



HHS Public Access

Author manuscript

Sex Transm Dis. Author manuscript; available in PMC 2021 August 01.

Published in final edited form as:

Sex Transm Dis. 2020 August ; 47(8): 511–515. doi:10.1097/OLQ.0000000000001201.

Ending the HIV Epidemic: Contributions Resulting from Syphilis Partner Services

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Abstract

Background: There is a high level of coinfection with HIV among persons diagnosed with syphilis in the United States. Public health workers at state and local health departments help inform exposed partners to STD/HIV infections to facilitate early testing and treatment (partner services). The federal initiative, Ending the HIV Epidemic (EHE), identifies four key strategies: diagnose, treat, prevent, and respond. This study describes the contributions of syphilis partner services to the EHE strategies in a county prioritized by the EHE plan.

Methods: A retrospective record review of reported early syphilis cases (less than one year's duration) between 2016 and 2018 in the Indianapolis area was conducted to determine the extent of new HIV diagnoses, retention in HIV care, and other evidence-based HIV prevention interventions occurring after provision of syphilis partner services.

Results: A total of 752 partners to early syphilis were attempted to be notified of exposure. 1,457 case patients and partners received STD/HIV prevention counseling; 400 partners received STD treatment; 352 partners learned their HIV status; and 22 received new HIV diagnoses, with 68% retained in medical care and 60% virally suppressed. Two-thirds of partner services were completed within 21 days. New HIV positivity among partners to HIV-negative syphilis case patients was 3.5%, and 14% among HIV-positive syphilis case patients.

Conclusions: Partner services for syphilis was an effective method of addressing the EHE strategies, resulting in persons at risk tested, STD treatment provided, PrEP referrals, and new HIV cases identified, leading to retention in medical care and viral suppression.

Short Summary

Providing partner services for syphilis in a designated Ending the HIV Epidemic county resulted in the HIV outcomes of case finding, linkage to care, viral suppression and other evidence-based results.

Keywords

Ending the HIV Epidemic; partner services; syphilis; partner notification; HIV case finding

Introduction

Syphilis has continued to increase over the last several years in the United States, and there is a high degree of coinfection with human immunodeficiency virus (HIV) among infectious syphilis cases, primarily among men who have sex with men (MSM).^{1, 2, 3, 4} Most new HIV infections in the U.S. occur among gay and bisexual men.⁵ Some have hypothesized the increase in cases and coinfections may be due to the rise in social media apps for finding sex partners, social inequality, stigma, increase in condomless sex, deterioration of public health infrastructure, and lack of access to health care. Syphilis is a known risk factor for HIV acquisition, and disease transmission is syndemic.

The federal initiative, Ending the HIV Epidemic (EHE), seeks to reduce transmission of HIV in the U.S. through a four strategy plan, initially targeting efforts among the 48 counties contributing to more than 50% of all new HIV diagnoses.⁶ This initiative utilizes four “pillars”: Diagnose all those at risk of HIV infection; Treat all those infected to achieve viral suppression; Prevent new HIV infection among those at risk; and Respond to potential outbreak situations. EHE stresses implementation of evidence-based interventions (EBI), especially Pre-Exposure Prophylaxis (PrEP) and linking those with HIV infection to medical care in order to achieve an undetectable viral load.

Indiana’s STD District 5 consists of eight counties including the city of Indianapolis in Marion County. Marion County is one of the 48 counties prioritized in the EHE plan. In 2018, Marion County ranked 55th of selected U.S. counties for infectious syphilis with 141 cases reported (14.8 per 100,000 population).⁷ The Marion County Public Health Department’s (MCPHD) Bell Flower Clinic is the largest STD clinic in Indiana and the only full-service specialty clinic in the district offering diagnostic and treatment services for STDs as well as diagnostic and linkage to care services for HIV.

