedand whether any centralized person or unit coordinated STI clinical services and management throughout the facility.

METHODS

Design and Study Population

All 291 NYS hospitals and CHCs regulated by New York State Department of Health (the NYSDOH) and certified to receive public funds through Medicaid and Medicare were surveyed using the Health Emergency Response Data System (HERDS). The HERDS is an electronic Web-based information network operated by NYSDOH for communication of emergency alerts and conducting surveys, which has been previously described.[5,6] Targeted facility senior administrators receive an e-mail alert whenever a new message is posted to this network, which requires a confirmation of receipt. The survey was posted

TABLE 1. NYS STI Cases by Diagnosing Provider Type, 2012

	Chlamydia		Gonorrhea		Primary and Secondary Syphilis	
	Cases	Percent	Cases	Percent	Cases	Percent
New York City (NYC)						
STD clinic	5940	9.5	2866	19.4	222	22.3
Jail	2957	4.7	586	4.0	6	0.6
FQHC	8172	13.1	2116	14.3	139	14.0
Other	45391	72.7	9179	62.2	629	63.2
Subtotal cases, NYC	62,460		14,747		996	
NYS outside NYC						
Hospital	5854	15.3	2204	28.0	62	16.5
CHC	3017	7.9	573	7.3	31	8.3
STD clinic	4009	10.5	1437	18.2	55	14.7
Private practice	15592	40.8	2068	26.2	158	42.1
Planned Parenthood	6171	16.1	1058	13.4	8	2.1
Other	2117	5.5	283	3.6	14	3.7
Missing	1467	3.8	261	3.3	47	12.5
Subtotal cases, NYS outside NYC	38,227		7884		375	
Total cases, NYS	100,687		22,631		1371	

NB: NYS and NYC health departments do not use the same categories for classifying health care organizations in their data systems.
Sources: NYC Department of Health and Mental Hygiene–Bureau of STD Prevention and Control; NYSDOH AIDS Institute–Division of Epidemiology, Evaluation and Research.
FQHC indicates federally qualified health center.

to HERDS along with a cover letter explaining its purpose and completion deadline. As with other surveys focusing on specific information requests, if administrators were unable to answer the survey's questions, they delegated the task to the most appropriate staff person. Private office practices, Veterans Administration facilities, and correctional health service units are not part of this NYSDOH network and were not surveyed.

The survey was posted on March 24, 2011. Several rounds of follow-up calls were made and e-mails sent to the medical directors of facilities that had not completed the survey within a week. Respondents from follow-up calls and e-mails submitted data via fax and e-mail. Surveys were accepted until July 29, 2011. When survey responses were unclear, the facility was contacted directly by telephone or e-mail to ensure the accuracy of the collected data.

The survey contained 5 brief questions intended to obtain basic information about measuring STI rates, monitoring the quality of STI care, coordinating STI management, departments most frequently treating STIs, and primary staff points of contact (Table 2). Numbers 1 to 3 were constructed as simple binary "yes" or "no" questions; "I don't know" or "unsure" were not included to encourage discussion within each facility about how to answer questions and promote delegation of the survey to an appropriate respondent. For questions 3a and 4, respondents were able to submit multiple answers.

Data Analysis

Specialty hospitals and same-campus facilities were excluded from the analysis, resulting in 256 eligible survey respondents. After compilation of survey responses, data were analyzed by health care facility type—categorized as hospital or CHC. Results were stratified by the binary (yes/no) response to the first 3 survey questions. Univariate associations between the survey responses and specific organizational characteristics were explored using logistic regression. These characteristics included the following: facility type, number of departments commonly treating STIs, caseload/facility size, HIV program, family planning program, county-level STI rate per 100,000 residents, and region (New York City vs. rest of NYS). Multivariate analysis was conducted for those survey questions with multiple significant predictors in the univariate analyses ($P < 0.05$). R 2.15.2 (R Foundation for Statistical Computing, Vienna, Austria) was used for all analyses.

