

# Existence, Distribution, and Characteristics of STD Clinics in the United States, 2017

Public Health Reports  
2019, Vol. 134(4) 371-378  
© 2019, Association of Schools and  
Programs of Public Health  
All rights reserved.  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/0033354919847733  
journals.sagepub.com/home/phr



Beth E. Meyerson, PhD<sup>1,2</sup>; Alissa Davis, PhD<sup>3</sup>; Hilary Reno, MD, PhD<sup>4</sup>;  
Laura T. Haderxhanaj, PhD<sup>1,2</sup>; M. Aaron Sayegh, PhD<sup>5</sup>;  
Megan K. Simmons, PhD<sup>1,2</sup>; Gurprit Multani, MPH<sup>1,2</sup>;  
Lindsey Naeyaert, MPH<sup>1,2</sup>; Audra Meador, MPH<sup>1,2</sup>;  
and Bradley P. Stoner, MD, PhD<sup>6,7</sup>

## Abstract

**Objectives:** Studies of sexually transmitted disease (STD) clinics have been limited by the lack of a national list for representative sampling. We sought to establish the number, type, and distribution of STD clinics and describe selected community characteristics associated with them.

**Methods:** We conducted a 2-phased, multilevel, online search from September 2014 through March 2015 and from May through October 2017 to identify STD clinics in all 50 US states and the District of Columbia. We obtained data on clinic name, address, contact information, and 340B funding status (which requires manufacturers to provide outpatient drugs at reduced prices). We classified clinics by type. We also obtained secondary county-level data to compare rates of chlamydia and HIV, teen births, uninsurance and unemployment, and high school graduation; ratios of primary care physician to population; health care costs; median household income; and percentage of population living in rural areas vs nonrural areas. We used *t* tests to examine mean differences in characteristics between counties with and without STD clinics.

**Results:** We found 4079 STD clinics and classified them into 10 types; 2530 (62.0%) clinics were affiliated with a local health department. Of 3129 counties, 1098 (35.1%) did not have an STD clinic. Twelve states had an STD clinic in every county, and 34 states had  $\geq 1$  clinic per 100,000 population. Most STD clinics were located in areas of high chlamydia morbidity and where other surrogate needs were greatest; rural areas were underserved by STD clinics.

**Conclusions:** This list may aid in more comprehensive national studies of clinic services, STD clinic adaptation to external policy changes (eg, in public financing or patient access policy), and long-term clinic survival, with special attention to clinic coverage in rural areas.

## Keywords

STD clinics, health services research, safety-net health

<sup>1</sup> Department of Applied Health Science, Indiana University School of Public Health–Bloomington, Bloomington, IN, USA

<sup>2</sup> Rural Center for AIDS/STD Prevention, Indiana University, Bloomington, IN, USA

<sup>3</sup> Columbia University School of Social Work, New York, NY, USA

<sup>4</sup> Division of Infectious Disease, Department of Medicine, Washington University in St. Louis, St. Louis, MO, USA

<sup>5</sup> Department of Epidemiology and Biostatistics, Indiana University School of Public Health–Bloomington, Bloomington, IN, USA

<sup>6</sup> Departments of Anthropology and Medicine, Washington University in St. Louis, St. Louis, MO, USA

<sup>7</sup> St. Louis STD/HIV Prevention Training Center, St. Louis, MO, USA

## Corresponding Author:

Beth E. Meyerson, PhD, Indiana University School of Public Health–Bloomington, Rural Center for AIDS/STD Prevention, 1025 E 7th St, Bloomington, IN 47405, USA.

Email: [bmeyerso@indiana.edu](mailto:bmeyerso@indiana.edu)

Sexually transmitted disease (STD) clinics are important sexual health safety nets that serve primarily uninsured and underinsured populations and persons for whom disease burden is the greatest.<sup>1-5</sup> STD prevention and treatment are traditional public health services in the United States, although most STDs are now diagnosed by private providers.<sup>1,6</sup> Yet concern exists about the extent and quality of STD care delivered by primary care providers,<sup>7</sup> which explains continued interest in STD clinic survival and level of services.<sup>2,3,8,9</sup> National studies to address these questions have had 2 challenges: defining an STD clinic and sampling for national studies.<sup>10</sup>

