CONCISE COMMUNICATION

HIV pre-exposure prophylaxis provision by U.S. health centers in 2021

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Objectives: The aim of this study was to assess HIV preexposure prophylaxis (PrEP) provision in U.S. health centers.

Design: The U.S. Ending the HIV Epidemic (EHE) initiative designated health centers as the main healthcare system through which PrEP scale-up occurs. Health centers offer primary care to over 30 million disproportionately uninsured, racially or ethnically minoritized, and low-income patients. This study is the first to assess PrEP provision across health centers, including characteristics of clinics, patient populations, and policies associated with PrEP prescribing.

Methods: The Health Resources and Services Administration's Uniform Data System contained aggregate data on PrEP prescriptions and patient sociodemographics at health centers from January 1 through December 31, 2021, in 50 U.S. states, the District of Columbia, and eight U.S. territories. We compared patient demographics and availability of Medicaid expansion and PrEP assistance programs at health centers that prescribed vs. those that did not prescribe PrEP.

Results: Across 1375 health centers serving 30 193 278 patients, 79 163 patients were prescribed PrEP. Health centers that prescribed any PrEP had higher proportions of sexual, gender, racial, and ethnic minority patient populations compared with health centers that prescribed no PrEP. Compared with health centers that prescribed no PrEP, a higher proportion of health centers that prescribed PrEP were located in designated high-priority jurisdictions of the EHE initiative or states with Medicaid expansion or public PrEP assistance programs.

Conclusion: Health centers are critical for scaling up PrEP in minoritized populations disproportionately affected by HIV, facilitated through federal and state-level policies. These findings highlight service gaps and inform future interventions to optimize PrEP implementation and support EHE initiative goals.

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Introduction

Oral preexposure prophylaxis (PrEP) is highly effective in preventing acquisition of HIV [1]. In 2021, however, it was estimated that only 25% of 1.2 million individuals who would benefit from PrEP were prescribed it [2]. Racial and ethnic disparities exist in PrEP uptake, as African Americans account for 44% of new HIV infections, but only 10% of all PrEP users are African American [3]. PrEP use is also distributed inequitably, as Southern U.S. states have lower proportions of PrEP users despite having the highest proportions of new HIV diagnoses [4]. These regional differences could be attributable in part to the variability of state-level strategies that may influence access to HIV prevention services, such as Medicaid expansion and state PrEP Drug Assistance Program (PrEP-DAP) availability [5,6].

In 2019, the U.S. Department of Health and Human Services proposed the Ending the HIV Epidemic in the U.S. (EHE) initiative, a comprehensive strategy to decrease new HIV infections by 90% by 2030 [7], including scale-up of PrEP in 57 priority jurisdictions with high HIV incidence. The EHE initiative has designated the National Health Center Program as the primary healthcare system through which PrEP scale-up will occur. Health centers offer primary care to over 30 million patients who disproportionately are uninsured, are members of racially or ethnically minoritized groups, and have low incomes or live below the federal poverty level (FPL) [8], all of which are associated with increased HIV risk.

The current study assessed PrEP provision at health centers in the U.S. during 2021, including characteristics of clinics, patient populations, and policies associated with PrEP prescribing. We hypothesized that health centers that prescribed PrEP served higher proportions of patient populations at disproportionate risk of HIV acquisition compared to health centers that did not prescribe PrEP. We also hypothesized that health centers that prescribed PrEP were more likely to be geographically located in EHE jurisdictions, states with Medicaid expansion, and states with PrEP-DAPs. Identifying factors associated with PrEP prescribing at health centers can highlight gaps in service delivery and inform future interventions to optimize PrEP implementation, thereby supporting the goals of the EHE initiative.

Materials and methods

This study used data from the Bureau of Primary Healthcare, Health Resources and Services Administration's (HRSA) 2021 Uniform Data System (UDS). The UDS is a standard annual data set that provides information about health centers, including the number of individuals served and their demographic characteristics. These data are reported in aggregate by health centers, rather than at the patient level.

As of 2021, UDS data also included the number of patients at each health center tested for HIV and the number of HIV-negative patients who received PrEP prescriptions. HRSA granted permission to analyze the publicly available, de-identified UDS dataset. Patient characteristics, also reported as annual aggregate data at the health-center level, included age, sexual orientation, gender identity, race, ethnicity, income, and insurance status. Available sexual orientation data for lesbian, gay, or bisexual (LGB) patients did not allow further disaggregation. Given that patient-level data across all measures are not available in the UDS, interpretation should only focus on the aggregate health-center level.