For each facility, the number of self-reported departments in which STIs are most commonly seen was quantified and treated as a continuous variable. For hospitals, the total outpatient volume in 2011 was used as a proxy for facility size and was treated as a continuous variable. This information was obtained from the NYSDOH Statewide Planning and Research Cooperative System. For CHC facility size, the number of patients served in 2011 was used and treated as a continuous variable. This information was obtained from the Health Resources and Services Administration Uniform Data System.

Facilities were listed as having an HIV program if they participated in the NYS HIV Quality of Care program, which is limited to those facilities with an HIV caseload greater than 50 (n = 66). All of these facilities have established systems for tracking and reporting HIV cases, as well as formal HIV quality management programs that adhere to statewide standards and are monitored to assure that they are implemented. Facilities with a Family Planning program were identified using the NYSDOH database of agencies that receive a combination of Title X and state funding and are held to Title X standards

TABLE 2. Survey Questions

1. Does the facility have any person or unit that tracks and reports rates for STIs? (Yes/No)
2. Does the facility have a process in place throughout the entire facility for monitoring quality and treatment outcomes for the care of STIs? (Yes/No)
3. Does the facility have a centralized person or unit for coordinating STI management that serves as a "home" for STIs? (Yes/No)
4. In which of the following departments within the facility are STIs most commonly treated? (Check all that apply) [ED, General Medicine, OB-GYN, HIV, Other] If other, please identify.
5. Please provide a primary point of contact for further information on the handling of STI care and policies within the facility. [Name, Title, Phone number, E-mail]

(n = 22). The county-level STI rate was measured as the number of cases of chlamydia per 100,000 residents in 2011. These rates were taken from the CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention Atlas. Chlamydia was used as a proxy for other STIs because county chlamydia and gonorrhea rates in NYS are strongly correlated ($R^2 = 0.91$, $P < 0.05$).

RESULTS

Ninety-five percent of the 256 facilities completed the survey (n = 243). Specifically, 183 (98%) of 186 hospitals and 60 (86%) of 70 CHCs responded. This high response rate is similar to those of other NYSDOH surveys administered through HERDS to licensed health facilities.[5,6]

Departments that most commonly treat STIs include the following: emergency department (ED; 70%), obstetrics & gynecology (OB-GYN) clinic (51%), general medicine clinic (39%), HIV clinic (26%), and other (36%). Most respondents who selected "other" specified adolescent medicine department (9%), outpatient clinics (9%), pediatrics/pediatric ED (6%), STI/sexual health clinic (3%), and occupational health/employee health service (2%). Results sorted by hospitals versus CHCs are included in Table 3.

Of surveyed health care organizations, 51% of hospitals and 47% of CHCs identified a designated staff person or unit to track and report STIs (Table 4). Only 30% responded affirmatively that they had an agency-wide process for monitoring the quality of STI care, including treatment outcomes. Community health centers were more likely than hospitals to have this type of process (50% vs. 23%, $P < 0.01$). Finally, only one-quarter (23%; hospitals 25%, CHCs 30%) of surveyed facilities reported having at least 1 designated person or centralized unit coordinating STI management. Identified persons centrally coordinating STI management among these 57 facilities include an infection prevention/control practitioner (n = 11), quality improvement/process improvement director (n = 5, all from CHCs), or nurse (n = 5, all from CHCs). Identified units centrally coordinating STI management include infection control (n = 28, all from hospitals), HIV/ID service or clinic (n = 7), STD clinic (n = 2), ED (n = 1), nursing department (n = 1), and occupational medicine (n = 1); 1 respondent cited the local health department.

Table 5 describes the surveyed hospitals and CHCs by organizational characteristics. Table 6A–C summarizes the associations between these characteristics and responses to questions 1 to 3, which are presented as odds ratios (OR) and accompanying 95% confidence interval (CI). None of the variables studied were significant predictors of whether a facility has a person/unit that reports STI rates (Table 6A), or whether it had a centralized person/unit for coordinating STI management (Table 6C). Facility size, county-level STI rates, the number of departments commonly treating STIs, presence of a family planning program, and region were not associated with any of the organizational functions addressed by the survey. In the univariate analysis, both CHCs and facilities with an HIV treatment program were more likely to have a process for monitoring STI quality and treatment outcomes (OR, 0.3 [95% CI, 0.2–0.5] and 1.9 [95% CI, 1.1–3.4], respectively). However, when controlling for both of these variables, only the CHC facility type was independently associated with a process for monitoring quality and treatment outcomes for STIs (Adjusted OR, 0.3; 95% CI, 0.2–0.6; Table 6B).