The question of what constitutes an STD clinic is not discussed widely in the literature. Studies define STD clinics in various ways: as STD services provided by local health departments (LHDs), as dedicated (full-time) STD clinics within LHDs, and as unspecified public health providers of STD services.<sup>11-14</sup> The focus on STD clinics in LHDs may be an artifact of history<sup>1,15</sup> or reflect the safety-net aspects of these services, such as immediate availability and/or free or low-cost services.<sup>3,5,10,13</sup> Some studies do not clearly describe the organizational setting of STD clinics. Celum et al<sup>5</sup> defined STD clinics as clinics with public funding. Cramer et al<sup>3</sup> defined them as clinics that offer confidential services at free or reduced cost, including family planning clinics, community clinics, public health clinics, and STD clinics. However, Cramer et al did not clarify whether STD clinics were dedicated STD clinics in LHDs or elsewhere or how they compared with public health clinics generally. That said, Cramer et al recognized that STD services are provided by myriad organizations in the public health realm, which likely reflects what is happening today: some STD clinics are not operated by LHDs but may very well be the clinics primarily associated with a public health authority through contract or preferred referrals. Other clinics, such as community health centers or family planning clinics, may elect to provide STD services because of high STD rates among their patient populations. These conceptualizations of an STD clinic, however, have yet to be fully vetted or collectively claimed. Thus, what constitutes an STD clinic remains unclear.

A second challenge to national studies of STD clinics is sampling. Until now, studies used volunteer, purposeful, or limited geographic sampling<sup>14,16-18</sup> because, for the past few decades, no comprehensive list of STD clinics in the United States existed. Thus, knowledge of STD clinics, their characteristics, the level and quality of services provided, and challenges to their survival have been partially understood, and for only those clinics that are part of a funding network, are entities in a voluntary national association focused on STD prevention, and have the capacity to respond to surveys.

During periods of health reform, it is necessary to understand the effect of associated fiscal and policy changes on safety-net systems such as STD clinics. Landers'<sup>19</sup> 2016 decision tool reflects the continued need for clinical services in some communities despite coverage promises of the

Patient Protection and Affordable Care Act. Health care financing challenges are especially acute for government-sponsored clinics facing budget cuts amid increasing rates of STDs complicated by resistance to treatment.<sup>20</sup> Ensuring an STD services safety net embodies the nation's collective responsibility for population health.<sup>21</sup>

We therefore sought to define and enumerate STD clinics by constructing a national list and to identify what could be understood about clinics short of fielding surveys. This outcome can inform future national studies yielding information about STD clinics, level of services, patients, and sustainability of publicly provided STD clinical services. Findings may also help advance the national discussion of what constitutes an STD clinic. An important practical application is identifying health care provider communities in need of training in sexual health service provision and STD prevention.

## Methods

We conducted a 2-phased, multilevel search to identify STD clinics in the United States. For inclusion criteria, we adapted Cramer et al's<sup>3</sup> conceptualization to require affiliation with a public health authority, such as an LHD, a state health department, or regional health district. Thus, for this study, we defined an STD clinic as any publicly funded provider of STD services identified by or as the state health department or LHD. We based this choice on the importance of understanding public health STD infrastructure and responsibility. Limiting the definition to LHD-dedicated STD clinics was too narrow and including all clinics identified as STD providers was too broad.

In phase 1, we developed an initial list using the search term "STD services" from publicly available sources, such as the National Prevention Information Network, a voluntarily populated and updated database sponsored by the Centers for Disease Control and Prevention (CDC, <https://npin.cdc.gov>). We then confirmed and augmented this initial list through a systematic state-by-state online review of websites of state health departments, city or county health departments, and state public health associations. From this list, we measured STD clinic accessibility, that is, the extent to which 2-way communication between the clinic and the public was possible through internet access. We assessed web presence by whether the clinic had a website (yes/no) or whether it was identified on the website of a sponsoring organization (yes/no). We examined clinic websites to identify and/or confirm such information as location(s), hours of operation (hours posted, extended beyond normal business hours, if weekend hours), and clinic contact information (an email address). We gathered and confirmed web-based data from September 2014 through March 2015. We then matched clinics on this list with secondary county-level indicators to determine the national distribution of clinics and to evaluate accessibility. We completed this first phase of analysis in fall 2016.

To confirm list comprehensiveness, we consulted with colleagues at the CDC Division of STD Prevention and others with years of practice and research experience. We concluded that although the state-by-state search was thorough, it was not complete. A second phase initiated in January 2017 involved the integration of the phase 1 list with entities defined as STD clinics under the national 340B drug pricing program.<sup>22</sup> This federal program requires drug manufacturers to provide outpatient drugs to eligible entities at substantially reduced prices. That a clinic participates in the program may indicate affiliation with state or local public health authorities because clinics are often recommended by them for 340B designation. This recommendation, however, is not a program requirement. Analysis of this integrated list is reported here. We could not analyze clinic accessibility for phase 2 because the 340B listings did not include an email address or a website, and we had neither the time nor the resources for a second systematic collection of this information.

