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Identifying the Need for and Availability of Evidence-Based Care for Sexually Transmitted Infections in Rural Primary Care Clinics

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Abstract

Background: Increasing rates of bacterial sexually transmitted infections (STIs) may lead to increased HIV rates, as the STI and HIV epidemics are syndemic. Centers for Disease Control and Prevention guidelines recommend including extragenital (i.e., rectal and/or pharyngeal) STI screenings for certain populations at increased risk of STIs and concurrent infections with HIV.

Methods: A descriptive study was conducted by interviewing staff members from 4 rural primary care clinics in areas of high need for STI and HIV services in South Carolina. Qualitative data about their clinical practices in 2021 were obtained. The primary outcome was to determine the awareness and availability of health care services associated with STI and HIV care in these locations.

Results: Clinics in target counties provided limited STI and HIV testing and treatment services, especially for populations at risk of infection, indicating the need for additional clinical training and professional development for all clinic staff. Specifically, only 1 of 4 clinics provided extragenital STI testing, and no clinics reported prescribing preexposure prophylaxis.

Conclusions: Rural primary care clinics can fill important gaps in the availability of STI and HIV services with appropriate support and incentives. Findings from this study may aid in

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facilitating policy (state Medicaid agency) and program (state health department) decisions related to STI and HIV testing and treatment.

The incidence of sexually transmitted infections (STIs) is increasing in the United States. In 1 year, from 2019 to 2020, gonorrhea and syphilis (primary and secondary) increased by 5.7% and 6.8%, respectively.[1] During the same period, chlamydia infections decreased by 13%, to nearly 1.6 million cases.[1] This decrease may be due to COVID-19–related disruptions in access to STI screening services, including limited STI clinic hours and staffing that led to STIs going undetected and therefore untreated.[2,3] For comparison, between the period 2015 and 2019, chlamydia infections were reported to have increased 20%.[4]

New HIV diagnoses in the United States decreased by 8% from 2016 to 2019, with more than 30,000 individuals diagnosed with HIV in 2020.[5] Increasing rates of STIs may, however, lead to increased HIV rates, as the STI and HIV epidemics are syndemic.[6] Having an STI significantly increases an individual's risk of acquiring HIV, both for biological and for behavioral reasons.[6] Biologically, having an STI causes physical changes that increase the likelihood that HIV will access vulnerable cells. Coinfection with an STI also increases the infectivity of a person with HIV—resulting in a higher likelihood of the transmission of HIV to others. Shared behavioral risk factors (e.g., condomless sex, multiple sex partners) drive both epidemics.

Effective clinical strategies exist for the prevention of STIs and HIV. The Centers for Disease Control and Prevention (CDC) recommends that health care clinicians conduct a sexual history as part of routine care.[7] Preexposure prophylaxis (PrEP) is a pharmacological intervention recommended for groups at risk of HIV, including individuals diagnosed with at least 1 bacterial STI in the past year.[8] Before starting PrEP, individuals should be tested for STIs, and ongoing screening and/or testing for STIs and HIV must occur during PrEP use, with recommendations based on individual risk characteristics and type of PrEP used (i.e., oral or injectable).[8,9] Current CDC guidelines recommend including extragenital (i.e., rectal and/or pharyngeal) STI testing for men who have sex with men (MSM) because of an increased risk of STIs and concurrent HIV infections, in addition to the increasing prevalence of asymptomatic STIs in these locations.[10]

Despite these recommendations, access to testing and treatment of STIs and HIV is challenging given that most care is now rendered in non-STD clinic settings.[11] Primary care settings, which were reported as diagnosing up to half of all reported STIs, have been found to have inconsistent STI care practices among providers and to provide limited testing and counseling services.[11–13] Rural areas often have limited access to services compared with their urban counterparts; for example, 2016 data show that only 75% of rural counties compared with 91% of urban have access to any HIV-related services including STI testing.[14] Sexually transmitted infection testing among a group of individuals who were HIV positive and commercially insured showed lower odds of STI testing for rural populations compared with urban.[15] Structural barriers, including persistent racism, also impact STI and HIV prevention.[16] Minoritized populations at high risk of concurrent infection, especially MSM who identify as Black, may experience intersecting stigmas

that impact their engagement with health care.[17] These barriers are especially concerning considering the increased risk of STIs among rural populations.[18]