Limitations

Although private office practices constitute a major service provider of STIs, monitoring their quality of care is not under the direct purview of the NYSDOH and they are not part of the HERDS network. Whether any given private office practice cares for a significant number of patients with STIs remains unknown, but most likely lack sufficient volume to establish systems dedicated to STI management.

Because all data were self-reported, some answers may have been inaccurate due to incomprehension of survey question content, improper notation of answers, exaggeration of responses given their oversight by the NYSDOH, or the absence of an informed STI point person to complete the survey. For example, some respondents may have conflated public health department reporting with having a system for monitoring performance and quality of care. Some facilities may have interpreted and, therefore, responded to survey questions differently from other facilities. However, any effect of differing interpretations of survey questions is likely mitigated by the magnitude of the finding that most organizations lack any STI-specific processes and staff functions. Although HERDS records the login identity of survey recipients, we did not directly identify the names and roles of individual respondents and were therefore unable to ascertain their roles within the facility.

Our analyses did not account for the following potential confounding variables: individual STI-focused practitioners within organizations, funding to address quality of care, history of focusing on specific subpopulations (e.g., lesbian, gay, bisexual, and transgender or HIV-infected patients), and history of serving as an STI sentinel surveillance site. However, because these characteristics apply to few facilities, they likely would not be statistically significant even if included in the analyses.

Finally, we are not able to know facility-based STI rates, which might have been key predictors of whether STI management processes were present or if they were coordinated. No formal reporting system of facility-based STI rates is maintained

TABLE 3. Departments Most Commonly Treating STIs

	All Facilities (n = 243)	Hospitals (n = 183)	CHCs (n = 60)
ED	169 (70%)	169 (92%)	0 (0%)
OB-GYN	124 (51%)	89 (49%)	35 (59%)
General medicine	94 (39%)	53 (29%)	41 (69%)
HIV	62 (26%)	40 (22%)	22 (35%)
Other departments entered by respondents*			
Outpatient clinics (ambulatory care, primary care)	22 (9%)	21 (11%)	1 (2%)
Family and adolescent medicine	22 (9%)	17 (9%)	5 (8%)
Pediatrics/pediatric emergency	14 (6%)	6 (4%)	8 (14%)
STI/sexual health clinics	6 (3%)	2 (2%)	4 (8%)
Occupational health/employee health service	5 (2%)	4 (2%)	1 (2%)

(*Responses varied considerably because the surveyed facilities do not have all of the departments listed in this table.).

TABLE 4. Facilities Responding Affirmatively to Survey Questions 1 to 3

	All Facilities (n = 243)	Hospitals (n = 183)	CHCs (n = 60)
1. Person/unit that tracks and reports rates for STIs	121 (50%)	93 (51%)	28 (47%)
2. Process for monitoring quality of STI care and treatment outcomes	73 (30%)	43 (23%)	30 (50%)
3. Centralized person/unit for coordinating management	57 (23%)	39 (25%)	18 (30%)

by the state or local health departments, or at most health care facilities.

DISCUSSION

All NYS health care facilities are required to report STI cases as part of routine surveillance and disease reporting. However, our pilot study and the data from our survey show that few hospitals and CHCs have established organizational processes to monitor agency-wide STI rates or the quality of STI prevention, screening, diagnosis, treatment, and outcomes. Furthermore, although STI care is scattered throughout multiple departments in most of these facilities, few have a locus for coordinating its services and functions.