We matched lists from both phases by clinic name and address, removing exact duplicates. We then examined similar listings with a matching name and town but different street addresses by conducting an internet search to determine uniqueness. Once we integrated all clinics into the final list, we coded clinics according to the following characteristics: type of clinic, region (South, Midwest, West, Northeast), whether the clinic received 340B funding, and whether a clinic was part of a group of clinics (ie, affiliated with a larger entity such as an LHD, Planned Parenthood group, university, hospital, or other organization). We determined clinic type based on clinic identification and/or name (eg, Planned Parenthood is a family planning clinic; Johnson County Health Department is an LHD). For clinic types that were not clear, we conducted an internet search to confirm the clinic type.

We matched the list with indicators of community need by using county Federal Information Process Standards codes. We including the following indicators from the 2017 county health rankings<sup>23</sup>: (1) epidemiologic: chlamydia incidence per 100 000 population in 2014, HIV prevalence per 100 000 population in 2013, and teen birth rates averaged for 2008-2014; (2) health access-related: ratio of primary care provider to population in 2014; percentage uninsured for persons aged <65 in 2014; health care cost value in 2014 (price-adjusted Medicare reimbursements [Parts A and B] per enrollee); and (3) demographic/social: high school graduation rate in 2014-2015, percentage unemployed among persons aged >15 in 2015, median household income in 2015, percentage living in a rural area in 2010, and social associations per 10 000 population in 2014. Social association refers to the number of membership associations (ie, clubs with groups or members) in a county and is thought to be a surrogate indicator of social support. We selected these indicators of county need for their potential value to future studies evaluating STD clinics over time. We drew the list of counties for the analysis from the US Census 2016

estimate<sup>24</sup> and included entities identifying as counties, independent cities, and parishes (n = 3129).

### Data Analysis

We tabulated the number of STD clinics by county and state and the number of STD clinics per 100 000 population. We conducted *t* tests to examine significant mean differences between counties with clinics and counties without clinics for clinics with complete data on selected indicators of county need (chlamydia incidence, social associations, HIV prevalence, percentage uninsured, high school graduation rate, percentage unemployed, and percentage living in rural area<sup>25</sup>). We examined associations between key clinic characteristics by using Pearson  $\chi^2$  goodness-of-fit tests, with *P* < .05 considered significant. We conducted all statistical analyses by using SPSS version 24.<sup>26</sup>

### Results

The final database contained 4079 clinics: 1044 unique contributions from the state-by-state search (phase 1), 2267 unique contributions from the 340B data set (phase 2), and 768 matches found in both databases. Clinics were located in all 50 states and the District of Columbia. The 340B data set provided most of the clinics listed in the final database, whereas state department of health websites identified 1551 (85.6%) of the 1812 clinics identified in phase 1.

Most (64.8%; n = 2031 of 3129) US counties were served by  $\geq 1$  STD clinic, and 13 of 51 (25.5%) states and Washington, DC, had an STD clinic in every county (Table 1). Most STD clinics (n = 3035, 74.4%) received 340B funding.

The number of clinics in states ranged from 7 in New Hampshire to 288 in California (mean = 80 [SD = 71.1]; median = 58.0 [interquartile range (IQR)] = 25.0-119.5). The number of clinics per 100 000 population ranged from 0.2 in Utah to 5.6 in Wyoming (mean = 1.9 [SD = 1.44]; median = 1.2 [IQR = 0.7-2.8]). Thirty-one (60.8%) states had  $\geq 1$  clinic per 100 000 population.

We found significant differences in indicators of county need between counties with an STD clinic and counties without an STD clinic. In counties with  $\geq 1$  STD clinic, chlamydia rates were significantly higher, high school graduation rates were significantly lower, social associations per 10 000 population were significantly lower, and the percentage of the population living in rural areas was significantly lower than in counties with no STD clinic (Table 2).

In all regions, most clinics had 340B funding: 496 of 571 (86.9%) in the Northeast, 1311 of 1753 (74.8%) in the South, 739 of 866 (85.3%) in the West, and 489 of 889 (55.0%) in the Midwest. We counted 406 clinic groupings, which included 43.0% of clinics (n = 1754). We found significant differences in whether clinics had 340B funding by whether they were part of a group. Most clinics in a group (85.5%, 1499 of 1754) had 340B funding, compared with 66.1%

**Table 1.** Sexually transmitted disease (STD) clinics in the 50 US states and Washington, DC, by state, county, and population size, 2017 (N = 4079)<sup>a</sup>