In the U.S. in 2016 among persons living with HIV/AIDS (PLWHA), 49% were retained in care and 53% were virally suppressed.⁸ Within Indiana, the majority of PLWHA are living in Marion County. Among Marion County HIV diagnoses between 2016 and 2018, 16% (103/630) of new HIV infections were identified by Bell Flower Clinic.⁹

Even though national guidelines recommend that sexually active persons with HIV infection receive STD testing annually, this is only completed 55% of the time.¹⁰ It is estimated that approximately 154,000 persons with HIV in the U.S. are unaware of their status.¹¹ This study builds on what is already known about HIV outcomes among partners exposed to syphilis to describe the exclusive contribution of partner services (PS) for syphilis in achieving EHE objectives. Outcomes of interest are those identified as being evidence-based interventions for HIV prevention including knowledge of HIV status; STD treatment; PrEP; and suppressed or undetectable viral load.

Methods

We analyzed early syphilis (ES) cases, less than one year’s duration, between 2016 and 2018 reported to Indiana’s STD District 5. Data was derived from the Statewide Investigating Monitoring and Surveillance System (SWIMSS). This database contains all reportable STDs

throughout the state as well as viral load and CD4 count laboratory results for PLWHA. Data was extracted to relational tables for analysis. Case patients who named partners were connected to partner data by linking the unique ID of the ES case with the unique ID of the partner in the relational tables.

Early syphilis cases who were not interviewed, whose HIV status was unknown, or who did not mention partners, were removed from further analysis. HIV positive case patients were separately examined for the same criteria for partners described below.

Disposition codes are a standardized method used by STD Programs to show the outcome of the interaction between public health and the patient or partner (for example, unable to locate, or infected, brought to treatment). Using disposition codes, we calculated the date difference between staging of the syphilis case and completion of PS work for the partner, with an inclusion period of up to 60 days after the case patient's syphilis diagnosis. In this way we avoided the problem of partners testing positive for HIV prior to notification of syphilis exposure being counted in the analysis. Dispositions were also examined to identify the number of partners tested for HIV, and those receiving syphilis treatment.

Disposition codes are recorded on "field record" forms in SWIMSS, but a field record would not be created for HIV if the ES case patient is HIV-negative. Similarly, partners notified of exposure who chose to test for HIV with their own provider might not have been recorded in SWIMSS. To correctly capture all outcomes, other data sources had to be used for HIV status of partners, including Insight, MCPHD's medical record database, and Indiana's enhanced HIV/AIDS Reporting System (e-HARS). Insight contains all HIV testing conducted by Bell Flower Clinic. E-HARS contains all statewide HIV case reports.

Characteristics of ES cases were stratified by sexual orientation and demographics. Characteristics of the ES partners were stratified by HIV status. The newly HIV-diagnosed ES partners were examined to count those retained in medical care as of August, 2019, and assess viral suppression.

Evidence-Based Interventions (EBI) for HIV Prevention

We focused on four interventions found to have HIV prevention benefit, namely: learning one's HIV status; STD treatment; PrEP; and retention in medical care/viral suppression.

Knowledge of one's HIV status - Prevention benefit is gained since some may use knowledge of their own and their partner's status as a risk reduction method.¹² Learning one's status is positive allows a person to access care and treatment. The US Advisory Committee for HIV and STD Prevention (ACHSP) asserts that "screening for HIV infection among persons with other STDs is an important HIV prevention strategy."

