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Patient-Reported Expedited Partner Therapy for Gonorrhea in the United States: Findings of the STD Surveillance Network 2010–2012

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Abstract

Background: Expedited partner therapy (EPT) has been shown to prevent reinfection in persons with gonorrhea and to plausibly reduce incidence. The Centers for Disease Control and Prevention recommends EPT as an option for treating sex partners of heterosexual patients. Few studies that examine how the reported use of this valuable intervention differs by patient and provider characteristics and by geography across multiple jurisdictions in the United States are currently available.

Methods: Case and patient interview data were obtained for a random sample of reported cases from 7 geographically disparate US jurisdictions participating in the Sexually Transmitted Disease (STD) Surveillance Network. These data were weighted to be representative of all reported gonorrhea cases in the 7 study sites. Patient receipt of EPT was estimated, and multivariate models were constructed separately to examine factors associated with receipt of EPT for heterosexuals and for men who have sex with men.

Results: Overall, 5.4% of patients diagnosed and reported as having gonorrhea reported receiving EPT to treat their sex partners. Heterosexual patients were more likely to have received EPT than men who have sex with men at 6.6% and 2.6% of patients, respectively. Receipt of EPT did not vary significantly by race, Hispanic ethnicity, or age for either group, although significant

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variation was observed in different provider settings, with patients from family planning/reproductive health and STD clinic settings more likely to report receiving EPT. Jurisdiction variations were also observed with heterosexual patients in Washington State most likely (35.5%), and those in New York City, Connecticut, and Philadelphia least likely to report receiving EPT (<2%).

Conclusions: With the exception of one jurisdiction in the STD Surveillance Network actively promoting EPT use, patient-reported receipt of the intervention remains suboptimal across the network. Additional efforts to promote EPT, especially for patients diagnosed in private provider and hospital settings, are needed to realize the full potential of this valuable gonorrhea control intervention.

BACKGROUND

Expedited partner therapy (EPT) is the practice of treating the sex partners of persons with curable sexually transmitted diseases (STD) without requiring their prior medical evaluation. In most instances, this involves giving patients medication or a prescription for medication to give to their sex partners; this is referred to as patient-delivered partner therapy. Randomized controlled trials conducted in the 1990s and in the last decade have established that EPT increases partner treatment and decreases patients' risk of recurrent gonorrhea or chlamydial infection.[1–3] This effect is particularly strong for gonorrhea, with EPT resulting in a 9% or greater absolute reduction in gonorrhea risk in the months after treatment.[3] More recently, investigators in Washington State reported that making patient-delivered partner therapy widely available at no cost to medical providers led to broad use of the intervention and seemed to decrease the rate of gonorrhea and chlamydia test positivity at the population-level in women.[4]

Centers for Disease Control and Prevention (CDC) STD treatment guidelines recommend that clinicians use EPT for treating sex partners of heterosexuals with uncomplicated gonorrhea. However, how often patients actually receive EPT has not been well described. At least half of US medical providers report using EPT at least sometimes, with 15% to 50% reporting that they do so routinely.[5–7] Although several studies have looked at EPT in single clinical sites,[8–10] data on EPT use in networks of clinics and population-based studies are extremely limited and do not provide a useful estimate of overall EPT use in the United States.[11]

We used data collected through the CDC's STD Surveillance Network (SSuN) to evaluate how often patients with gonorrhea report receiving EPT for their partners. A previously published study using SSuN data demonstrated a relationship between EPT and the legal and regulatory environment in SSuN jurisdictions.[12] The previous SSuN analysis was limited to data collected in 2010; we include 2 additional years of data in the current study with the broader goal of describing patient and provider differences in self-reported receipt of EPT among persons reported with gonorrhea.

METHODS

SSuN and Participating Sites

SSuN CYCLE 2 is a CDC-funded cooperative agreement supporting 12 city and/or state health departments to collect sentinel surveillance data related to cases of gonorrhea diagnosed and reported in their jurisdictions and on all patients seeking care in sentinel clinical facilities.[13] This network is designed to collect more detailed epidemiologic and health services data than is available through routine public health case reporting with the goal of informing national prevention and care programs.[14] Participating health departments randomly select a sample of reported gonorrhea cases and attempt to interview those cases using consensus protocols. Sites are required to contribute a minimum of 240 completed case interviews among the randomly selected cases annually to the national data set, although most sites contribute considerably more and are encouraged to set sample fractions reflecting their local capacity to recruit patients and conduct interviews. Participating sites transmit basic, de-identified data on all cases, as well as interview data for those in the random sample to CDC quarterly. The minimum number of interviews required reflects the variation in incidence across sites and overall funding available for the cooperative agreement.

