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## Syphilis Time to Treatment at Publicly Funded Sexually Transmitted Disease Clinics Versus Non–Sexually Transmitted Disease Clinics—Maricopa and Pima Counties, Arizona, 2009–2012

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### Abstract

Delays in syphilis treatment may contribute to transmission. We evaluated time to treatment for symptomatic patients with syphilis by clinical testing site in 2 Arizona counties. Fewer patients were tested and treated at publicly funded sexually transmitted disease clinics, but received the timeliest treatment; these clinics remain crucial to syphilis disease control.

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In the United States, primary and secondary (P&S) syphilis rates have approximately doubled from 2005 to 2013, increasing from 2.9 to 5.3 cases/100,000 population,<sup>1</sup> with infections predominately occurring among men who have sex with men (MSM) who frequently had HIV coinfection.<sup>2,3</sup>

Presumptive treatment (i.e., treatment the same day as symptom evaluation and testing) with a single-dose, long-acting intramuscular injectable penicillin G is recommended for symptomatic patients with syphilis.<sup>4,5</sup> However, diagnosis and treatment delays might occur in clinical settings where signs and symptoms that characterize primary (chancre) and secondary (rash) syphilis stages are not recognized by patients or medical providers.<sup>4,5</sup> Timely and correct syphilis treatment during these infectious stages is necessary to reduce transmission and prevent additional infections. Timely treatment has been reported to vary by clinic testing site.<sup>6</sup>

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Certain publicly funded sexually transmitted disease (STD) clinics in the United States, including those with catchment areas with high rates of syphilis, have experienced budget cuts and resource challenges.<sup>7</sup> In addition, increased access to private doctors and clinics impacted by US health care system changes might call into question the need for publicly funded STD clinics, although publicly funded STD clinics diagnose up to approximately 50% of P&S syphilis infections, in certain areas.<sup>7</sup> To evaluate the time-likeness of treatment services provided by the 2 publicly funded STD clinics in Maricopa and Pima Counties, Arizona, we compared time to treatment for P&S syphilis patients by clinic setting.

Providers are required to report syphilis infections to the county health department 5 days or less after clinical or laboratory diagnosis.<sup>8</sup> Primary and secondary syphilis cases reported from the 2 most populous Arizona counties (accounting for 76% of Arizona's population), Maricopa County (Phoenix area) and Pima County (Tucson area), during the period January 1, 2009, to December 31, 2012, were obtained from Arizona's STD surveillance system, Patient Reporting Investigation Surveillance Management (Florida Department of Health, Tallahassee, FL). Demographic and diagnosis variables, including age, race/ethnicity, sex, clinic type, and syphilis stage were collected and analyzed for P&S syphilis patients. Patients were organized into the following 3 diagnostic and treatment categories: (1) those who were tested and treated at a publicly funded STD clinic; (2) those who were tested at a non-STD clinic, but treated at a publicly funded STD clinic; and (3) those who were tested and treated at a non-STD clinic.

The outcome of interest for this study was time to treatment, which was defined as the number of days from syphilis test date to treatment initiation. Treated patients were defined as persons who had received a syphilis diagnosis with treatment documented within the surveillance system. If injected antibiotics were used, the date of the injections was counted as the date of treatment. If a prescription was provided, the date that the prescription was written was counted as the date of treatment. Public providers were defined as publicly funded STD clinics, whereas non-STD clinics included all clinic types (e.g., private clinics and non-STD publicly funded clinics). We compared median time to treatment for publicly funded STD clinics versus non-STD clinics.

Data analyses were conducted by using SAS Version 9.3 (SAS Institute, Inc, Cary, NC). The median time to treatment was calculated for each diagnosis and treatment category. Nonparametric data and age were assessed by using the Kruskal-Wallis test. Demographic comparisons were assessed by using  $\chi^2$  test. Risk ratios (RRs) were calculated to compare risk of not receiving treatment by testing setting at 7, 14, 21, 30, and 90 days posttesting.