Health centers characteristics included being in an urban area, an EHE priority jurisdiction, a Medicaid expansion state, or a state with PrEP-DAP funding. Medicaid expansion involves adoption of Affordable Care Act provisions to offer insurance coverage for more low-income Americans by extending eligibility for adults up to 64 years of age and with incomes up to 138% of the FPL [9]. Several U.S. states have implemented PrEP-DAPs to mitigate the financial burden of PrEP care on patients and increase PrEP access [10].

We used proportions to describe patient demographics at health centers that did and did not prescribe PrEP. The aggregate UDS data counts of individuals who were prescribed PrEP at each health center were converted into proportions, with the denominator being the total number of patients served at each health center in 2021. Statistical analyses consisted of chi-square tests using SPSS software version 25 (IBM, Somers, New York, USA).

Results

Of all health centers, 69.8% had at least one patient prescribed PrEP. The 2021 UDS data included 1375 health centers serving 30 193 278 patients from January 1, 2021, through December 31, 2021, in 50 U.S. states, the District of Columbia, and eight U.S. territories [11], with a total of 79 163 (0.3%) patients having a PrEP prescription during that year. Health centers that did not prescribe PrEP were mapped according to their zip codes (Fig. 1). U.S. states with the highest number of PrEP-prescribed patients were California, New York, and Illinois (see Map, Supplemental Digital Content 1, http://links.lww.com/QAD/D37, which shows the number of patients prescribed PrEP by geographical location of health centers in 2021).

Compared with health centers that did not prescribe PrEP, health centers that prescribed PrEP had higher

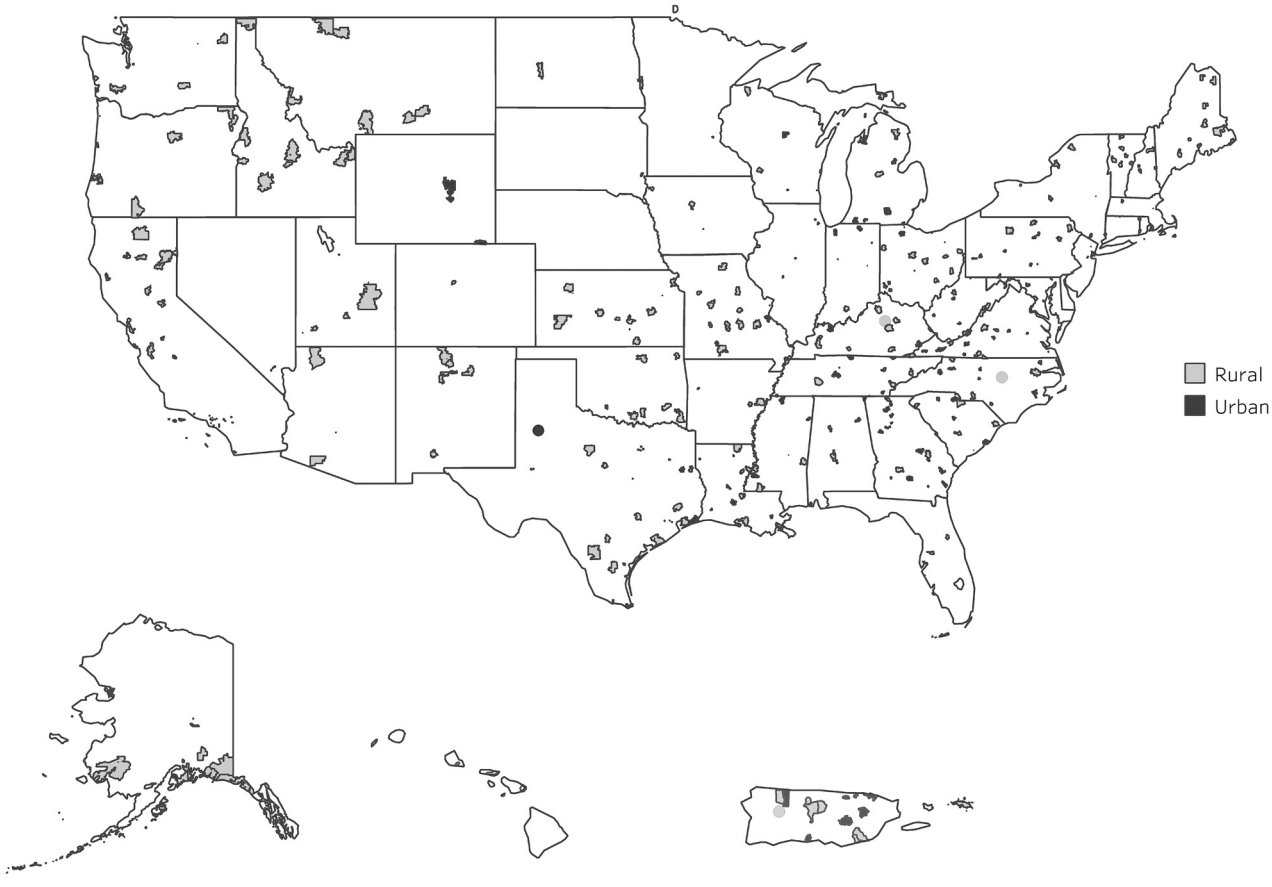

Fig. 1. U.S. map of zip codes with health centers that did not prescribe any preexposure prophylaxis, 2021.