Although 12 sites participated in SSuN cycle 2, the proportion of all reported cases that were randomly sampled varied from 4% to 97%, and local success in interviewing sampled cases varied substantially from 24.1% to 78.4%. To minimize potential response bias, we restricted our analyses to SSuN sites with interview completion rates of 40% or greater (Baltimore, California [excluding San Francisco], Colorado, Connecticut, New York City, Philadelphia, and Washington State).

The SSuN is a sentinel disease surveillance activity and as such did not require human subjects review by CDC. Collection of data from SSuN sites was conducted with Office of Management and Budget approval (Office of Management and Budget Number 0920–0842). No personally identifiable information was available to CDC or the analysts, or was used in any way for these analyses.

Description of Data

A random sample of gonorrhea cases reported between January 1, 2010, and December 31, 2012, were identified by local project staff and referred for interview. We defined patients eligible for receipt of EPT as those who reported 1 or more sex partners in the 60- to 90-day period before their gonorrhea diagnosis and who did not report seeking medical care specifically because of contact with just a single sex partner diagnosed and previously treated for any STD. Clinicians and public health staff would have no basis to offer EPT to patients reporting only a single previously treated partner.

In most jurisdictions, patients were asked questions specifically designed to determine whether the responding patient was given medications or prescriptions by their provider or local health department personnel for their most recent sex partner (e.g., “Were you given medication or a prescription to give to your partner/s?”). In Washington State, interviewers asked respondents about each of their sex partners in the prior 60 days, whether their

partners were already treated at the time of the interview, and, if so, how their partners were treated. Responses to this question included “original patient gave meds to this partner” and “original patient gave prescription to partner.” Persons who reported receiving medications or a prescription to give to a partner were defined as having received EPT. Information on the most recent sex partner is included in SSuN data sets.

We evaluated receipt of EPT among heterosexuals and men who have sex with men (MSM) separately because of ongoing concerns with the routine use of EPT for treating partners of persons with gonorrhea in gay, bisexual, and other MSM, including a lack of evidence supporting the efficacy of EPT among MSM, as well as the potential loss of opportunities to test these patients for other STDs, such as syphilis or HIV.[15] We defined MSM as men who, at the time of their SSuN interview, reported that they had any male sex partners in the 60 to 90 days before their STD diagnosis regardless of whether they also reported female partners. We defined the heterosexual population to include men not reporting any male sex partners and all female patients reporting male sex partners.

Data Analyses

Individual case weights were calculated to adjust for the site specific sample fractions, which varied from 10.3% to 25.8% of all reported cases, and for nonresponse based on the distribution of patient sex, age group, and diagnosing provider type (e.g., family planning clinic, STD clinic, etc) in the population of all reported cases. Analyses of weighted data allowed us to estimate the number and proportion of patients diagnosed and reported in each study site who were eligible for EPT and received EPT. We report standard Wald 95% confidence intervals (CIs) for estimated EPT use.

Covariates available in the SSuN data included MSM status, age group, race/Hispanic ethnicity, and category of diagnosing provider. Adjusted odds ratios (AORs) and 95% CIs for differences by these covariates were obtained by logistic regression using a generalized logit function and Taylor series variance estimates with a finite population correction. We selected reference categories either in the middle, or at the extremes, of observed distributions for contrast purposes. All analyses were performed using SAS 9.3 (SAS Institute, Carey, NC).