South Carolina (SC) is a rural state that consistently ranks in the top 5 states in the United States for chlamydia and gonorrhea cases and has been identified as a state with substantial rural burden of HIV in the federal Ending the HIV Epidemic initiative.[19,20] Thus, the purpose of this study was to examine the need for, and availability of, health care services associated with STI and HIV care for high-risk rural populations in SC. Identifying and ultimately improving access to high-quality preventive and treatment services for STI and HIV in this state will inform practice and policy stakeholders across the US health care delivery system.

METHODS

With an overall long-term goal of reducing STI prevalence among rural SC residents, this descriptive study's primary outcome was to determine awareness and availability of STI and HIV services among rural primary care clinics in identified high-need rural areas within the state. A secondary outcome was to determine if these clinics were providing services specifically for high-risk populations (i.e., extragenital STI testing). The University of South Carolina Institutional Review Board reviewed this study and declared it not human subjects research on May 12, 2022.

Context

In 2021, SC had a total population of approximately 5 million people, of which 51.8% were female, 37.2% were non-White, and 14.9% had an income of less than 100% of the Federal Poverty Line.[21] A Medicaid nonexpansion state, 20% of the population is covered by Medicaid, whereas 10% of the population is uninsured.[21] Twenty of SC's 46 counties are categorized as rural according to the CDC's definition.[22] Rates of chlamydia, gonorrhea, and syphilis (i.e., primary and secondary) were 662.7, 324.4, and 12.7 per 100,000 persons, respectively, in 2020.[20] HIV prevalence in SC was 342.1 per 100,000 persons in 2019.[23] Statewide in 2020, 23 community health centers provided health care in 226 service delivery sites, and 87 Medicare-certified Rural Health Clinics were in operation.[21]

Determination of Target Counties

Publicly available secondary data sources with county-level descriptive statistics were used to identify high-need areas. Weblinks to all data sources are listed in Supplemental Digital Content, Table S1, http://links.lww.com/OLQ/B11. Epidemiological data sources included CDC AtlasPlus (chlamydia, gonorrhea, and syphilis prevalence rates), AIDSVu.org (PrEP utilization rate), and SC Department of Health and Environmental Control (DHEC) surveillance data (HIV prevalence rate). The prevalence of STI and HIV and PrEP utilization rates were ranked from highest to lowest for each rural SC county. Target ("high need") counties were limited to those with reported PrEP utilization as a proxy for the presence of populations at risk of STIs. Rural counties in the top 10 for PrEP utilization were then compared with the rankings of rural counties for each of the STIs to identify overlapping areas and therefore potential high-risk counties (i.e., at risk of HIV infections and high STI

spread). Six counties in the top 10 for highest PrEP utilization were listed more than once as a top 10 highest county for 1 or more STIs: Georgetown, Bamberg, Marlboro, Marion, Williamsburg, and Dillon (Table 1).

To further confirm areas of high need in the state, available infrastructure for treatment (or lack thereof) was identified. Available infrastructures were described for each of the high-need counties to include primary care safety net clinics (i.e., Federally Qualified Health Centers, Rural Health Clinics), local health departments, comprehensive PrEP services, and educational resources as determined by SC Area Health Education Consortium region. Data sources included HRSA.gov (Federally Qualified Health Center locations), the National Provider Identifier registry, and SC DHEC (health department locations). Additional county-level data including Rural Health Clinic and comprehensive PrEP services locations were provided through direct communication with the SC Office of Rural Health and SC DHEC staff members, respectively.

Exclusion criteria were applied in a stepwise order: (1) counties without comprehensive PrEP services coverage were excluded because of uncertainty about where care was obtained, and (2) counties outside of the Pee Dee and Lowcountry regions of South Carolina Area Health Education Consortium (the most eastern and southern parts of SC located along the I-95 corridor) were excluded because of limited resources for the project. Finally, counties with high numbers of primary care clinics and those with established connections to the study team were given preferential consideration as a final determination of feasibility.

