Geographic Variations of HIV Specialist Shortages: An Observational Study to Support the 90-90-90 HIV Treatment Goals in the US

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Conclusions

- This real-world observational study used the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90-90-90 HIV-1 treatment goals[1] to highlight geographic variations in HIV-1-trained clinician availability and shortage across the US
  - Most HIV-1-trained clinicians practiced as infectious disease or internal medicine specialists, and practiced in urban areas and in 'Ending the HIV Epidemic' (EHE) jurisdictions
  - The target HIV-1-trained clinician-to-people with HIV-1 ratio (TPR) was 13:1000 nationwide compared with 1:1000 in counties with clinician shortages that did not meet any UNAIDS treatment goals
- To meet all UNAIDS treatment goals in the US, strategic interventions, such as those provided by the Ryan White HIV/AIDS Program (RWHAP),[2] are needed to ensure equitable access to HIV-1 care and to address workforce shortages in regions of greatest need, including Southern states where HIV-1 prevalence is high
  - It is estimated that at least 1565 additional HIV-1 trained clinicians are needed to support the ongoing EHE initiative, which aims to reduce new HIV-1 cases in the US by at least 90% by 2030 using four key science-based strategies: diagnose, treat, prevent, and respond

Plain Language Summary

- It is important that all people with HIV see clinicians who are trained in HIV care
- The Joint United Nations Programme on HIV/AIDS (UNAIDS) have set goals to be achieved by 2025
  - These goals aim to ensure that 90% of people living with HIV know they have HIV, receive treatment, and have treatment that works
- This study looked at how many more HIV-trained clinicians are needed in the US to give people with HIV the care they need
- The study also looked at how many US counties were meeting at least one of the UNAIDS treatment goals
- The nationwide target was to have 13 HIV-trained clinicians for every 1000 people with HIV
  - In areas that had clinician shortages and did not meet any of the UNAIDS goals, there was only 1 HIV-trained clinician for every 1000 people with HIV
- The researchers found that over 1500 additional HIV-trained clinicians are needed in the US to meet all UNAIDS goals and that states in the South needed the most additional clinicians
- More efforts are needed to make sure that all people with HIV can access the right care and to improve shortages in trained clinicians across the US

Background

- Access to experienced HIV-1-trained clinicians (doctors, physician associates, nurse practitioners, clinical pharmacists) is essential to ensure that people with HIV-1 (PWH) are diagnosed early and receive immediate and appropriate antiretroviral therapy (ART)[3,4]
  - The UNAIDS 90-90-90 HIV-1 treatment goals aimed to ensure that, by 2025, 90% of all PWH know their HIV-1 status, 90% of PWH receive sustained ART, and 90% of all people receiving ART achieve viral suppression[1]
  - Similarly, the EHE initiative in the US targets a 90% reduction in new HIV-1 infections by 2030 by providing resources to 50 local areas where more than half of all new HIV-1 diagnoses occur[4]
- Achieving UNAIDS and EHE goals has proven difficult, and shortages in experienced HIV-1-trained clinicians persist in the US[5,6]

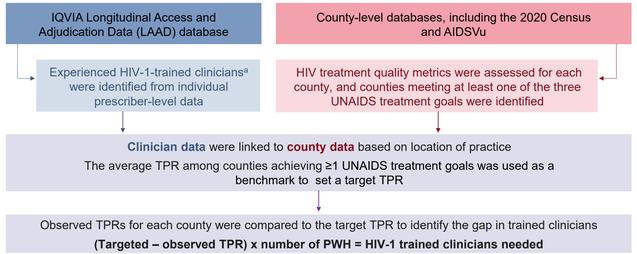
Objective

- To identify regional variations in shortages of trained clinicians in the US in support of the UNAIDS 90-90-90 HIV-1 treatment goals through a retrospective, observational study

Methods

- Trained clinician data from the IQVIA pharmacy claims database were combined with county data in an algorithm to identify counties with a clinician shortage (**Figure 1**)

Figure 1. Algorithm to identify counties with a clinician shortage



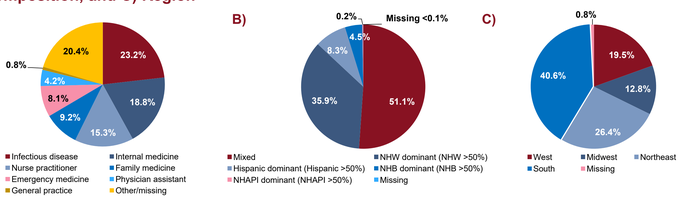
[a]Defined as clinicians delivering care to ≥25 PWH between 2022 and 2024.
PWH, people with HIV-1; TPR, HIV-1-trained clinician-to-PWH ratio; UNAIDS, Joint United Nations Programme on HIV/AIDS.