RESULTS

A total of 170,063 cases of gonorrhea were reported in the 7 selected SSuN sites during the study period, of which 23,363 (13.7%) were randomly selected for interview (Table 1). The sample fraction in sites meeting the thresholds for inclusion in the analysis varied between 10.3% and 25.8% of all cases reported. Project staff in these sites interviewed a total of 10,988 cases for a response rate of 47% of the overall random sample. Interview response rates varied across jurisdictions from 40.2% to 78.3%. Based on weighted analyses, we estimated that 92.3% of all persons reported with gonorrhea met our criteria as eligible to receive EPT (95% CI, 91.2%–93.4%). Among all eligible patients, 5.4% reported receiving EPT (95% CI, 4.6%–6.2%). We found that receipt of EPT varied significantly between MSM and heterosexual patients, between sites, and by provider setting.

Men who have sex with men comprised an estimated 27.9% (95% CI, 26.1%–29.8%) of all reported cases. Among these, 96.1% were estimated to be eligible for EPT at the time of their diagnosis (95% CI, 94.1%–98.2%). The overall percentage of MSM patients estimated to have received EPT was 2.6% (95% CI, 1.7%–3.4%). This percentage varied by site from less than 1% in New York City to 13.2% in Baltimore (Table 2). In a multivariate model of MSM patients controlling for age group, race/ethnicity, provider setting, and SSuN site, significant variation in receipt of EPT was observed by SSuN site and by diagnosing provider setting. Men who have sex with men reported in Baltimore (AOR, 7.29; 95% CI, 1.62–32.78) and Washington State (AOR, 6.73; 95% CI, 2.38–19.10) were significantly more likely to report receiving EPT, and those diagnosed in New York City (AOR, 0.04; 95% CI, 0.0–0.35) were less likely to report receiving EPT compared with MSM diagnosed in the reference site (Colorado). Men who have sex with men who received their diagnosis in family planning/reproductive health settings (AOR, 2.54; 95% CI, 1.03–6.26) and in other/unknown settings (AOR, 2.21; 95% CI, 1.00–4.87) were more likely to report receiving EPT compared with MSM reported from STD clinics.

Among heterosexual men and women, 90.8% (95% CI, 89.6%–92.1%) were eligible to receive EPT. Overall among these patients, 6.6% (95% CI, 5.5%–7.7%) reported receiving EPT. The proportion of eligible heterosexual patients with gonorrhea reporting receiving EPT varied by jurisdiction (Table 3) from less than 1% in New York City to more than 35% in Washington State. Similarly, multivariate models exploring EPT use among heterosexuals while controlling for SSuN site, sex, age group, race/Hispanic ethnicity, and provider setting were constructed. Receipt of EPT was found to be significantly associated with SSuN site, patient sex, and provider setting. Eligible heterosexual patients in Washington State were much more likely to report receiving EPT than patients in Colorado, the reference site (AOR, 6.66; 95% CI, 4.03–10.99). Heterosexual men were less likely than women to report receiving EPT (AOR, 0.67; 95% CI, 0.47–0.95), and patients diagnosed in hospital or emergency departments (EDs), private provider settings, and other/unknown settings were less likely to report receiving EPT than those diagnosed in STD clinics.

DISCUSSION

Overall, we found that 5.4% of all patients diagnosed as having gonorrhea in SSuN jurisdictions reported receiving EPT from their provider or from the health department to treat their sex partners. Receipt of EPT varied significantly by sex of sex partners, with heterosexual patients reporting receipt of EPT more frequently than MSM (6.6% vs. 2.6%, respectively). Reported receipt of EPT also varied significantly by SSuN jurisdiction, regardless of MSM status.

A prior study of reported receipt of EPT in SSuN from 2010 found that 9.5% of patients with gonorrhea reported receiving EPT and demonstrated that permissive laws and favorable regulatory environments were associated with higher levels of EPT use.[12] Our analysis differs in several important respects from the previous study in that we include 2 additional years of data and exclude several jurisdictions with low interview response rates and/or sample fractions. In addition, we assessed receipt of EPT in MSM and among heterosexuals separately, with the goal of specifically identifying differences by patient characteristics,

regardless of the legal or regulatory environment. The criteria we used to determine which patients could be considered eligible for EPT also differed. More patients were considered eligible for EPT and included in our denominators for the current analysis. In light of the often considerable time that elapses between patients' initial gonorrhea diagnosis and their interview by SSuN investigators, a significant proportion of patients who reported in these interviews that their partners were treated may have had untreated partners at the time of their initial diagnosis; we considered these patients eligible to receive EPT. For these reasons, the more modest proportion of patients we observe reporting receipt of EPT in the current analysis may be more representative of patients receiving EPT across the full range of community settings in SSuN sites.