Four counties were initially chosen as target areas: Bamberg, Georgetown, Marion, and Orangeburg. Although not in the top 10 for estimated highest PrEP utilization, Orangeburg County was chosen as a target county as it also had sufficient primary care infrastructure for this project, with high rankings for STI prevalence among the rural counties (3rd highest for chlamydia, highest for gonorrhea, and 11th highest for syphilis). Because of an unexpected change in the local health care infrastructure in Marion County during the study period (i.e., a facility closure), Williamsburg County replaced it as a target county before on-site clinic visits. A map of SC indicating the final group of targeted counties is provided as Figure 1.

Clinic Engagement

Clinics in target counties were identified, contacted, and engaged in the study in summer and fall 2022, and on-site visits with the study team were scheduled during this time. Individual staff members at each site (i.e., clinicians and/or practice managers) were interviewed during these visits about their clinic's practices regarding STI and HIV testing and treatment services. Topics covered included patient demographics, existing STI services, and any PrEP utilization among their patients; a copy of the interview guide used is provided as Supplemental Digital Content, Exhibit S1, http://links.lww.com/OLQ/B12. Each interview lasted approximately an hour. The study team took detailed, handwritten notes of the staff members' responses using the interview guide but did not audio record the interviews. These notes were validated with the clinic staff member through subsequent email and/or in-person communication within approximately a week of the interview.

Staff members were also asked to self-report annual clinic data from 2021 to capture a full year of services provided. These data were acquired by the staff member using the clinic's electronic medical record and reported in aggregate to the study team through a secure method within approximately 2 weeks of the initial interview. (This additional time to obtain these data postinterview was necessary for more than 1 clinic because of the limited availability of existing queriers or reports.) Together, these descriptive data, from each interview and each clinic's electronic health record, were used to develop summaries of each clinic's current STI and HIV service provision. These summaries were provided back to each clinic for use in their own performance improvement activities as well as condensed and used as results for this study. Because of the scope of the project, only one clinic per target county was engaged.

RESULTS

Primary Care Clinic Feedback

One primary care clinic in each of the target counties (n = 4) was engaged by the study team to identify their current clinical practices regarding STI and HIV testing and treatment. A summary of each clinic's characteristics relative to this study is provided in Table 2. Clinic names and locations were not provided for privacy reasons. The patient populations at each clinic ranged from 2255 to 18,729 patients annually. The number of clinicians on staff ranged from 2 to 14. Payor mixes varied among all 4 clinics, with commercial insurance population percentages ranging from 27 to 55 and Medicaid from 11 to 41.

All 4 clinics reported that they provided STI testing services for chlamydia, gonorrhea, and syphilis, as well as HIV testing. The ranges of tests provided in 2021 were 15 to 497, 4 to 97, 0 to 233, and 5 to 415, respectively. Only 1 clinic reported providing extragenital STI testing, but they did not report a number of tests completed in 2021. One clinic noted that their contracted insurance providers recommended and/or required chlamydia screenings.

All 4 clinics referred patients who test positive for HIV to specialty providers to initiate and manage treatment of their disease. Barriers to STI and HIV testing were noted by 2 clinics who shared that the interface between their third-party laboratory vendor and their electronic health record was either nonexistent or inconsistent in results retrieval. No clinics reported that they prescribed PrEP, although 2 of the clinics indicated a willingness to do so with additional education and training.

Overall, information gathered from the on-site visits indicated limited awareness and provision of STI and HIV testing and treatment among rural primary care clinics. Additional clinical training and professional development for all clinic staff was provided through educational programming developed by the study team as follow-up to this engagement (Table 3).