proportions of patients who were aged under 18 (29.0 vs. 26.8%), 18–39 years old (29.7 vs. 28.0%), LGB (2.7 vs. 1.8%), or transgender (0.3 vs. 0.1%) (Table 1). Health centers that prescribed PrEP also had higher proportions of patients who were Black (18.4 vs. 16.1%), Asian (3.5 vs. 3.1%), or Hispanic (37.0 vs. 27.0%), had personal incomes less than or equal to the FPL (44.7 vs. 43.2%), or were uninsured (20.4 vs. 19.7%) or on Medicaid (48.9 vs. 42.9%).

Compared with health centers that did not prescribe PrEP, a higher proportion of health centers that prescribed PrEP were in urban areas (65.8 vs. 40.0%), EHE jurisdictions (39.6 vs. 24.8%), and U.S. states with Medicaid expansion (77.0 vs. 66.5%) or PrEP-DAPs (42.2 vs. 22.4%). All demographic and health-center characteristic measures had significantly different proportions between health centers that did and did not prescribe PrEP ($P < 0.001$).

Discussion

Health centers deliver primary and preventive medical care to over 30 million people in the U.S. who are disproportionately economically disadvantaged, minoritized based on their race, ethnicity, sexual orientation and gender identity, and living within EHE priority jurisdictions. Understanding PrEP prescribing across the National Health Center Program is therefore especially important for ending the HIV epidemic in the U.S. This study is the first to examine PrEP data available in the UDS to gain insights into potential strategies for increasing PrEP delivery by health centers to underserved populations.

Compared to health centers not prescribing PrEP, health centers prescribing PrEP had higher proportions of underserved populations, including patients who are minoritized based on race, ethnicity, sexually orientation and gender identity, as well as patients who had lower incomes, were uninsured, or on Medicaid. These findings suggest that EHE policy interventions should aim to optimize high-volume PrEP delivery specifically at health centers.

Among the 30 million people receiving care at health centers, approximately 0.3% were prescribed PrEP. The total number of patients prescribed PrEP at health centers was 79 163, which suggests that approximately one quarter of national PrEP prescriptions were from health

Table 1. Patient sociodemographic characteristics and health-center characteristics among U.S. health centers that prescribed any vs. no preexposure prophylaxis, 2021.

	HCs prescribing any PrEP, % ($n = 25\,211\,385$)	HCs prescribing no PrEP ($n = 4\,981\,893$)	*P*
Age (years)			<0.001
Aged under 18	29.0%	26.8%	
Aged 18–39	29.7%	28.0%	
Aged 40 and over	41.3%	45.2%	
Sexual orientation			<0.001
LGB	2.7%	1.8%	
Heterosexual/Straight	55.0%	66.1%	
Don't know	3.9%	3.2%	
Unreported/Refused	38.5%	28.9%	
Gender identity			<0.001
Transgender	0.3%	0.1%	
Cisgender	70.6%	79.0%	
Other gender identity	1.0%	0.4%	
Unreported/Refused	28.1%	20.5%	
Race			<0.001
Black	18.4%	16.1%	
Asian	3.5%	3.1%	
Native American	1.2%	1.7%	
Native Hawaiian and Pacific Islander	0.7%	1.6%	
White	56.3%	64.3%	
Multiracial	2.7%	3.2%	
Unreported/Refused	17.1%	10.0%	
Ethnicity			<0.001
Hispanic	37.0%	27.0%	
Non-Hispanic	57.9%	69.8%	
Unreported ethnicity	5.1%	3.2%	
Federal poverty level			<0.001
≤100% FPL	44.7%	43.2%	
>100% FPL	21.7%	24.8%	
Unreported FPL	33.6%	32.1%	
Insurance status			<0.001
Uninsured	20.4%	19.7%	
Medicare	10.2%	13.0%	
Medicaid	48.9%	42.9%	
Privately insured	19.6%	23.7%	
Other public insurance	0.8%	0.6%	
HC characteristics			
Urban area	65.8%	40.0%	<0.001
EHE jurisdiction	39.6%	24.8%	<0.001
State with Medicaid expansion	77.0%	66.5%	<0.001
State with PrEP-DAP	42.2%	22.4%	<0.001

EHE, Ending the HIV in the U.S. initiative; FPL, federal poverty level; HC, health center; LGB, lesbian, gay, bisexual; PrEP-DAP, PrEP drug assistance program.

centers. Given the national goal of having 1.2 million people receive PrEP [2], and that health centers in this study serve approximately 9% of the total U.S. population, there should have ideally been at least 108 000 health center patients receiving PrEP. Thus, there was likely inadequate receipt of PrEP prescriptions by health center patients; in fact, one-third of health centers did not report prescribing PrEP in 2021.