Among heterosexual gonorrhea cases reported in SSuN sites, we found that our estimates varied significantly, with roughly half of the sites reporting very few patients receiving EPT (<2%), half reporting modest levels (7%–10%), and one site reporting that more than one-third of heterosexual cases report being given EPT for their partners. We expected receipt of EPT to be lower among MSM patients than among heterosexuals because of the lack of a CDC recommendation for providing EPT to MSM with gonorrhea. Not surprisingly, we observed reported receipt of EPT among MSM to be fairly low overall, although there was variability across SSuN sites suggesting that local practices may differ somewhat. Baltimore City was conducting a pilot project implementing EPT for use exclusively among heterosexuals during the study period. However, this site also had the highest estimated receipt of EPT among MSM. Investigators in Baltimore report (personal communication) that a high proportion of local MSM patients also had female sex partners; these patients may not have disclosed their history of male sex partners to the provider at their initial diagnosis, would not have been considered MSM, and would have been provided EPT as per local recommendations for heterosexuals.

Reported receipt of EPT did not vary significantly by age group or by race and Hispanic ethnicity for MSM, and only marginal variation was observed among heterosexuals by these categories. This finding is promising, given inequalities historically observed in gonorrhea case incidence,[16] with younger age groups and non-Hispanic black populations bearing a disproportionate burden of disease. Any bias in receipt of EPT by patient demographic characteristics could have a differential impact on reinfection rates, potentially exacerbating existing inequities.

We also observed differences in patient-reported receipt of EPT by provider setting for both MSM and heterosexuals. Among both heterosexuals and MSM, patients reported from family planning/reproductive health clinics were significantly more likely to report receiving EPT. We also found that a lower proportion of heterosexual patients diagnosed in private providers and hospital/EDs and from unknown provider settings reported receiving EPT compared with patients diagnosed in STD clinics. Although systematically exploring the reasons for variations in EPT receipt across the spectrum of diagnosing providers was beyond the scope of our study, there may be plausible explanations for the higher proportion of patients we observed reporting receipt of EPT in family planning and STD clinic settings.

Family planning settings typically serve young women (and often their male partners) seeking reproductive health services. Clinicians in these settings may be more aware of the importance of assuring partner treatment to prevent reinfection because of their continuing engagement with their patients and may be more aware of EPT as an option for the management of STDs. Similarly, clinicians providing care in STD clinics, which are predominantly publically funded, could also be expected to be familiar with current CDC treatment guidance and partner services recommendations. Provision of EPT to patients in STD clinic settings may be somewhat less frequent than in family planning settings, which is consistent with our findings because clinicians practicing in STD clinics may be more aware of concerns with providing EPT to their MSM patients. They likely serve a higher-risk heterosexual patient population as well; higher-risk patients may not be considered suitable candidates for EPT by their providers because of the patient's real or perceived inability or unwillingness to contact recent sex partners.

Our analysis also highlights the extent to which receipt of EPT varies across jurisdictions in the SSuN. Some of this variation is due to local differences in the legal and regulatory status of EPT. Although EPT was permissible in some form in all SSuN sites included in our study as of December 2012, a statute explicitly enabling EPT did not become effective until October 2011 in Connecticut, and in New York, EPT is expressly authorized only for chlamydial infection.[17] This likely explains the lower proportion of patients reporting receipt of EPT in these sites. Receipt of EPT was also observed to be demonstrably higher in Washington State, where specific programmatic efforts to promote EPT were undertaken.

Investigators in King County, Washington, developed a model for population-based EPT promotion in the late 1990s, which was subsequently implemented throughout Washington State as part of a community-level randomized trial.[4,18] An important component of the intervention in Washington State was the provision of free EPT medications to index patients through partner packs or prescriptions that could be filled at no cost through participating pharmacies. At the conclusion of their trial, the investigators reported that the proportion of heterosexual patients provided EPT by medical providers was 34%.[4] Our estimate of the proportion of patients receiving EPT among heterosexuals in Washington State for 2010 to 2012 is similar to those findings, reflecting sustained levels of EPT use beyond their community trial period.