State	No. of Clinics	No. of STD Clinics per 100 000 Population <sup>b</sup>	No. of Counties <sup>c</sup>	Counties With an STD Clinic No. (%)
Alabama	90	1.9	67	67 (100)
Alaska	25	3.4	20	18 (90)
Arizona	39	0.6	15	15 (100)
Arkansas	89	3.0	75	73 (97)
California	288	0.7	58	57 (98)
Colorado	65	1.2	64	37 (58)
Connecticut	120	3.4	8	8 (100)
Delaware	25	2.6	3	3 (100)
District of Columbia	8	1.2	1	1 (100)
Florida	254	1.2	67	64 (96)
Georgia	258	2.5	159	158 (99)
Hawaii	12	0.8	5	4 (80)
Idaho	11	0.7	44	11 (25)
Illinois	59	0.5	102	23 (23)
Indiana	28	0.4	92	23 (25)
Iowa	149	4.8	99	90 (91)
Kansas	97	3.3	105	76 (72)
Kentucky	24	0.5	120	24 (20)
Louisiana	168	3.6	64	64 (100)
Maine	32	2.4	16	16 (100)
Maryland	36	0.6	24	24 (100)
Massachusetts	28	0.4	14	7 (50)
Michigan	58	0.6	83	37 (45)
Minnesota	41	0.7	87	18 (21)
Mississippi	52	1.7	82	49 (60)
Missouri	60	1.0	114	48 (42)
Montana	24	2.3	56	16 (29)
Nebraska	21	1.1	93	8 (9)
Nevada	21	0.7	16	13 (81)
New Hampshire	7	0.5	10	6 (60)
New Jersey	41	0.5	21	17 (81)
New Mexico	114	5.5	33	33 (100)
New York	230	1.2	62	60 (79)
North Carolina	124	1.2	100	98 (98)
North Dakota	37	4.9	53	28 (53)
Ohio	161	1.4	88	88 (100)
Oklahoma	73	1.9	77	65 (84)
Oregon	64	1.6	36	33 (92)
Pennsylvania	82	0.6	67	30 (45)
Rhode Island	11	1.0	3	2 (67)
South Carolina	94	1.9	46	46 (100)
South Dakota	10	1.2	66	7 (11)
Tennessee	137	2.1	95	95 (100)
Texas	119	0.4	254	58 (23)
Vermont	20	3.2	14	11 (79)
Virginia	145	4.8	133	112 (84)
Utah	18	0.2	29	14 (48)
Washington	152	2.1	39	38 (97)
West Virginia	57	3.1	55	46 (84)
Wisconsin	168	2.9	72	70 (97)
Wyoming	33	5.6	23	22 (96)
Total	4079	1.3	3129	2031 (65)

<sup>a</sup>Based on a 2-phased, multilevel, online search from September 2014 through March 2015 and from May through October 2017. An STD clinic was defined as any publicly funded provider of STD services identified by or as the state health department or local health department.

<sup>b</sup>Counties include independent cities and parishes.

<sup>c</sup>Data source: US Census Bureau.<sup>24</sup>

**Table 2.** County need indicators by sexually transmitted disease (STD) clinic existence, 50 US states and Washington, DC, 2017<sup>a</sup>

Indicator <sup>b</sup>	No. of Counties <sup>c</sup>	County Has an STD Clinic		Mean (SD)	t Test <sup>d</sup>
		Yes	No		
Chlamydia rate per 100 000 population in 2014	2910	Yes		367.9 (186.33)	$t_{2254.91} = -15.08$
		No		269.6 (153.77)	
Uninsured at age <65 in 2014, %	3125	Yes		14.2 (0.05)	$t_{1830.01} = 3.37$
		No		14.9 (0.06)	
High school graduation rate in 2014-2015, %	2671	Yes		85.4 (0.08)	$t_{2669.00} = 11.47$
		No		88.9 (0.07)	
Unemployed at age >15 in 2015, %	3135	Yes		5.8 (0.02)	$t_{3133.00} = -11.10$
		No		5.0 (0.02)	
Rate of social associations per 10 000 population <sup>e</sup> in 2014	3136	Yes		12.7 (5.62)	$t_{1619.13} = 10.78$
		No		15.8 (8.68)	
HIV prevalence rate per 100 000 population in 2013	2338	Yes		185.2 (169.24)	$t_{1519.44} = -10.74$
		No		118.3 (115.48)	
Living in rural area in 2010, %	3136	Yes		52.4 (0.31)	$t_{2417.76} = 15.75$
		No		69.9 (0.29)	

<sup>a</sup>Based on a 2-phased, multilevel, online search from September 2014 through March 2015 and from May through October 2017. An STD clinic was defined as any publicly funded provider of STD services identified by or as the state health department or local health department.

<sup>b</sup>Data source: Robert Wood Johnson Foundation.<sup>23</sup>

<sup>c</sup>Data source: US Census Bureau.<sup>24</sup>

<sup>d</sup>Independent samples (unpaired 2-tailed t tests) were used to determine significant differences for variables, with  $P < .05$  considered significant. All values were  $P < .001$ .

<sup>e</sup>Social association refers to the number of membership associations in a county and is thought to be a surrogate indicator of social support.<sup>23</sup>

(1536 of 2325) of independent clinics ( $P = .01$ ). Only 49.4% (1499 of 3035) of 340B clinics were in a group.