DISCUSSION

This study examines the supply-side characteristics related to providing STI and HIV testing and treatment services among rural primary care clinics in SC—a southern state with

large populations of rural and racial and ethnic minoritized individuals.[19] The findings from this study, namely, that rural clinics have limited STI and HIV testing, especially for high-risk populations, are consistent with previous studies examining STI care in primary care settings.[11–13] Reducing the rural burden of STIs and HIV will require policy and practice-related decisions on resource allocation and public health prevention programming at state and local levels. For example, results from this study are being used to inform the development of a provider toolkit to be used by public agencies to support improvements in access to these services among rural primary care clinics in SC. Topics include public health need; clinical guidelines overview; best practices, clinical tools, and resources; practice management; existing quality improvement initiatives, including those associated with required reporting (i.e., related to health plan performance); and action plan development to test an improvement strategy. Health care and public health leaders who desire to work collaboratively with primary care clinics to encourage implementation of these services, specifically those in the Medicaid program, may consider use of this toolkit as a quality improvement framework for improving population health.

Findings from this study may also facilitate policy decisions by state Medicaid agencies regarding STI testing and treatment services. As a primary payer of STI services, which now total more than $16 billion in direct costs, the Medicaid program has an especially important role in addressing the STI epidemic.[19,24] Although a Medicaid nonexpansion state, SC provides family planning services—to include STI and HIV testing and treatment—to both men and women that meet income eligibility requirements.[25] However, prepandemic costs for STI testing among Medicaid participants in SC were found to be highest overall in emergency department settings.[26] Rates of emergency department visits for STIs have been increasing overall, which leads to inappropriate treatment of these conditions that may contribute to increasing antibiotic resistance.[27] Use and extension of existing levers in the primary care setting, such as the Healthcare Effectiveness Data and Information System measure for chlamydia screening in 15- to 24-year-old sexually active women, may be an opportunity to further incentivize primary care clinics to address STI testing and treatment needs.[28] Barriers to care, including assurance of payment for same-day multisite (i.e., extragenital) STI testing in patients, must also be addressed to encourage primary care clinicians' conformity with CDC guidelines.[24]

State public health leaders—including State Offices of Rural Health—are instrumental in identifying resources to support capacity development for STI testing and treatment in rural primary care settings. The STI National Strategic Plan directs local jurisdictions to be aware of their own surveillance data to quickly address upward trends in STI incidence; state health departments play a vital role in ensuring that rural areas are attuned to these data.[29] With limited STI and HIV services in rural areas, primary care clinics must become knowledgeable regarding clinical recommendations for STI and HIV testing as well as the need to scale-up PrEP availability in communities at risk of HIV, including MSM, transgender individuals, and all who engage in condomless sex with partners of unknown or positive HIV status.[8,9] Complementary prevention strategies are also needed, including consistent condom use and other risk reduction strategies as PrEP does not protect against STIs. Future educational efforts led by public health officials may be able to address deficiencies in knowledge and increase clinician self-efficacy in the prevention

and treatment of these conditions. Furthermore, primary care clinicians may be motivated by opportunities to address other preventive screenings during follow-up care associated with PrEP use.[9] Education is also important for reducing biases in treatment due to inconsistent service provision across all patients.[18]

Rural primary care clinic staff members must also understand and address stigma toward persons who test positive for STIs and/or HIV. Populations that experience stigma may be reluctant to seek care as cultural and socioreligious norms around sexuality and gender in the southern US often create hostile environments for MSM and transgender individuals.[18] Primary care clinics seeking to strengthen STI and HIV services must commit to providing care that supports and affirms individuals from sexual and gender minority groups who are seeking care.[30]

In addition, because minoritized racial and ethnic groups experience a disproportionate burden of STIs and HIV, clinics should also be aware of the role that structural racism has played in shaping the HIV epidemic and how racism continues to result in subpar HIV services for Black individuals.[31s] Rigorous work has previously identified, for instance, that Black MSM engage in similar or fewer risk behaviors than White MSM, yet have a far higher likelihood of acquiring HIV.[32s] Understanding the societal and community-level barriers that drive these disparities is important for individual practices and our broader health care systems to better respond to the social determinants of health (e.g., transportation and housing vulnerability, poverty, etc.) that impede access to high-quality care for minoritized communities.[20] The unwind of Medicaid continuous enrollment at the conclusion of the COVID-19 public health emergency declaration may further systemically impact care access and quality for minoritized populations.[33s,34s]