Our findings are subject to several important limitations. It is important to note that our data can only measure whether a patient reported receiving EPT from a provider, not whether the patient actually gave EPT to his/her sex partners. The STD Surveillance Network includes geographically diverse populations covering approximately 20% of the US population; however, results are not necessarily generalizable to those states or jurisdictions not participating in SSuN. Interview response rates varied between study sites, raising concerns about potential nonresponse bias. We calculated poststratification weights to adjust for differences in response by sex, age, and diagnosing provider setting, but unmeasured biases may remain. One SSuN site (Washington State) collected information on EPT from interviewer-documented partner management outcomes, rather than patient self-report in a single question. This method is arguably more sensitive for capturing all partner services

information, yet probably does not account for the large difference in EPT use observed between Washington State and other SSuN jurisdictions.

In conclusion, we estimate that 6.6% of heterosexuals and 2.6% of MSM with gonorrhea in 7 sites participating in SSuN received EPT from a provider or health department. This estimate varied between sites from less than 1% of patients in New York City to more than a third of eligible heterosexual patients in Washington State. Although receipt of EPT was higher among women, among heterosexuals overall, and in some treatment settings, receipt of EPT remains suboptimal in many settings. Our findings highlight the need for additional efforts to promote the intervention. Cost and reimbursement issues may be among the more problematic impediments to the expanded use of EPT. It is unlikely that state or local STD programs can absorb the cost and administrative burdens of implementing statewide, population-based EPT initiatives, as seen in the Washington State EPT trial.

However, some components of the Washington State intervention model, such as enhancing provider awareness, triaging through case-reporting mechanisms, or provision of EPT through health department staff (as part of routine partner management activities), might be more cost-effective and readily implemented in other locations. Much of the essential preparatory work of assuring a favorable regulatory and legal environment can also be accomplished without programmatic funding. Additional research is needed to evaluate the effect of cost to the index patient as a barrier to EPT, as well as to explore methods to minimize cost for providing treatment for partners among insured patients. Given the strong evidence demonstrating an individual-level benefit for EPT, recent work suggesting that EPT may lead to modest reductions in population-level morbidity, and findings demonstrating that considerably higher levels of uptake are indeed achievable,[4,19] we believe that additional efforts are warranted at all levels of the public health and health care systems to realize the full potential of EPT in the United States.

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TABLE 1.

Reported Cases of Gonorrhea, Sample Fraction, and Interview Response Rate by SSuN Site, 2010–2012

SSuN Jurisdiction	Reported Cases 2010–2012	Sampled Cases and Sample Fraction		Interviewed Cases and Response Rate	
Baltimore City	7602	1053	13.9%	825	78.3%
California (excluding SF)	80,867	8354	10.3%	3783	45.3%
Colorado	5604	1446	25.8%	602	41.6%
Connecticut	5006	1196	23.9%	507	42.4%
New York City	41,558	4594	11.1%	2103	45.8%
Philadelphia	20,587	4921	23.9%	1977	40.2%
Washington State	8839	1799	20.4%	1191	66.2%
Total	170,063	23,363	13.7%	10,988	47.0%

SF indicates San Francisco.

TABLE 2.

Point Estimates and AORs for Receipt of EPT Among MSM Diagnosed As Having Gonorrhea by Patient Characteristics, SSuN, 2010–2012

	EPT Use*	95% CI	Adjusted OR	95% CI
Total	2.6%	1.7–3.4	—	—
SSuN site				
Baltimore City	13.2%	6.1–20.3	***7.29***	***1.62–32.78***
California (excluding SF)	2.6%	1.2–3.9	1.28	0.45–3.72
Colorado	2.1%	0.2–3.9	Reference	—
Connecticut	1.4%	0.0–3.4	0.56	0.09–3.52
New York City	0.08%	0.0–0.2	***0.04***	***0.00–0.35***
Philadelphia	1.9%	1.1–3.9	0.77	0.17–3.55
Washington State	11.1%	6.6–15.7	***6.73***	***2.38–19.10***
Age group, y				
≤19	1.8%	0.4–3.3	Reference	—
20–24	2.9%	1.6–4.4	1.44	0.57–3.65
25–29	3.0%	0.6–5.5	1.71	0.54–5.37
30–39	2.3%	0.9–3.7	1.24	0.46–3.39
40+	1.9%	0.5–3.4	0.88	0.30–2.56
Race†				
Black	2.3%	0.8–3.8	0.79	0.25–2.58
Hispanic	1.9%	0.4–3.4	0.55	0.22–1.36
White	3.5%	2.0–5.0	Reference	—
Other	2.0%	0.1–3.9	0.47	0.16–1.37
Provider setting				
Hospital (including ED)	2.5%	0.5–4.5	1.72	0.73–4.04
FP/RH	5.8%	1.7–9.9	***2.54***	***1.03–6.26***
Private/HMO	1.3%	0.5–2.1	0.69	0.31–1.51
STD clinic	2.6%	1.5–3.6	Reference	—
Other public clinic	1.6%	0.0–3.8	1.65	0.40–6.86
Other/Unk‡	4.3%	1.2–7.4	***2.21***	***1.00–4.87***