### Types of Clinics

We classified STD clinics into 10 categories: (1) local health department (2530, 62.0%); (2) family planning clinic ( $n = 696$ , 17.1%); (3) community health center, including federally qualified health centers (FQHCs), FQHC look-alikes (ie, community health centers that function as FQHCs but are not designated as such), and stand-alone community-based clinics ( $n = 318$ , 7.8%); (4) school-based clinic ( $n = 148$ , 3.6%); (5) state health department–sponsored clinic ( $n = 138$ , 3.4%); (6) hospital-sponsored clinic ( $n = 88$ , 2.2%); (7) AIDS service organization ( $n = 84$ , 2.1%); (8) university-sponsored clinic ( $n = 48$ , 1.2%); (9) jail, juvenile detention, or probation/parole clinic ( $n = 26$ , 0.6%); and (10) a small category of “other,” including 2 Job Corps clinics and 1 Air Force base Special Supplemental Nutrition Program for Women, Infants and Children clinic (0.1%). University-sponsored clinics were available to the public and should not be confused with clinics established solely for university students, staff members, and faculty (Table 3).

We observed several patterns in characteristics by type of clinic. State health department clinics and family planning clinics were significantly more likely than other types of clinics to be located in the West, family planning clinics and community health centers were less likely to be located in the South than in other regions, and nearly half of community health centers and most of the jail, juvenile detention, and probation/parole clinics were in the Northeast. Furthermore, more than half of the AIDS service organizations were

located in the South and were less likely than other types of clinics to be in the West. Finally, school-based clinics were more likely to be located in the Northeast and the South than in other regions. Most clinics in 9 of the 10 clinic types received 340B funding (eg, 100% of jail-based clinics, 146 of 148 [98.6%] school-based clinics, and 680 of 696 [97.7%] family planning clinics); however, only 1615 of 2530 (63.8%) LHD clinics received 340B funding.

Local health department STD clinics were the primary providers for rural communities (Table 4). Family planning clinics and community health centers were primary providers in nonmetropolitan areas and in metropolitan areas with >1 million persons. State health department clinics were primarily associated with nonmetropolitan areas that were not adjacent to metropolitan areas.

### Discussion

To our knowledge, this study is the first to attempt to construct a national list of STD clinics in the United States since implementation of the Affordable Care Act in 2010. Although we did not capture complete information, we were able to identify basic information for program partners, policy makers, and future researchers. The only other large national study of STD clinic services about which we are aware was a study by Landry and Forrest<sup>10</sup> in 1996, in which 1437 LHDs reported providing STD services. We identified 2530 STD clinics that were affiliated with an LHD. Of this number, 2019 operated a dedicated STD clinic: 1758 LHDs had 1 clinic site and 261 had >1 clinic site. Although our data cannot directly compare with data from Landry and Forrest, they suggest a sustained LHD-affiliated STD clinic presence

**Table 3.** Characteristics of sexually transmitted disease (STD) clinics, 50 US states and Washington, DC, 2017 (N = 4079)<sup>a</sup>

Characteristics	No. (%)
Type of clinic	
Local health department	2530 (62.0)
Family planning clinic	696 (17.1)
Community health center	318 (7.8)
School-based clinic	148 (3.6)
State health department-sponsored clinic	138 (3.4)
Hospital-sponsored clinic	88 (2.2)
AIDS service organization	84 (2.1)
University-sponsored clinic	48 (1.2)
Jail, juvenile detention, probation/parole clinic	26 (0.6)
Other	3 (0.1)
Region <sup>b</sup>	
South	1753 (43.0)
Midwest	889 (21.8)
West	866 (21.2)
Northeast	571 (14.0)
Clinic has 340B funding <sup>c</sup>	3035 (74.4)
Clinic is part of a group of STD clinics	1754 (43.0)
No. of clinics in an STD clinic group, mean (range) [SD]	4.33 (2-35) [4.73]
Counties without an STD clinic (n = 51)	1098 (35.1)
States with an STD clinic in every county (n = 3129)	13 (25.5)

<sup>a</sup>Based on a 2-phased, multilevel, online search from September 2014 through March 2015 and from May through October 2017. An STD clinic was defined as any publicly funded provider of STD services identified by or as the state health department or local health department.