In the univariate analysis, established processes for assessing the quality of STI care and treatment outcomes were associated with CHCs and with agencies having an HIV program. We hypothesized that because HIV programs must adhere to NYS standards and Ryan White Program requirements for quality management, they could potentially apply these same standards to STIs. Although this may be the case for certain hospitals or CHCs, in our multivariate analysis, HIV programs were not predictive of any organizational processes we studied pertaining to the management of STIs. In the multivariate analysis, CHCs were independently associated with having a process in place throughout the entire facility for monitoring quality and treatment outcomes for the care of STIs. We believe that the emphasis placed on the implementation of quality improvement methods and standards within federally qualified health centers supported by the HRSA Bureau of Primary Health Care[7,8] has resulted in the development of strong quality improvement programs, which work to improve performance and health outcomes for a number of priority health conditions and have integrated STIs into their ongoing quality management programs.

No organizational characteristics were significant predictors of whether a facility had a person/unit to track and report STI rates or whether it had a centralized person or unit for coordinating STI management. Number of departments commonly treating STIs, facility size, presence of formal family planning programs, county-level STI rate, and region were not associated with responses to any of the first 3 survey questions. These findings reflect the reality that STI care is often scattered across facilities.

Although individual providers within ED, OB-GYN, primary care, HIV, or family planning departments may champion STI care and management within their own units, few agencies have an organization-wide program or structure to effectively orchestrate STI quality of care activities. Hospitals or CHCs with a locus of coordination may have a motivated leader or clinician with a special interest in the quality of STI care.[9]

Like previous studies,[10] our survey found that STIs are commonly treated in the hospital ED and OB-GYN clinic (Table 3). Emergency departments are the main sites for STI diagnosis and treatment,[11] yet they face barriers to providing STI services, report poorer performance on several STI quality metrics including screening rates for bacterial STIs and HIV, and are not designed to provide follow-up or partner services.[12] Given this lack of continuous care, ED physicians must choose to either empirically treat STIs or delay treatment until laboratory confirmation of results is available.[11] Overtreatment, undertreatment, and mistreatment of STIs in EDs are of particular concern given the ability of bacterial STIs to develop antibiotic resistance.[13,14] Although obstetricians and gynecologists screen women for STIs at a higher rate than do physicians in other specialties, they do not always follow existing screening recommendations from the US Preventive Services Task Force and CDC, especially for nonpregnant women.[15] Similarly, OB-GYN clinics are common sites for STI treatment; however, care may be episodic or time-limited without integrated plans for ongoing follow-up with patients.

We also found that STIs are commonly treated in general medicine and primary care units in both NYS hospitals and CHCs (Table 3). In fact, in the United States, most STI care takes place in primary care settings,[16] but like EDs, they provide STI services of suboptimal quality.[16–18] Primary care clinicians' common attitudes about STIs—low confidence in the effectiveness of STI prevention services, limited time and staffing, financial barriers, and competing priorities[17]—may directly reduce the quality of STI care.[14] Primary care clinicians frequently do not conduct guidelines-recommended universal risk assessments and STI screening[16] and, in some cases, do not screen routinely even in populations with high rates of STIs and low condom usage.[19] An overreliance on the public health system to carry out several crucial functions, such as partner notification, may partly explain this lack of adherence to guidelines.[20] Many

TABLE 5. Surveyed Hospitals and CHCs by Facility Characteristics

	Hospitals (n = 183)	CHCs (n = 60)
No. departments commonly treating STIs*	2 (1–7)	2 (0–7)
Caseload/facility size*	83,028 (2,747–590,596)	24,099 (177–96,721)
Facilities with HIV program†	47 (26%)	19 (32%)
Facilities with family planning program†	12 (7%)	10 (17%)
County STI rate (chlamydia cases/100,000)*	434 (107–1200)	643 (130–1200)
Region		
New York City†	43 (23%)	33 (55%)
Rest of NYS†	140 (77%)	27 (45%)

*Mean (range).
†Number of facilities (percentage).