STD treatment is HIV prevention - Synergy between sexually transmitted diseases (STD) and HIV acquisition has long been accepted. Early detection and treatment of other STDs is an effective strategy for preventing sexually transmitted HIV infection.¹³

PrEP - PrEP has been shown to be effective at reducing HIV acquisition¹⁴

Retention in care/viral suppression - HIV infected persons with undetectable viral loads are considered unable to transmit the virus.¹⁵

Description of Partner Services

Partner services is an evidence-based strategy for identification of new cases of STD and HIV. HIV case finding is increased when HIV testing is integrated with syphilis PS.^{16, 17} Syphilis PS gives an opportunity to identify those at high risk of testing HIV positive.¹⁸ Local health department STD Programs employ DIS to offer PS for STD and HIV. DIS have been instrumental in providing services to some STD case patients and their exposed partners since the 1940s. DIS are public health workers specially trained to intervene in syphilis transmission. Activities typically performed are: ensuring the case patient is treated (STD) or linked to care (HIV); encouraging the acceptance of PS; and confidential notification of exposed partners to provide testing and treatment as indicated. Referrals for PrEP were added to DIS core activities several years ago^{19,20}. Confidential notification can be attempted by phone, in person, or the internet. When the DIS undertakes notification of exposed partners (aka provider referral), studies have shown this is the most cost effective method from an individual and societal perspective.²¹ Syphilis partner services are an important method of case finding for both syphilis and HIV.²²

Results

A total of 984 ES cases were identified in District 5 between 2016 and 2018, 96% (n=941) of whom were interviewed for their infection. (Table 1). Of the 984 cases, 974 (90%) received adequate syphilis treatment. Most (623 or 64%) were treated by the diagnosing provider and 351 (36%) were treated as a result of DIS intervention. Among ES cases interviewed, 34% of case patients with HIV identified partners needing notification (156/461) while 50% of case patients without HIV named partners for notification (222/446).

A total of 378 unique individuals named partners, representing 405 ES cases due to 27 repeat infections in the study period. Each case patient group named two partners for notification. The HIV-positive case group had a higher number of reinfections than the HIV-negative case group at 12% vs. 3.6%, respectively. There were 725 unique individuals named as exposed partners and 761 exposures among these individuals during the study period, taking into account individuals named more than once.

There was a larger proportion of MSM (97%) in the HIV-positive case group for whom partners were elicited than the HIV-negative case group (67%). There were no women in the HIV-positive ES case group and 77 in the HIV-negative case group. Among the HIV-negative ES case patients, White race accounted for 53% and Black race 38%. Among the HIV-positive ES case patients, this was reversed with 35% of cases White and 58% Black. Similarly, the most common age group for both was 25–29 years but the next highest age group for the HIV-negative cases was 20–24 while it was 30–34 for the HIV-positive cases.

A total of 414 individual partners were named by the HIV-negative ES cases and 311 individual partners were named by the HIV-positive ES case patients (Table 2). Among the

partners to HIV-negative syphilis case patients 16% (n=68) were found to be previously HIV-positive and 21% (n=86) had an unknown HIV status. Sixty-three percent (n=260) were tested for HIV at time of syphilis exposure notification, with 251 (96.5%) testing negative and 9 (3.5%) testing newly HIV-positive. Examination of HIV care status of the 9 new diagnoses found that 78% (n=7) were retained in care as of August, 2019, and 57% (4/7) of those in care had an undetectable viral load (less than 50 copies of HIV per milliliter of blood).

Among the partners to HIV-positive syphilis case patients 50% (n=154) were found to be previously HIV-positive and 21% (n=65) had an unknown HIV status. Thirty percent (n=92) were tested for HIV at notification, with 79 (86%) testing negative and 13 (14%) newly HIV-positive. Examination of HIV care status (not shown in table) of the 13 new diagnoses found that 62% (n=8) were retained in care as of August, 2019; 50% (4/8) of those in care had an undetectable viral load and 1 (13%) was virally suppressed.

Among both ES case groups the greatest proportion of all partners named were in the 25–29 year old age group. Among new HIV-positive diagnoses, MSM comprised 89% from the HIV-negative ES case group and 100% from the HIV-positive ES case group.

Race differed by HIV status among the ES cases with Black race representing the majority of cases (58%) and partners (53%) for the HIV positive cases. White race was predominant for the HIV negative ES cases (53%) and partners (48%). There were no appreciable differences in ethnicity between the two groups, with approximately 10% of ES cases and less than 10% of partners of Hispanic ethnicity.