<sup>b</sup>Regions determined by using US Census 2014 data.<sup>24</sup> South: Alabama, Arkansas, Delaware, District of Columbia, Kentucky, Florida, Georgia, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington State, and Wyoming. Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

<sup>c</sup>Clinic is defined as an STD clinic and funded by the national 340B drug pricing program.<sup>22</sup>

in the past 20 years. This is important, given the challenge of ensuring that primary care providers offer standard-of-care sexual health services,<sup>3</sup> that insurers cover appropriate care and follow-up, and that many populations are reluctant to engage primary care providers for sexual health services,<sup>27</sup> particularly adolescents, gay and bisexual men, and persons of color.<sup>2</sup> That 35.3% of states had <1 STD clinic per 100 000 population and that 35.1% of counties had no STD clinic may partially explain the unprecedented number of STD infections in the United States.<sup>23,28</sup>

Issues of access (eg, hours of operation and potential for email communication with the clinic) and infrastructure (eg, human, organizational, and financial resources) appear to be perennial for clinics. Landry and Forrest identified the institutional limits (eg, staffing, days of operation) of providing STD services and access. And a 2015 study found limited use of electronic health records by LHDs.<sup>29</sup> We found the 340B

data insufficient to evaluate clinics' internet presence because no URL was identified with the listing of 340B clinics, which prevented an examination of access without substantial effort and funding.

As with other national clinic studies, we offer yet another definition of STD clinics at a time of ongoing national dialogue to define them. Although offering another definition of STD clinics is a limitation when comparing findings with other studies that define STD clinics differently, this definition builds on the emerging understanding that LHDs are not the only providers of STD services in a changing health care financing environment.

Counties with STD clinics predictably reported higher chlamydia rates than did counties without STD clinics, which reflected screening availability. Rural communities did not appear to be served well by STD clinics, although several rural states had more STD clinics per 100 000 population than more populous states. The importance of having an STD clinic at an LHD was confirmed when we analyzed data by rurality, and our findings echo findings by Owusu-Edusei et al<sup>30</sup> that rural counties were underserved by FQHCs. Nevertheless, having an STD clinic did not necessarily indicate sufficient coverage of STD services, because data on access to STD services and the level (ie, type and quality) of STD services offered by clinics nationally are not yet known.

Several questions remain: Why were all but LHD-associated clinics overwhelmingly 340B-associated? Local health departments are not prevented from participating in the 340B program. Is the 340B program an untapped opportunity for LHDs? Are there local or state policy barriers to participation?

The challenge of maintaining a current understanding of the existence and distribution of STD clinics across the United States is now introduced. How such a list should be updated should be discussed by entities with an interest: state and local STD directors and the CDC-sponsored National Network of STD Clinical Prevention Training Centers. Validation studies of the full list and state lists are warranted.

### Limitations

This study had several limitations. For one, integration of 340B data had limitations despite the importance of a national list for representative sampling in STD systems and services research. The association of STD clinics with the local or state public health authority was not always clear. We could only associate 340B clinics with a state or local public health government if there was a match with phase 1 data. Being a 340B clinic does not necessarily require health department recommendation of a clinic to the program.<sup>31</sup> It may indicate only that these clinics get special pricing for STD medications. Thus, the phase 1 list was sensitive and specific, and the addition of 340B clinics in phase 2 may have weakened specificity. The importance of an STD clinic's association with state or local health government is

**Table 4.** Types of sexually transmitted disease (STD) clinics by rurality designation with example cities and towns, United States, 2017 (N = 4079)<sup>a,b</sup>

Type (No.) of STD Clinics	Metropolitan, No.			Nonmetropolitan, No.				Rural, No.	
	Population >1 000 000 (n = 1219) <sup>c</sup>	Population 250 000-1 000 000 (n = 859) <sup>d</sup>	Population <250 000 (n = 494) <sup>e</sup>	Population >20 000 Adjacent to Metropolitan (n = 271) <sup>f</sup>	Population >20 000 Nonadjacent to Metropolitan (n = 138) <sup>g</sup>	Population 2500-19 999 Adjacent to Metropolitan (n = 433) <sup>h</sup>	Population 2500-19 999 Nonadjacent to Metropolitan (n = 344) <sup>i</sup>	Population <2500 Adjacent to Metropolitan (n = 144) <sup>j</sup>	Population <2500 Nonadjacent to Metropolitan (n = 177) <sup>k</sup>
Local health department (n = 2530)	569	472	313	185	82	356	262	134	157
Family planning clinic (n = 696)	296	158	86	47	29	37	38	3	2
Community health center (n = 318)	159	76	30	16	8	8	10	4	7
School-based clinic (n = 148)	40	64	23	1	0	18	2	0	0
State health department (n = 138)	31	26	21	11	0	7	22	1	10
Hospital-sponsored clinic (n = 88)	44	14	10	3	7	5	5	0	0
AIDS service organization (n = 84)	54	25	4	1	0	0	0	0	0
University-sponsored clinic (n = 48)	11	17	6	6	0	2	4	1	1
Jail (juvenile detention) (n = 26)	15	6	1	1	2	0	0	1	0
Other (n = 3)	0	1	0	0	1	0	1	0	0

<sup>a</sup>Based on a 2-phased, multilevel, online search from September 2014 through March 2015 and from May through October 2017. An STD clinic was defined as any publicly funded provider of STD services identified by or as the state health department or local health department. Numbers in columns sum to number in column head, and numbers in rows sum to number in row head.