TABLE 6. (A–C) Logistic Regression Analyses of Facility Characteristics on Responses to Survey Questions 1 to 3

A. Characteristics Associated With Question 1: Person/Unit That Tracks and Reports STI Rates

	Unadjusted		
	OR	**95% CI**	***P****
Facility type			
CHC	Reference		
Hospital	1.02	0.6–1.8	0.96
No. departments commonly treating STIs	0.9	0.8–1.1	0.53
Caseload/facility size	1.0	0.9–1.1	0.47
HIV program			
No program	Reference		
Program	1.0	0.6–1.7	0.96
Family planning program			
No program	Reference		
Program	1.4	0.6–3.5	0.50
County STI rate	1.0	0.9–1.0	0.25
Region			
Rest of State	Reference		
New York City	1.2	0.7–2.1	0.49

B. Characteristics Associated with Question 2: Process for Monitoring the Quality of STI Care and Treatment Outcomes

	Unadjusted			Adjusted		
	OR	**95% CI**	***P****	**OR**	**95% CI**	***P***
Facility type						
CHC	Reference					
Hospital	0.3	0.2–0.5	<0.01†	0.3	0.2–0.6	0.02†
No. departments commonly treating STIs	1.1	0.9–1.3	0.92			
Caseload/facility size	0.9	0.9–1.1	0.47			
HIV program						
No program	Reference					
Program	1.9	1.1–3.4	0.03†	1.2	0.7–2.1	0.32
Family planning program						
No program	Reference					
Program	1.7	0.7–4.0	0.36			
County STI rate	1.0	0.9–1.0	0.17			
Region						
Rest of State	Reference					
New York City	0.96	0.5–1.7	0.96			

C. Characteristics Associated With Question 3: Centralized Person/Unit for Coordinating Management

	Unadjusted		
	OR	**95% CI**	***P****
Facility type			
CHC	Reference		
Hospital	0.6	0.3–1.1	0.20
No. department commonly treating STIs	0.9	0.7–1.1	0.52
Caseload/facility size	1.0	0.9–1.1	0.43
HIV program			
No program	Reference		
Program	1.2	0.7–2.1	0.96
Family planning program			
No program	Reference		
Program	0.9	0.3–2.6	0.98
County STI rate	1.0	0.9–1.1	0.59
Region			
Rest of State	Reference		
New York City	0.9	0.5–1.7	0.98

*χ^2 test.
†$P < 0.05$.

missed opportunities exist to provide needed STI services in primary care units, especially because patients are already present and care is ongoing. In summary, little progress has been made in organizing and integrating care within a variety of practice settings.

Several studies have called for the adoption of health care system–level policies that promote a focus on the quality of STI care. Emergency medicine publications describe the need for improved collaboration with health departments to assist in

sample analysis, cost sharing, patient follow-up, and quality management.[11] Studies of managed care organizations also describe the need for policies that improve STI quality, including the formal adoption and dissemination of STI guidelines[21–23]; centralized systems, dedicated staff, and electronic data systems that facilitate reporting; and provider feedback and reminder systems.[21] Overall, these actions have been shown to empirically improve quality of care. For example, an OB-GYN study reported that the introduction of HEDIS measures for chlamydia screening prompted system-level interventions that increased screening rates and numbers of positive cases.[24]

In accordance with the aforementioned studies, we believe that it is crucial for hospitals and CHCs to adopt policies and strategies to assess and improve the quality of STI care. Learning from successful organizations, especially CHCs, which were more likely than hospitals in NYS to monitor the quality and outcomes of STI care, offers an opportunity for identifying best practices that can be spread and adapted. Future studies will be important to understand implementation strategies for effective STI care and consist of both qualitative and quantitative analyses. In particular, studies of the impact of different organizational structures and processes on STI treatment outcomes would contribute to our understanding of the best models of STI care and service delivery in the changing health care environment.

CONCLUSIONS

Our survey shows that although CHCs are more likely than hospitals to monitor the quality and outcomes of STI care, most NYS hospitals and CHCs lack systematic processes for monitoring facility-wide STI rates or the quality of STI services. Even fewer have an internal staff member or unit to orchestrate STI management activities even though services are typically scattered across multiple departments. This lack of organizational focus on STIs might preclude the delivery of comprehensive STI management in health care organizations, including prevention counseling, patient follow-up, and partner notification as well as the oversight of the quality of STI care. A clear need exists for both the health care system and health care organizations to address this gap to ensure that the resurgence in STI rates is curbed. Serious and costly STI complications could be avoided. Establishing organizational processes and structures for assessing the quality of STI care and coordinating STI management can aid not only patients and physicians but also communities by improving communicable disease outcomes.

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