Finally, collaboration between public and private stakeholders is critical for conducting work in this space. The project study team represented by this work included public health agencies, public educational institutions, private nonprofit organizations, and private health care clinics. Without the partnerships developed, opportunities to connect the dots regarding the plethora of available resources to support STI and HIV care delivery would not have been realized. For example, there are a multitude of Federal and state efforts within SC related to STI and HIV testing and treatment with available educational and other resources, including those facilitated by the National Network of STD Clinical Prevention Training Centers and AIDS Education and Training Centers. However, little awareness of these efforts was apparent within rural primary care settings. Through using the study team networks, better coordination and communication to increase awareness and reduce confusion of these resources was realized.

Limitations

An overall limitation of this study is inadequate data availability. Accurate quantitative data representing rural populations are limited because of confidentiality concerns associated with small numbers. Furthermore, targeted counties included minority populations at high risk of STIs and HIV, which further restricted data availability. One specific data request that went unfulfilled was for pharmacy claims data for PrEP prescriptions, resulting in our decision to use AIDSVu data for estimated PrEP users in each county. If available, these

pharmacy data would have provided additional insight into access to HIV prevention in rural areas of the state. Qualitative data were collected to provide this context. Generalizability of study findings should only be considered for other states that are demographically similar to SC.

The ability to collect qualitative data from the primary care clinics was limited by self-reporting, the timing of the project overall (i.e., with 1 year of funding), and continued stressors in the peri-COVID pandemic era, which were barriers to the participation of primary care clinics in the study. In addition, the ever-evolving nature of local rural health care infrastructure is a challenge to clinic recruitment. During the brief period of clinic engagement for this project, approximately 6 months, 2 counties were impacted by either a clinic closure or a health system acquisition.

CONCLUSIONS

Increasing access to high-quality, evidence-based STI and HIV services in rural primary care clinics will require increasing the awareness of clinic staff and community members regarding the importance of routine, comprehensive STI and HIV testing. Innovations are needed to overcome existing barriers, including incentives - and/or expanded reimbursement of these services for rural clinics. Curbing the STI and HIV epidemics in a timely manner is critical from patient, public health, and overall societal perspectives. Furthermore, providing safe, effective, equitable, timely, patient-centered, and efficient care for all people in all places for all conditions is central to ensuring health equity in the United States.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

1. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2020: National Overview (CDC website). Available at: https://www.cdc.gov/std/statistics/2020/overview.htm. Accessed December 21, 2022.