<sup>b</sup>Data source: US Department of Transportation, Federal Highway Administration.<sup>25</sup>

<sup>c</sup>Examples: Wilmington, Delaware, and Boston, Massachusetts.

<sup>d</sup>Examples: Bridgeport, Connecticut, and Gainesville, Florida.

<sup>e</sup>Examples: Macon, Georgia, and Fargo, North Dakota.

<sup>f</sup>Examples: Key West, Florida, and Richmond, Indiana.

<sup>g</sup>Examples: St. Cloud, Minnesota, and Dillon, Montana.

<sup>h</sup>Examples: Lawrence, Kentucky, and Homerville, Georgia.

<sup>i</sup>Examples: Trenton, Missouri, and Raton, New Hampshire.

<sup>j</sup>Examples: Linton, North Dakota, and Standish, Michigan.

<sup>k</sup>Examples: Quitman, Mississippi, and Medicine Lodge, Kansas.

really about the sustainability of government-associated STD clinics and the ability of public health governments to meet their duty to ensure safety-net services. Another possible limitation was that we did not weight county-level analyses by population. However, our data were not gathered from surveys; therefore, population weighting was not necessary.

## Conclusion

Our findings and the resulting list of STD clinics provide information about clinics that can inform future studies of STD clinic services, organizational adaptation to external policy and funding environments, and clinic sustainability (particularly in rural areas). The list also creates opportunities to extend clinical training to the entire national STD workforce to maintain service quality.

## Acknowledgments

A national listing of clinics is available by contacting the corresponding author. The list should be publicly available by autumn 2019 through the Indiana University Rural Center for AIDS/STD Prevention.

## Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The authors declared no funding with respect to the research, authorship, and/or publication of this article.

## ORCID iD

Beth E. Meyerson, PhD  <https://orcid.org/0000-0003-1762-7179>

## References

- Eng TR, Butler WT, eds; Institute of Medicine. *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*. Washington, DC: National Academies Press; 1997.
- Golden MR, Kerndt PR. What is the role of sexually transmitted disease clinics? *Sex Transm Dis*. 2015;42(5):294-296. doi:10.1097/OLQ.0000000000000271
- Cramer R, Leichter JS, Gift TL. Are safety net sexually transmitted disease clinical and preventive services still needed in a