A total of 884 P&S syphilis cases were reported in Maricopa and Pima Counties in 2009 to 2012. Maricopa and Pima Counties account for most of Arizona's P&S syphilis morbidity, with 89% of the 944 total cases reported in Arizona during this period. Maricopa County operates 1 publicly funded STD clinic, Pima County operated 3 publicly funded STD clinics, and there were approximately 200 non-STD clinics. Of the 884 P&S syphilis patients, 578 (65%) were initially tested at a non-STD clinic and 306 (35%) at a publicly funded STD clinic. Among all patients, 592 (67%) were treated 7 days or less after evaluation; 711 (80%) were treated 14 days or less after evaluation; 764 (86%) were treated

21 days or less after evaluation; 786 (89%) were treated 30 days or less after evaluation; 809 (92%) patients were treated 90 days or less after evaluation; 3 (<1%) were treated more than 90 days after evaluation; and 72 (8%) had no reported treatment.

Among those treated 90 days or less ( $n = 809$ ), 36% (289) were tested and treated at a publicly funded STD clinic; 18% (148) were tested at a non-STD clinic, but treated at a publicly funded STD clinic; and 46% (372) were tested and treated at a non-STD clinic. Eight percent (75) tested at either setting had no reported treatment 90 days or less after syphilis test. Among those treated, 713 (88%) were treated with penicillin. Ninety-three percent of patients were men, 38% were Hispanic, and 41% were white, non-Hispanic. The median age was 32 years (range, 15–74 years; Table 1).

Among those treated 90 days or less ( $n = 809$ ), no differences were reported by sex where patients had been tested and treated. However, overall distribution of race/ethnicity by testing and treatment setting varied. Hispanic patients were more likely to seek care at publicly funded STD clinics than a private clinic, with 44% of Hispanic patients evaluated and treated at public STD clinic versus 34% evaluated and treated at private clinics, whereas non-Hispanic white patients were more likely to seek care at private clinics than publicly funded STD clinics, with 53% evaluated and treated at private clinics and 32% evaluated and treated at public STD clinics ( $P < 0.01$ ). Patients tested and treated at non-STD clinics were older, with a median age of 35 years, compared with a median age of 30 years for those in the other groups ( $P < 0.01$ ; Table 1).

Patients tested at publicly funded STD clinics were more likely to be treated at all time points 7, 14, 21, 30, and 90 days posttesting, compared with those at non-STD clinics (RRs, 1.57 [95% confidence interval {CI}, 1.45–1.71], 1.23 [95% CI, 1.16–1.31], 1.13 [95% CI, 1.08–1.19], 1.09 [95% CI, 1.05–1.14], 1.05 [95% CI, 1.01–1.09], respectively; Table 2). Those tested at publicly funded STD clinics were less likely to remain untreated more than 90 days than those tested at non-STD clinics (odds ratio, 0.53; 95% CI, 0.29–0.91). No substantial differences in treatment by sex or race/ethnicity were reported.

Primary and secondary cases patients who were tested and treated at a publicly funded STD clinic had a median time to treatment of 0 days (range, 0–6.5 days). Those who were tested at non-STD clinics and treated at a publicly funded clinic had a median time to treatment of 8 days (range, 0–25 days). Those who were tested and treated at a non-STD clinic had a median time to treatment of 5 days (range, 0–18 days).

A Kaplan-Meier analysis was performed (Fig. 1), and patients who were evaluated and treated in a public clinic received the most timely treatment; only 20% were not treated on the day of their evaluation (day 0). In other words, nearly 80% received treatment on the same day they had been evaluated. In contrast, approximately 20% patients evaluated and treated in a private clinic received same-day treatment. Among patients who were diagnosed in private clinics and treated in a public clinic, only 7% received same-day treatment ( $P < 0.001$ ).

Our evaluation reported that most P&S syphilis patients in Maricopa and Pima Counties, Arizona, were initially tested at non-STD clinics (65%). Although most of these patients

were treated, treatment receipt and time to treatment differed by clinical site of testing and treatment. Patients who were tested and treated at publicly funded STD clinics received the timeliest syphilis treatment, with a majority receiving treatment the same day as testing, whereas those who were tested at non-STD clinics and treated at a publicly funded STD clinic had the longest time to treatment. The percent of untreated syphilis cases was twice the rate in the non-STD clinical setting when compared with the publically funded STD clinic.