Of the 761 exposures among 725 partners, approximately two-thirds (n=501) were dispositioned within 21 days. No differences in timeliness were noted between partners named by an HIV positive or HIV negative case patient.

Among partners with a syphilis exposure disposition, a total of 400 were treated for syphilis, 63 of whom were new syphilis diagnoses; 291 were preventively treated; and 46 were treated for syphilis prior to the notification.

SWIMSS did not capture PrEP referrals. Bell Flower Clinic refers people to Eskenazi Hospital for PrEP, and they were able to provide us with the number of PrEP referrals received by Bell Flower during all but two months of the study period (March, 2016 – December, 2018), but not the number of successful enrollments in PrEP. In this time period, Bell Flower made 168 referrals for PrEP. (Personal communication, Thomas Kleyn, Clinical Pharmacy Specialist, Eskenazi Health, 3/27/20)

The number of partners learning their HIV status was 352: 260 from the HIV negative case patient group and 92 from the HIV positive case patient group.

Aligning findings with EBIs

Knowledge of HIV status - The number of partners learning their HIV status was 352: 260 from the HIV negative case patient group and 92 from the HIV positive case patient group. One new HIV case was identified for every 43 ES patients interviewed.

STD treatment for HIV prevention - Among partners with a syphilis exposure disposition, a total of 400 were treated for syphilis, 63 of whom were new syphilis diagnoses; 291 were preventively treated; and 46 were treated for syphilis prior to the notification. Among the ES case patients 351 were treated for syphilis due to DIS intervention.

PrEP - Bell Flower Clinic made 168 PrEP referrals in the study period.

Retention in care/suppressed or undetectable viral load - Examination of HIV care status of the 22 new diagnoses found that 68% (n=15) were retained in care as of August, 2019; 60% (9/15) had viral loads that were either undetectable (n=8) or virally suppressed (n=1).

Limitations

It is not possible to definitively say if the partner was named by only one case patient nor how often two partners were exposed by the same case patient. We believe this effect is minimal on our findings. We examined the record of each partner testing newly HIV positive and none were identified with this attribute.

Dispositions used by DIS are not always representative of the true outcome of the interaction²³ so there may be some misclassification. Authors attempted to mitigate any errors due to this by record review for accuracy on all partners newly HIV positive and on those with syphilis dispositions indicating that an HIV test should have been performed.

Findings likely underestimate the actual effect of PS due to low acceptance of partner services by DIS, with only 40% of ES interviews resulting in a partner to notify.

There are likely additional benefits from syphilis PS that would support the EHE pillars that were unable to be quantified for this study due to database limitations, such as PrEP enrollment and the number of PLWHA linked or re-linked to care at diagnosis of syphilis exposure.

Discussion

Nationally, there is variability in the rate of new HIV positivity depending on the testing venue and whether those tested had known exposures to HIV-positive individuals. CDC recommends HIV testing be conducted using an opt-out approach in which consent is implied in the general consent for medical services.²⁴ For those tested as a result of community HIV testing or opt-out screening programs, positivity ranges from 0.15% to 1%.^{25, 26, 27} A large hospital emergency department in Marion County reports that in 2018 a total of 23 new HIV diagnoses were identified, for positivity of 0.31%, from its opt-out testing program. (Personal communication, John Nichols, HIV Prevention Program Director, ISDH Division of HIV/STD/Viral Hepatitis, 8/21/19)

For those tested due to an exposure to an HIV-positive person, the new diagnosis positivity can be as high as 38%.^{28, 29, 30} Some studies reported on new HIV positivity among syphilis case patients, yielding overall HIV positivity as high as 6%.³¹ When partner positivity is examined by the HIV status of the syphilis case naming the partner, variable rates were

identified, with much higher HIV positivity rates achieved if the syphilis case patient had previously-diagnosed HIV.