2. Tao J, Napoleon SC, Maynard MA, et al. Impact of the COVID-19 pandemic on sexually transmitted infection clinic visits. Sex Transm Dis 2021; 48:e5–e7. [PubMed: 33181578]
3. Pinto CN, Niles JK, Kaufman HW, et al. Impact of the COVID-19 pandemic on chlamydia and gonorrhea screening in the U.S. Am J Prev Med 2021; 61:386–393. [PubMed: 34020848]
4. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2019. Atlanta, GA: U.S. Department of Health and Human Services, 2021.
5. Centers for Disease Control and Prevention. HIV Basics: Basic Statistics. Available at: https://www.cdc.gov/hiv/basics/statistics.html. Accessed December 14, 2022.
6. Mayaud P, McCormick D. Interventions against sexually transmitted infections (STI) to prevent HIV infection. Br Med Bull 2001; 58:129–153. [PubMed: 11714628]
7. Centers for Disease Control and Prevention. A Guide to Taking a Sexual History. Available at: https://www.cdc.gov/std/treatment/sexualhistory.htm. Accessed September 7, 2023.
8. Centers for Disease Control and Prevention. US Public Health Service: Preexposure Prophylaxis for the Prevention of HIV Infection in the United States—2021 Update: Clinical Providers' Supplement. Available at: https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-provider-supplement-2021.pdf. Accessed December 14, 2022.
9. Centers for Disease Control and Prevention. US Public Health Service. Preexposure Prophylaxis for the Prevention of HIV Infection in the United States—2021 Update: A Clinical Practice Guideline. Available at: https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2021.pdf. Accessed December 14, 2022.
10. Workowski KA, Bachmann LH, Chan PA, et al. Sexually transmitted infections treatment guidelines, 2021. MMWR Recomm Rep 2021; 70:1–187. Available at: https://www.cdc.gov/std/treatment-guidelines/STI-Guidelines-2021.pdf. Accessed December 14, 2022.
11. Barrow RY, Ahmed F, Bolan GA, et al. Recommendations for providing quality sexually transmitted diseases clinical services, 2020. MMWR Recomm Rep 2020; 68:1–20. [PubMed: 31899459]
12. Montaño DE, Phillips WR, Kasprzyk D, et al. STD/HIV prevention practices among primary care clinicians: Risk assessment, prevention counseling, and testing. Sex Transm Dis 2008; 35:154–166. [PubMed: 18007273]
13. Kushner M, Solorio MR. The STI and HIV testing practices of primary care providers. J Natl Med Assoc 2007; 99:258–263. [PubMed: 17393950]
14. Ahrens K, Burgess A, Munk L, et al. Rural HIV Prevalence and Service Availability in the United States: A Chartbook. Portland, ME: University of Southern Maine, Muskie School, Maine Rural Health Research Center, 2021.
15. Pearson WS, Davis AD, Hoover KW, et al. Demographic and health services characteristics associated with testing for sexually transmitted infections among a commercially insured population of HIV-positive patients. J Acquir Immune Defic Syndr 2015; 70:269–274. [PubMed: 26039931]
16. Harrison SE, Paton M, Muessig KE, et al. "Do I want PrEP or do I want a roof?": Social determinants of health and HIV prevention in the Southern United States. AIDS Care 2022; 34:1435–1442. [PubMed: 35109734]
17. Eaton LA, Earnshaw VA, Maksut JL, et al. Experiences of stigma and health care engagement among Black MSM newly diagnosed with HIV/STI. J Behav Med 2018; 41:458–466. [PubMed: 29626312]
18. Jenkins WD, Williams LD, Pearson WS. Sexually transmitted infection epidemiology and care in rural areas: A narrative review. Sex Transm Dis 2021; 48:e236–e240. [PubMed: 34264905]
19. Giannouchos TV, Crouch E, Merrell MA, et al. Racial, ethnic, and rural/urban disparities in HIV and sexually transmitted infections in South Carolina. J Community Health 2023; 48:152–159. [PubMed: 36331790]
20. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance, 2020: State Ranking Tables. Available at: https://www.cdc.gov/std/statistics/2020/tables/2020-STD-Surveillance-State-Ranking-Tables.pdf. Accessed December 14, 2022.
21. Kaiser Family Foundation. State Health Facts (KFF website). Available at: https://www.kff.org/statedata/. Accessed December 14, 2022.

22. Centers for Disease Control and Prevention, National Center for Health Statistics. NCHS Urban-Rural Classification Scheme for Counties (CDC website). Available at: https://www.cdc.gov/nchs/data_access/urban_rural.htm#2013_Urban-Rural_Classification_Scheme_for_Counties. Accessed December 14, 2022.
23. South Carolina Department of Health and Environmental Control. The South Carolina STD/HIV/AIDS Annual Surveillance Report, 2020. Available at: https://scdhec.gov/sites/default/files/media/document/STDHIV-Surveillance-Report-2020.pdf. Accessed December 14, 2022.
24. Seiler N, Horton K, Pearson WS, et al. Addressing the STI epidemic through the Medicaid program: A roadmap for states and managed care organizations. Public Health Rep 2022; 137:5–10. [PubMed: 33617381]
25. Sonfield A, Gold RB. Medicaid Family Planning Expansions: Lessons Learned and Implications for the Future. New York, NY: Alan Guttmacher Institute, 2011.
26. Merrell MA, Betley C, Crouch E, et al. Screening and treatment of sexually transmitted infections among Medicaid populations—A2-State analysis. Sex Transm Dis 2021; 48:572–577. [PubMed: 33433174]
27. Pearson WS, Peterman TA, Gift TL. An increase in sexually transmitted infections seen in US emergency departments. Prev Med 2017; 100:143–144. [PubMed: 28455221]
28. Centers for Disease Control and Prevention. Chlamydia Screening Data, HEDIS and Managed Care (CDC website). Available at: https://www.cdc.gov/std/chlamydia/hedis.htm. Accessed December 14, 2022.
29. U.S. Department of Health and Human Services. Sexually Transmitted Infections National Strategic Plan for the United States: 2021–2025. Washington, DC; 2020. Available at: https://www.hhs.gov/sites/default/files/STI-National-Strategic-Plan-2021-2025.pdf.
30. Scott D, Pereira NM, Harrison SE, et al. “In the Bible Belt:” The role of religion in HIV care and prevention for transgender people in the United States South. Health Place 2021; 70:102613.