PrEP prescriptions alone, however, may be insufficient in determining adequate use of PrEP in a particular community. A recent study analyzed the prevalence of PrEP use per new HIV diagnosis, called the PrEP-to-need ratio (PnR), by the distribution of race and ethnicity at the county level. The study found that counties with the highest concentration of Black and Latine residents had higher prevalence of PrEP use but lower PnR [5]. As the number of PrEP-prescribing health centers increases, future disaggregation of high-PrEP and low-PrEP prescribing in relation to PnR will be important to determine the effectiveness of health centers in engaging at-risk patients.

Including sexual risk history in the UDS and ensuring the completeness of patient sexual orientation and gender identity (SOGI) data will be critical to make future analyses more rigorous and impactful. A recent study found that almost one-third of patient SOGI data remain missing in the UDS, 6 years after this reporting requirement began [12]. Ongoing vigilant monitoring and evaluation of UDS data reporting will be important to help track HIV prevention efforts in the U.S.

Our study identified small geographical clusters of health centers that did not prescribe PrEP, predominantly in Southern and Western U.S. states, as well as in Puerto

Rico. Increasing PrEP provision in these regions in relation to new HIV diagnoses ought to be prioritized to ensure equitable access. Higher proportions of health centers that prescribed any PrEP were in EHE priority jurisdictions or U.S. states that adopted Medicaid expansion or had PrEP-DAPs. EHE jurisdictions are designated U.S. geographical catchments with the highest proportions of new HIV diagnoses, indicating a high need for PrEP scale-up. Our findings suggest the importance of allocating funding for further PrEP implementation at health centers in EHE priority jurisdictions, as well as research on relationships between specific funding mechanisms and PrEP uptake among priority populations.

Studies have found that U.S. states adopting Medicaid expansion have higher uptake of PrEP, possibly due to increased utilization of PrEP with insurance coverage [4,6,13]. There is also evidence supporting the role of PrEP-DAPs in increasing use of PrEP [5]. Although PrEP-DAPs vary across U.S. states, they generally provide financial support for medication and provider-related costs and offer referrals to other care services, such as mental health and substance use disorder treatment, which can support PrEP initiation and persistence.

This study has several limitations. The data reported in the UDS, which are from all health centers that received federal funding in 2021, are in aggregate at the health-center level and therefore do not allow for patient-level analyses. The UDS does not include information on the number of individual staff who prescribed PrEP. There is also a lack of sexual risk data in the UDS, which, if collected, would allow researchers to better understand whether PrEP prescriptions are meeting patients' needs. This study's cross-sectional design does not allow determination of causal pathways.

These findings have significant public health implications. This is the first analysis of national PrEP prescribing data from health centers across the U.S. and provides important baseline information on health center and patient-population characteristics associated with PrEP prescribing. Future analyses of UDS data will offer a means to evaluate the impact of federal and state-level interventions on PrEP prescribing and longitudinally track the geographic distribution of PrEP prescribing and disparities nationally. Federal interventions to improve service delivery for HIV prevention, such as through culturally responsive training and provision of other education and resources, should focus on the substantial proportion of health centers that are not yet prescribing PrEP. Ongoing education and training efforts for health-center staff, such as programming by the National LGBTQIA+ Health Education Center at The Fenway Institute and the AIDS Education and Training Centers, will support increased PrEP prescribing by health centers [14]. Public PrEP awareness and educational campaigns that engage minoritized communities at elevated risk for HIV will also promote increased receipt of PrEP.

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A.S. Keuroghlian and K.H. Mayer conceptualized the study. T. Chinbunchorn led writing of the initial manuscript and subsequent revisions. J. Campbell and D. King conducted all data analyses. J.L. Marcus contributed to the design of the data analyses. C. Grasso contributed expertise regarding the UDS dataset. D. Krakower contributed expertise regarding PrEP implementation. All authors interpreted the data and provided critical revision of the manuscript for important intellectual content. A.S. Keuroghlian supervised the design, implementation, and reporting of the study.

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Conflicts of interest

There were no sources of funding for this study. A.S.K. reports royalties as editor of a McGraw Hill textbook on transgender and gender-diverse healthcare. The authors report no other relevant disclosures.

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