In this analysis, the new HIV case rate yield of 3.5% among tested partners to the HIV-negative syphilis case patients is noteworthy since these partners did not have an identified HIV exposure at time of syphilis notification. Our findings indicate that one new HIV diagnosis was identified for every 43 ES interviews conducted, consistent with another study³². Among all Bell Flower HIV diagnoses, 21.3% (22/103) during the study period are attributable to syphilis PS. These findings provide further support that the intervention of syphilis PS is effective at HIV case finding.

EHE Pillar One: Diagnose all people with HIV as early as possible (Addresses the EBI of Knowledge of one's HIV status)

HIV testing was provided to 352 of the exposed partners. Twenty-two individuals received a new HIV diagnosis as a result of syphilis PS. One new HIV case was identified for every 43 ES cases interviewed.

EHE Pillar Two: Treat people with HIV rapidly and effectively to achieve viral suppression (Addresses the EBI of retention in care/viral suppression)

In this study, we documented 68% retained in HIV care with 60% of those in care undetectable or virally suppressed, exceeding the national averages. Syphilis PS was successful in testing partners to syphilis cases quickly, leading to timely identification of HIV status, with two-thirds of partner records dispositioned within 21 days of the case patient's diagnosis.

EHE Pillar Three: Prevent new HIV infections via proven interventions (Addresses the EBIs of STD treatment as HIV Prevention, and PrEP)

Treatment for syphilis was provided to 400 partners, likely reducing their ability to acquire HIV in the short term if negative, and to transmit HIV in the short term if positive.

Between March, 2016 and December, 2018, 168 people were referred to PrEP.

Previous studies have demonstrated the effectiveness of PS for STD and HIV prevention; highlighted the rates of new HIV diagnoses among syphilis patients; and examined HIV case finding attributable to PS from HIV cases. Key findings from this study describe HIV outcomes due to syphilis PS even when the case patient is HIV negative, reinforcing the critical role STD Programs can play in contributing to the EHE pillars.

Case finding resulting from syphilis PS may identify more new HIV cases than a strategy which relies primarily on persons coming forward for community testing. In this analysis, new HIV positivity from partners of ES cases is greater than that seen at voluntary testing sites or through opt-out screening. State and local areas prioritized for EHE may want to ensure that many options exist for testing to include community testing, opt-out screening in venues such as emergency departments, as well as ensuring a robust syphilis PS program.

Given this evidence of syphilis PS contributions to HIV prevention, it is important that adequate resources are allocated and maintained for STD programs and DIS staff, and that STD Programs are included in local EHE planning.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Acknowledgments

The authors would like to thank Matthew Hogben for his very helpful review of this work.