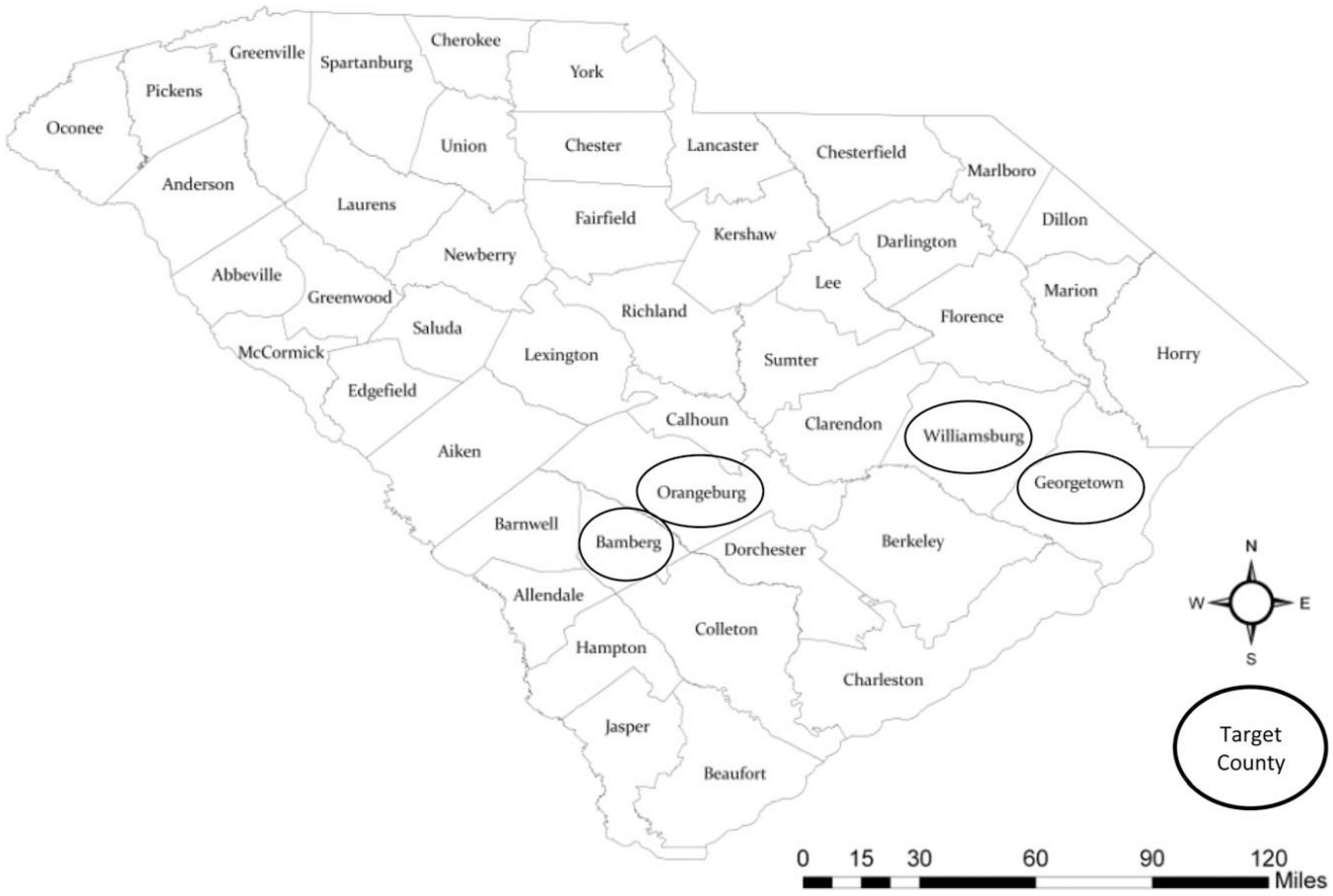

Figure 1.
Targeted rural South Carolina counties for primary care clinic engagement.