- changing health care system? *Sex Transm Dis.* 2014;41(10):628-630. doi:10.1097/OLQ.0000000000000187
4. Morgan JR, Drainoni ML, Sequeira S, Sullivan M, Hsu KK. Getting what you pay for: the economics of quality care for sexually transmitted infections. *Sex Transm Dis.* 2016;43(1):18-22. doi:10.1097/OLQ.0000000000000377
  5. Celum CL, Bolan G, Krone M, et al. Patients attending STD clinics in an evolving health care environment: demographics, insurance coverage, preferences for STD services, and STD morbidity. *Sex Transm Dis.* 1997;24(10):599-605.
  6. Workowski KA, Bolan GA. Sexually transmitted disease treatment guidelines, 2015 [published erratum appears in *MMWR Morb Mortal Wkly Rep.* 2015;64(33):924]. *MMWR Recomm Rep.* 2015;64(RR-3):1-137.
  7. McCree DH, Liddon NC, Hogben M, St Lawrence JS. National survey of doctors' actions following the diagnosis of a bacterial STD. *Sex Transm Infect.* 2003;79(3):254-256.
  8. Leichter JS, Heyer K, Peterman TA, et al. US public sexually transmitted disease clinical services in an era of declining public health funding: 2013-14. *Sex Transm Dis.* 2017;44(8):505-509. doi:10.1097/OLQ.0000000000000629
  9. Golden MR, Kerndt PR. Improving clinical operations: can we and should we save our STD clinics? *Sex Transm Dis.* 2010;37(4):264-265. doi:10.1097/OLQ.0b013e3181d5e01e
  10. Landry DJ, Forrest JD. Public health departments providing sexually transmitted disease services. *Fam Plann Perspect.* 1996;28(6):261-266.
  11. Paschal AM, Oler-Manske J, Hsiao T. The role of local health departments in providing sexually transmitted disease services and surveillance in rural communities. *J Community Health.* 2011;36(2):204-210. doi:10.1007/s10900-010-9298-6
  12. Drainoni ML, Sullivan M, Sequeira S, Bacic J, Hsu K. Health reform and shifts in funding for sexually transmitted infection services. *Sex Transm Dis.* 2014;41(7):455-460. doi:10.1097/OLQ.0000000000000135
  13. Hoover KW, Parsell BW, Leichter JS, et al. Continuing need for sexually transmitted disease clinics after the Affordable Care Act. *Am J Public Health.* 2015;105(suppl 5):S690-S695. doi:10.2105/AJPH.2015.302839
  14. Cuffe KM, Leichter JS, Gift TL. Assessing sexually transmitted disease partner services in state and local health departments. *Sex Transm Dis.* 2018;45(6):e33-e37. doi:10.1097/OLQ.0000000000000803
  15. Meyerson BE, Martich FA, Naehr GP. *Ready to Go: The History and Contribution of U.S. Public Health Advisors.* Raleigh-Durham, NC: American Social Health Association; 2008.
  16. McGinnis E, Meyerson BE, Meites E, et al. Cervical cancer screening and prevention in 78 sexually transmitted disease clinics—United States, 2014-15. *Sex Transm Dis.* 2016;44(10):637-641. doi:10.1097/OLQ.0000000000000659
  17. Stephens SC, Cohen SE, Philip SS, Bernstein KT. Insurance among patients seeking care at a municipal sexually transmitted disease clinic: implications for health care reform in the United States. *Sex Transm Dis.* 2014;41(4):227-232. doi:10.1097/OLQ.0000000000000109
  18. Pathela P, Klingler EJ, Guerry SL, et al. Sexually transmitted infection clinics as safety net providers: exploring the role of categorical sexually transmitted infection clinics in an era of health care reform. *Sex Transm Dis.* 2015;42(5):286-293. doi:10.1097/OLQ.0000000000000255
  19. Landers GM. Whether health departments should provide clinical services after the implementation of the Affordable Care Act. *Am J Public Health.* 2016;106(2):271-272. doi:10.2105/AJPH.2015.302949
  20. Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016.* Atlanta, GA: US Department of Health and Human Services; 2017. [https://www.cdc.gov/std/stats16/CDC\\_2016\\_STDS\\_Report-for508WebSep21\\_2017\\_1644.pdf](https://www.cdc.gov/std/stats16/CDC_2016_STDS_Report-for508WebSep21_2017_1644.pdf). Accessed October 1, 2017.
  21. Gostin LO. *Public Health Law: Power, Duty, Restraint.* 2nd ed. Berkeley, CA: University of California Press; 2008.
  22. Notice regarding section 602 of the Veterans Health Care Act of 1992 Patient and Entity Eligibility. *Fed Register.* 1996;61(207):55156.
  23. Robert Wood Johnson Foundation. 2017 County Health Rankings key findings report. 2017. <http://www.countyhealthrankings.org/reports/2017-county-health-rankings-key-findings-report>. Accessed November 10, 2017.
  24. US Census Bureau. County population totals and components of change, 2010-2017. <https://www.census.gov/data/datasets/2017/demo/popest/counties-total.html>. Accessed July 1, 2017.
  25. US Department of Transportation, Federal Highway Administration. Census Transportation Planning Products (CTPP) 5-year ACS 2006-2010: tabulations part 3—worker home-to-work flow tables. Updated June 2017. [http://www.fhwa.dot.gov/planning/census\\_issues/ctpp/data\\_products/2006-2010\\_table\\_list/sheet04.cfm](http://www.fhwa.dot.gov/planning/census_issues/ctpp/data_products/2006-2010_table_list/sheet04.cfm). Accessed October 1, 2017.
  26. IBM Corp. *SPSS Version 24.0.* Armonk, NY: IBM Corp; 2017.
  27. Leichter JS, Seiler N, Wohlfeiler D. Sexually transmitted disease prevention policies in the United States: evidence and opportunities. *Sex Transm Dis.* 2016;43(2 suppl 1):S113-S121. doi:10.1097/OLQ.0000000000000289
  28. Centers for Disease Control and Prevention, Division of STD Prevention. *Sexually Transmitted Disease Surveillance 2015.* Atlanta, GA: Centers for Disease Control and Prevention; 2016. <https://www.cdc.gov/std/stats15/std-surveillance-2015-print.pdf>. Accessed November 1, 2016.
  29. McCullough JM, Zimmerman FJ, Bell DS, Rodriguez HP. Local public health department adoption and use of electronic health records. *J Public Health Manag Pract.* 2015;21(1):E20-E28. doi:10.1097/PHH.0000000000000143
  30. Owusu-Edusei K Jr, Gift TL, Leichter JS, Romaguera RA. The spatial association between federally qualified health centers and county-level reported sexually transmitted infections: a spatial regression approach. *Sex Transm Dis.* 2018;45(2):81-86. doi:10.1097/OLQ.0000000000000692
  31. US House of Representatives. *US House of Representatives House Committee on Energy and Commerce. Review of the 340B Drug Pricing Program.* Washington, DC: US House of Representatives; 2018.