References

1. Kidd S, Torrone E, Su J, et al. Reported primary and secondary syphilis cases in the United States: Implications for HIV Infection. *Sex Transm Dis* 2018; 45, S42–S47 [PubMed: 29465633]
2. Sexually Transmitted Disease Surveillance 2018 (CDC web site) Available at <https://www.cdc.gov/std/stats18/toc.htm>, accessed 10/8/19
3. Pathela P, Braunstein SL, Blank S, et al. The high risk of an HIV diagnosis following a diagnosis of syphilis: a population-level analysis of New York City men. *Clin Infect Dis* 2015; 61(2), 281–287 [PubMed: 25870333]
4. Newman TA, Maddox DR, Schmitt L, et al. High risk for HIV following syphilis diagnosis among men in Florida, 2000–2011. *Public Health Rep* 2014; 129(2), 164–169 [PubMed: 24587551]
5. Fact Sheet HIV Among Gay and Bisexual Men (CDC web site) Available at <https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/cdc-msm-508.pdf>, accessed 10/11/19
6. What is “Ending the HIV Epidemic: A Plan for America”? (HIV.gov web site) Available at <https://www.hiv.gov/federal-response/ending-the-hiv-epidemic/overview>, accessed 10/8/19
7. Sexually Transmitted Disease Surveillance 2018 (CDC web site) Available at <https://www.cdc.gov/std/stats18/tables/26.htm>, accessed 10/11/19
8. HIV in the US and Dependent Areas (CDC web site) Available at <https://www.cdc.gov/hiv/statistics/overview/ata glance.html>, accessed 10/16/19
9. Indiana State Department of Health, Office of Clinical Data and Research, 2018
10. Kidd S, Reported Primary and Secondary Syphilis Cases in the United States
11. <https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics>, accessed 3/27/20
12. Bird JD, Morris JA, Koester KA, et al. Knowing Your Status and Knowing Your Partner’s Status Is Really Where It Starts: A Qualitative Exploration of the Process by Which a Sexual Partner’s HIV Status Can Influence Sexual Decision Making. *J Sex Res* 2017; 54(6), 784–794 [PubMed: 27485155]
13. HIV Prevention Through Early Detection and Treatment of Other Sexually Transmitted Diseases -- United States Recommendations of the Advisory Committee for HIV and STD Prevention. *CDC, MMWR Morb Mortal Wkly Rep* 1998; 47(RR12);1–24 [PubMed: 9450721]
14. Preexposure Prophylaxis for the Prevention of HIV Infection in the United States - 2017 Update, <https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf>, accessed 4/3/20
15. Evidence of HIV Treatment and Viral Suppression in Preventing the Sexual Transmission of HIV. CDC. <https://www.cdc.gov/hiv/pdf/risk/art/cdc-hiv-art-viral-suppression.pdf>, accessed 4/3/20
16. Katz DA, Hogben M, Dooley SW Jr, et al. An evaluation of the reliability of HIV partner notification disposition coding by disease intervention specialists in the United States. *Sex Transm Dis* 2009; 36(7), 459–462 [PubMed: 19525888]
17. Hogben M, McNally T, McPheeters M, et al. The effectiveness of HIV partner counseling and referral services in increasing identification of HIV-positive individuals: a systematic review. *Am J Prev Med* 2007; 33(2), S89–S100 [PubMed: 17675019]

18. Avoundjian T Integrating Human Immunodeficiency Virus Testing Into Syphilis Partner Services in Mississippi to Improve Human Immunodeficiency Virus Case Finding. *Sex Transm Dis* 2019; 46 (4); 240–245 [PubMed: 30870325]
19. Recommendations for Partner Services Programs for HIV infection, Syphilis, Gonorrhea, and Chlamydia Infection. CDC, *MMWR Morb Mortal Wkly Rep* 2008; 57 (RR-9):1–63 [PubMed: 18185492]
20. Rowlinson E, Goings S, Minnerly S, et al. Differences in Partner Services Outcomes for Men Who Have Sex With Men Diagnosed With Primary and Secondary Syphilis by HIV Serostatus. *Sex Transm Dis* 2018; 3 45(3):152 [PubMed: 29420442]
21. Hogben M et al., The effectiveness of HIV partner counseling and referral services in increasing identification of HIV-positive individuals pg. S96
22. Samoff E, Cope AB., Maxwell J, et al. The number of interviews needed to yield new syphilis and HIV cases among partners of people diagnosed with syphilis, North Carolina, 2015. *Sex Transm Dis* 2017; 8;44(8):451 [PubMed: 28703722]
23. Katz DA, An evaluation of the reliability of HIV partner notification disposition coding by disease intervention specialists
24. Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Healthcare Settings, CDC, *MMWR Morb Mortal Wkly Rep* 55(RR14); 9 2006
25. Nelson ED. Evaluation of an Opt-Out HIV Screening Program in the Maricopa County Jails (Doctoral dissertation, The University of Arizona, 2017)
26. Hoxhaj S, Davila JA, Modi P, et al. Using Nonrapid HIV Technology for Routine, Opt-out HIV Screening in a High-Volume Urban Emergency Department. *Ann Emerg Med* 2011;58(1):S79–S84 [PubMed: 21684414]
27. Anonymous or Confidential HIV Counseling and Voluntary Testing in Federally Funded Testing Sites -- United States, 1995–1997; CDC, *MMWR Morb Mortal Wkly Rep* 1999 6 25;48 (24):509–13 [PubMed: 10401907]
28. Song W, Mulatu MS, Rorie M, et al. HIV Testing and positivity patterns of partners of HIV-diagnosed people in partner services programs, United States, 2013–2014. *Public Health Rep* 2017; 7;132(4):455–62 [PubMed: 28614670]
29. Bernstein KT, Stephens SC, Moss N, et al. Partner services as targeted HIV screening—changing the paradigm. *Public Health Rep* 2014; 129(1_suppl1), 50–55 [PubMed: 24385649]
30. Peters PJ, Pontones P, Hoover KW, et al. HIV infection linked to injection use of oxycodone in Indiana, 2014–2015. *NEJM* 2016; 375(3), 229–239
31. Avoundjian, T; Integrating Human Immunodeficiency Virus Testing Into Syphilis Partner Services.
32. Samoff E The number of interviews needed to yield new syphilis and HIV cases among partners of people diagnosed with syphilis, North Carolina, 2015