*Point estimate of proportion of eligible MSM patients reporting receipt of EPT

†Race/Ethnicity missing for 1.2% of interviewed MSM respondents; “Other” category includes Asian, Native Hawaiian/Other Pacific Islanders, and other race.

‡Provider setting unknown for 6.4% of MSM respondents; “Other” (13.7%) includes HIV care, corrections, military, school-based, and provider types not otherwise specified.

SF indicates San Francisco; FP/RH, family planning/reproductive health; HMO, health maintenance organization; Unk, unknown.

TABLE 3.

Point Estimates and AORs for Receipt of EPT Among Heterosexuals Diagnosed As Having Gonorrhea by Patient Characteristics, SSuN, 2010–2012

	EPT Use*	95% CI	Adjusted OR	95% CI
Total	6.6%	5.5–7.7	—	—
SSuN site				
Baltimore City	7.8%	5.2–10.5	0.89	0.49–1.62
California (excluding SF)	7.9%	5.7–10.1	0.80	0.50–1.29
Colorado	8.9%	5.2–12.6	Reference	—
Connecticut	1.5%	0.2–2.7	***0.13***	***0.05–0.35***
New York City	0.04%	0.0–1.8	***0.08***	***0.02–0.33***
Philadelphia	1.7%	1.0–2.4	***0.16***	***0.09–0.29***
Washington State	35.5%	30.3–40.7	***6.66***	***4.03–10.99***
Sex				
Male	5.6%	3.7–7.4	***0.67***	***0.47–0.95***
Female	7.3%	5.9–8.7	Reference	—
Age group, y				
≤19	4.9%	3.7–6.3	Reference	—
20–24	6.2%	4.3–8.1	1.14	0.72–1.80
25–29	9.0%	5.6–12.3	1.57	0.98–2.53
30–39	9.6%	5.1–14.1	***1.82***	***1.03–3.23***
40+	4.2%	2.3–6.1	0.77	0.45–1.29
Race†				
Black	4.7%	3.5–5.8	1.00	0.63–1.59
Hispanic	7.2%	4.2–10.2	1.29	0.76–2.17
White	9.9%	7.1–12.8	Reference	—
Other	12.3%	7.4–17.2	1.46	0.82–2.61
Provider setting				
Hospital (including ED)	3.7%	2.2–5.2	***0.48***	***0.28–0.82***
FP/RH	13.6%	10.5–16.8	***1.53***	***1.00–2.33***
Private/HMO	5.3%	3.2–7.4	***0.46***	***0.28–0.76***
STD clinic	5.7%	4.2–7.3	Reference	—
Other public clinic	9.8%	2.6–17.0	1.48	0.71–3.11
Other/Unk‡	6.2%	4.0–8.4	***0.59***	***0.37–0.95***

*Point estimate of proportion of eligible heterosexual patients reporting receipt of EPT.

†Race/Ethnicity missing for less than 1% of interviewed heterosexual respondents; “Other” category includes Asian, Native Hawaiian/Other Pacific Islanders, and other race.

‡Provider setting unknown for 8.7% of heterosexual respondents; “Other” (7.1%) includes HIV care, corrections, military, school-based, and provider types not otherwise specified.

SF indicates San Francisco; FP/RH, family planning/reproductive health; HMO, health maintenance organization; Unk, unknown.