The shorter time to treatment at STD clinics might be a reflection of symptom recognition and presumptive treatment by experienced STD clinicians. Non-STD clinicians might recognize syphilis symptoms, but wait for laboratory results before offering treatment. Syphilis is most contagious during P&S stages when moist, ulcerative lesions are present.<sup>4</sup> Thus, presumptive treatment the same day as testing is recommended to avoid spread to other sexual partners.<sup>9</sup> There is a potential role for point-of-care testing (e.g., new clinical laboratory improvement amendments-waived rapid syphilis test), which could allow community providers to obtain laboratory data in support of a decision to treat on the same day of diagnosis. The primary syphilis lesion is also a portal for HIV acquisition and transmission, with up to a 5-fold increased risk for HIV transmission when the lesion is present, rendering syphilis treatment a form of HIV prevention.<sup>2,10,11</sup>

Similar to national trends, increases in syphilis in Arizona have occurred among MSM.<sup>12</sup> Efforts to expand non-STD provider awareness of increasing syphilis rates, particularly among MSM, have been undertaken by the Arizona Department of Health Services and the Maricopa County Department of Public Health (MCDPH) through provider lectures, local newsletters, and distribution of surveillance reports.<sup>12,13</sup> In addition, efforts to improve symptom recognition by patients and providers have been used by both Maricopa and Pima Counties by using media campaigns and clinic-based education.<sup>14–18</sup> The National Network of STD/HIV Prevention Training Centers also provides online education for practicing clinicians who diagnose, treat, and manage patients with, or at risk for, STDs.

Because penicillin is expensive for non-STD clinics and syphilis diagnosis is sporadic, non-STD clinics in Arizona typically do not stock the medication, which necessitates a referral to publicly funded STD clinics and potentially prolonged time to treatment.<sup>6,19</sup> In 2009, to reduce time to treatment, the Maricopa County STD program began a partnership with 4 non-STD clinics that had reported the highest numbers of syphilis cases. The MCDPH delivers penicillin to these and other community clinics at no cost to the clinic or patient. The communicable disease investigators of MCDPH are also available at non-STD clinics to perform on-site partner services interviews, a practice resulting in greater numbers of partners being tested for syphilis.<sup>19</sup> Publicly funded STD clinics could consider exploring these types of associations with non-STD clinics to ensure prompt syphilis treatment availability.

Limitations associated with this study include Arizona's requirement that syphilis be reported to the health department 5 working days or less after a positive laboratory result. However, certain cases and treatment records might be unreported. In addition, we were unable to examine patient and clinic-level factors that potentially contributed to treatment

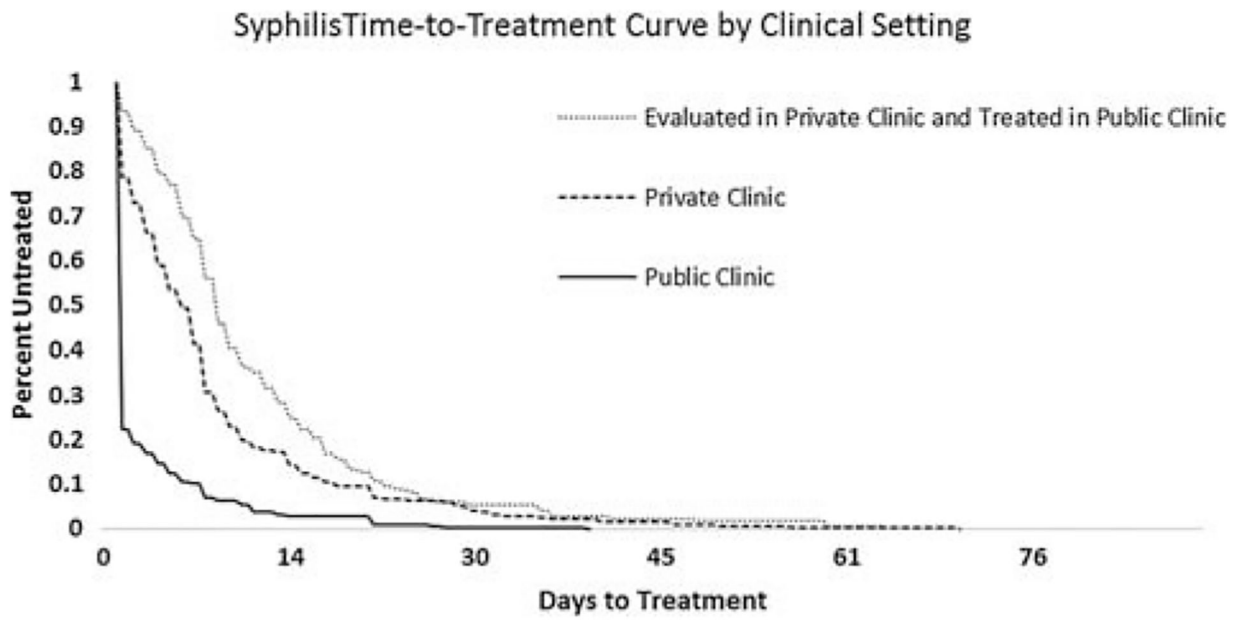
delays. Finally, differences in time to treatment among more specific categories of non-STD clinics were unavailable.