Table 1:

Characteristics of HIV Negative and Positive Early Syphilis Cases Who Named Partners By Sexual Orientation, District 5, 2016–2018 (N=378)

n	HIV Negative ES Cases (N=222)		Women n(%) ^a	HIV Positive ES Cases (N=156)	
	MSM n(%) ^a	MSW n(%) ^a		MSM n(%) ^a	MSW n(%) ^a
Age	149	32	41	152	4
0–19	6 (75.00)	1 (12.50)	1 (12.50)	2 (66.67)	1 (33.33)
20–24	38 (77.55)	5 (10.20)	6 (12.24)	22 (100.00)	0 (0.00)
25–29	44 (68.75)	7 (10.94)	13 (20.31)	39 (97.50)	1 (2.50)
30–34	24 (68.57)	5 (14.29)	6 (17.14)	28 (96.55)	1 (3.45)
35–39	13 (50.00)	6 (23.08)	7 (26.92)	13 (100.00)	0 (0.00)
40–44	6 (54.55)	3 (27.27)	2 (18.18)	15 (93.33)	0 (0.00)
45+	18 (68.07)	5 (17.24)	6 (20.69)	33 (97.06)	1 (2.94)
Race					
White	92 (78.63)	9 (7.69)	16 (13.68)	52 (96.30)	2 (3.70)
Black	43 (51.19)	19 (22.62)	22 (26.19)	88 (97.78)	2 (2.22)
Other	13 (65.00)	4 (20.00)	3 (15.00)	12 (100.00)	0 (0.00)
Unknown	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Ethnic^b					
H	17 (73.91)	3 (13.04)	3 (13.04)	14 (100.00)	0 (0.00)
NH	131 (66.16)	29 (14.65)	38 (19.19)	138 (97.18)	4 (2.82)
U	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

^aFrequency and row percent of all exposure variables for early syphilis cases between sexual orientation (cells too small to run statistical significance testing)

^bH stand for Hispanic, NH stands for Non-Hispanic, and U stands for Unknown

Table 2: HIV Case Finding as a Result of Syphilis Partner Services, District 5, 2016–2018 (N=725)