TABLE 1.

Sexually Transmitted Infections Rankings Among Rural South Carolina Counties

Top 10 Rural Counties With Highest Estimated PrEP Utilization (2018 County-Level Rate*)	**Rank† Among Rural Counties for Chlamydia Prevalence, 2018**	**Rank† Among Rural Counties for Gonorrhea Prevalence, 2018**	**Rank† Among Rural Counties for Syphilis Prevalence, 2018**
Colleton (54)	11	14	**7**
Georgetown (38)	16	**8**	**10**
Hampton (35)	15	16	+
Bamberg (32)	**6**	11	**8**
Chesterfield (31)	17	18	12
Marlboro (30)	**7**	**6**	**2**
Marion (30)	**5**	**5**	**5**
Williamsburg (29)	13	**10**	**1**
Abbeville (28)	18	17	**6**
Dillon (28)	**4**	**7**	**4**

*Rates per 100,000 population.

†A rank of 1 represents the worst infection rate. The bold format indicates a rank within the top 10 of worst counties in the state.

+No cases reported.

TABLE 2.

Characteristics of Rural Primary Care Clinics Engaged in Target Counties

	Clinic A	Clinic B	Clinic C	Clinic D
Primary role of staff member interviewed for study	Care manager	Nurse/nursing assistant	Practice/operations manager	Practice/operations manager
Total patient population, 2021	8278	18,729	2255	4606
Unique number of patients assigned female at birth younger than 25 y, 2021	1774	662	142	126
Clinical team	4 physicians	1 physician	1 nurse practitioner	1 physician
	8 nurse practitioners	5 nurse practitioners	1 physician assistant	1 nurse practitioner
	1 physician assistant	1 clinical pharmacist		1 physician assistant
	1 clinical pharmacist			
Payor mix	41% Medicaid	12% Medicaid	13% Medicaid	11% Medicaid
	27% commercial	55% commercial	39% commercial	37% commercial
	13% Medicare	32% Medicare	45% Medicare	49% Medicare
	19% uninsured	1% uninsured	3% uninsured	3% uninsured
Chlamydia tests performed, 2021	497	109	28	15
Gonorrhea tests performed, 2021	85	97	28	4
Syphilis tests performed, 2021	233	18	0	4
Extragenital tests performed, 2021	n/a	n/a	n/a	Not available *
HIV tests performed, 2021	415	51	5	9
PrEP prescriber	No	No	No	No

* Clinic reported that extragenital STI testing is conducted on-site, but the number of tests in 2021 was not available.

TABLE 3.

Educational Programming Developed to Support Increased Awareness of STI and HIV Prevention and Treatment Among Rural South Carolina Primary Care Clinic Staff

Topic	Target Audience	Primary Modality
A quality improvement initiative addressing STI services provided in rural South Carolina primary care clinics	All rural stakeholders	In-person conference presentation
Sexually transmitted infection update	Rural primary care clinicians	On-demand video
Extragenital STI screening for PrEP users	Rural primary care clinicians	On-demand video
Screening for extragenital sexually transmitted infections in the primary care setting: a PCP's perspective	Rural primary care clinicians	Live webinar
Talking to patients about STIs and HIV: reducing stigma to improve outcomes	Rural primary care clinicians and other practice staff (clinical and administrative)	Planned on-demand video
Practice management for STI and HIV prevention and treatment	Rural primary care practice managers andother practice staff (administrative)	On-demand video

Sex Transm Dis. Author manuscript; available in PMC 2025 February 01.