Publicly funded STD clinics offer services for persons who do not qualify for private health care coverage. However, even in the context of expanding health coverage, patients with medical insurance might seek care for STDs at publicly funded clinics where available because of convenience, confidentiality, and perception that these clinics provide better care.<sup>7,20,21</sup> We identified improved time to treatment for patients with infectious syphilis at publicly funded STD clinics. Beyond improved clinical care, STD clinics intervene in disease progression by serving as a critical link to case investigation and partner services. Improving time to treatment of syphilis at non-STD clinics is important, however publicly funded STD clinics are a key element of STD control.

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**FIGURE 1.**  
Syphilis time-to-treatment curve by clinical setting.

**TABLE 1.** Comparison of Syphilis Patients Who Obtained Testing and Treatment at Publicly Funded STD Clinic or Non-STD Clinic—Maricopa and Pima Counties, Arizona, 2009–2012

Characteristic	Total Treated 90 d (n = 809) No. (%)	Tested and Treated at Publicly Funded STD Clinic (n = 289) No. (%)	Tested at Non-STD Clinic, Treated at Publicly Funded STD Clinic (n = 148) No. (%)	Tested and Treated at Non-STD Clinic (n = 372) No. (%)	P
Sex <sup>*</sup>					
Female	56 (7)	16 (6)	9 (6)	31 (8)	0.33 <sup>†</sup>
Male	752 (93)	273 (94)	138 (93)	341 (92)	— <sup>‡</sup>
Race/ethnicity <sup>§</sup>					
Hispanic	307 (38)	136 (47)	65 (43)	106 (29)	<0.01 <sup>†</sup>
White, non-Hispanic	329 (41)	106 (37)	49 (33)	174 (47)	—
Black non-Hispanic American	87 (11)	27 (9)	19 (12)	41 (11)	—
Indian/Alaskan					
Native	32 (4)	5 (2)	4 (3)	23 (6)	—
Asian	7 (<1)	0 (0)	2 (3)	5 (1)	—
Age, median (range), y	32 (15–74)	30 (16–63)	30 (16–74)	35 (15–70)	<0.01 <sup>¶</sup>

\* Missing data (n = 1).

<sup>†</sup>  $\chi^2$  Test.

<sup>‡</sup> No data.

<sup>§</sup> Missing data (n = 47).

<sup>¶</sup> Kruskal-Wallis test.



**TABLE 2.**

Odds of Treatment of Syphilis 30 and 90 Days After Testing on the Basis of Site of Clinical Testing—  
Maricopa and Pima Counties, Arizona, 2009–2012 data.

	Total Patients (n = 884), No. (%)	P	RR (95% CI)
Treated 7 d	592 (67)		
Publicly funded	269 (88)	<0.01	1.57 (1.45–1.71)
STD clinic			
Non-STD clinic	323 (56)	—*	Reference
Treated 14 d	711 (80)		
Publicly funded	281 (92)	<0.01	1.23 (1.16–1.31)
STD clinic			
Non-STD clinic	430 (74)	—	Reference
Treated 21 d	764 (86)		
Publicly funded	286 (93)	<0.01	1.13 (1.08–1.19)
STD clinic			
Non-STD clinic	478 (83)	—	Reference
Treated 30 d	786 (89)		
Publicly funded	288 (94)	<0.01	1.09 (1.05–1.14)
STD clinic			
Non-STD clinic	498 (86)	—	Reference
Treated 90 d	809 (92)		
Publicly funded	289 (95)	0.01	1.05 (1.01–1.09)
STD clinic			
Non-STD clinic	520 (90)	—	Reference

\* No data.