n	Partners to HIV Negative Early Syphilis (N=414)				Partners to HIV Positive Early Syphilis (N=311)			
	New Positive n(%) ^a	Negative n(%) ^a	Previous n(%) ^a	Unknown n(%) ^a	New Positive n(%) ^a	Negative n(%) ^a	Previous n(%) ^a	Unknown n(%) ^a
Age								
0–19	2 (10.53)	12 (63.16)	2 (10.53)	3 (15.79)	0 (0.00)	3 (50.00)	2 (33.33)	1 (16.67)
20–24	1 (1.56)	49 (76.56)	7 (10.94)	7 (10.94)	3 (5.56)	15 (27.78)	24 (44.44)	12 (22.22)
25–29	6 (5.41)	73 (65.77)	13 (11.71)	19 (17.12)	6 (7.50)	21 (26.25)	35 (43.75)	18 (25.50)
30–34	0 (0.00)	42 (63.64)	16 (24.24)	8 (12.12)	3 (5.45)	17 (30.91)	29 (52.73)	6 (10.91)
35–39	0 (0.00)	29 (59.18)	10 (20.41)	10 (20.41)	1 (2.78)	8 (22.22)	21 (58.33)	6 (16.67)
40–44	0 (0.00)	18 (66.67)	6 (22.22)	3 (11.11)	0 (0.00)	4 (17.39)	14 (60.87)	5 (21.74)
45+	0 (0.00)	28 (48.28)	14 (24.14)	16 (27.59)	0 (0.00)	10 (21.74)	29 (63.04)	7 (15.22)
Unknown	0 (0.00)	0 (0.00)	0 (0.00)	20 (100.00)	0 (0.00)	1 (9.09)	0 (0.00)	10 (90.91)
Orientation								
MSM	8 (3.28)	159 (65.16)	64 (26.23)	13 (5.33)	13 (5.44)	64 (26.78)	138 (57.74)	24 (10.04)
MSW	0 (0.00)	46 (83.64)	1 (1.82)	8 (14.55)	0 (0.00)	6 (25.00)	11 (45.83)	7 (29.17)
Women	1 (2.27)	37 (84.09)	0 (0.00)	6 (13.64)	0 (0.00)	4 (57.14)	0 (0.00)	3 (42.86)
Unknown	0 (0.00)	9 (12.68)	3 (4.23)	59 (83.10)	0 (0.00)	5 (12.20)	5 (12.20)	31 (75.61)
Race								
White	2 (1.01)	135 (67.84)	22 (11.06)	40 (20.10)	3 (2.17)	42 (30.43)	63 (45.65)	30 (21.74)
Black	7 (3.83)	95 (51.91)	41 (22.40)	40 (21.86)	10 (6.02)	34 (20.48)	88 (53.01)	34 (20.48)
Other	0 (0.00)	20 (64.52)	5 (16.13)	6 (19.35)	0 (0.00)	3 (42.86)	3 (42.86)	1 (14.29)
Unknown	0 (0.00)	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Ethnic^b								
H	0 (0.00)	23 (76.67)	4 (13.33)	3 (10.00)	0 (0.00)	3 (33.33)	4 (44.44)	2 (22.22)
NH	9 (2.39)	225 (59.68)	64 (16.98)	79 (20.95)	13 (4.35)	75 (25.08)	148 (49.50)	63 (21.07)
U	0 (0.00)	3 (42.86)	0 (0.00)	4 (57.14)	0 (0.00)	1 (33.33)	2 (66.67)	0 (0.00)

^aFrequency and row percent of all exposure variables for early syphilis cases between sexual orientation (cells too small to run statistical significance testing)

^bH stand for Hispanic, NH stands for Non-Hispanic, and U stands for Unknown

Table 3:

Syphilis Notification Outcomes Among Those Notified of Exposure, District 5, 2016–2018 (N=761)

Outcome after notification	Named by HIV+ Cases	Named by HIV- Cases	Total
Preventively Treated for syphilis	108	183	291
Refused preventive treatment	23	22	45
Infected, brought to treatment	20	43	63
Infected, not treated	0	1	1
Not infected	40	30	70
Unable to locate partner	44	43	87
Notified of exposure, partner refused testing	84	63	147
Other	19	38	57
Total	338	423	761

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