Results

Clinician Characteristics

- A total of 21,003 HIV-1-trained clinicians were identified in 2561 counties between 2022 and 2024
  - The most common specialities HIV-1-trained clinicians practiced in were infectious disease (23%) or internal medicine (19%) (**Figure 2A**)
  - The majority of trained clinicians practiced in urban areas (98%), predominantly in mixed race/ethnicity (51%) and non-Hispanic White neighborhoods (36%) (**Figure 2B**)
  - Most trained clinicians practiced in the South (41%) and Northeast (26%) (**Figure 2C**), additionally 63% practiced in EHE regions
- Overall, 13% of trained clinicians practiced in high-income or high-education neighborhoods, and 28% practiced in neighborhoods with high levels of insurance coverage

Figure 2. HIV-1-Trained Clinician Characteristics: A) Specialty, B) Neighborhood Racial/Ethnic Composition, and C) Region

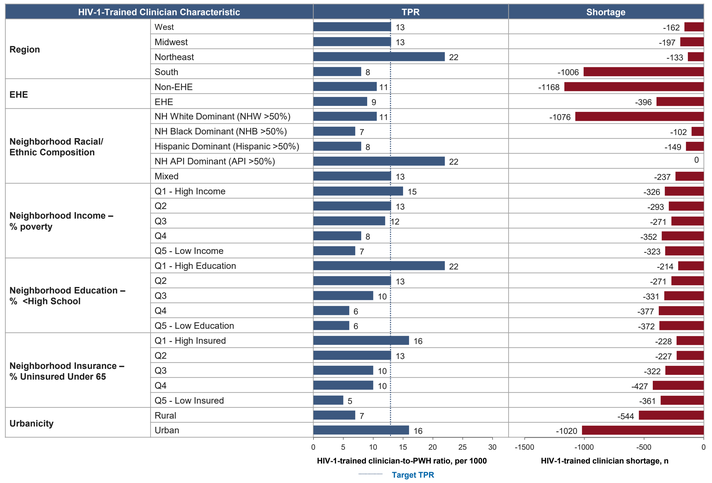


Neighborhood racial/ethnic composition and region were based on where each HIV-1-trained clinician practiced.
NHAPI, non-Hispanic Asian and Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White.

TPR and Shortages in HIV-1-Trained Clinicians

- The target HIV-1 TPR was 13:1000 nationwide, with significant demographic and geographic variation (**Figure 3**)
  - TPR was greatest in neighborhoods with high levels of income, education, and insurance coverage versus neighborhoods with low levels (**Figure 3**)
  - TPR varied widely among US states, ranging from 8:1000 in the South to 22:1000 in the Northeast (**Figure 3**; **Figure 4a**)

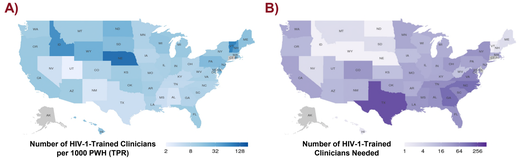
Figure 3. Ratio of HIV-1-Trained Clinicians to PWH and Numbers of HIV-1-Trained Clinicians Needed in the US, Stratified by County Characteristics



EHE, Ending the HIV Epidemic; NH API, non-Hispanic Asian and Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White; PWH, people with HIV-1; TPR, HIV-1-trained clinician-to-PWH ratio.

- To meet all UNAIDS treatment goals in the US, an additional 1565 HIV-1-trained clinicians nationwide are needed
  - This shortage was unevenly distributed, with high numbers of HIV-1-trained clinicians needed in non-EHE jurisdictions, White-dominant neighborhoods, and urban areas (**Figure 3**)
  - Across the US, shortages were greatest in Southern states, including Texas and Georgia, which require 236 and 137 additional HIV-1-trained clinicians, respectively (**Figure 4b**)

Figure 4. Geographic Variation of (A) Ratio of HIV-1-Trained Clinicians to PWH, and (B) Number of HIV-1-Trained Clinicians Needed in the US

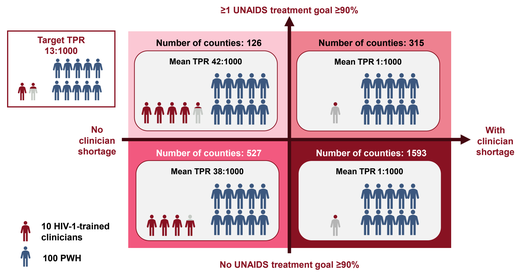


PWH, people with HIV-1; TPR, HIV-1-trained clinician-to-PWH ratio.

County-Level UNAIDS Goal Achievement and TPR

- Among 2561 counties, 75% (n=1908) had a shortage of clinicians and 83% (n=2120) had achieved none of the UNAIDS treatment goals (**Figure 5**)

Figure 5. Ratio of HIV-1-Trained Clinicians to PWH Across Counties by UNAIDS Treatment Goal Achievement and Clinician Shortage



UNAIDS HIV-1 treatment goals included: 1) 90% of all people living with HIV-1 will know their HIV-1 status; 2) 90% of all people with diagnosed HIV-1 infection will receive sustained antiretroviral therapy; and 3) 90% of all people receiving antiretroviral therapy will have viral suppression.
PWH, people with HIV-1; TPR, HIV-1-trained clinician-to-PWH ratio; UNAIDS, Joint United Nations Programme on HIV/AIDS.

Limitations

- Patient-level individual treatment goal achievement data were not available for this analysis
- Individual-level clinician characteristics, which may impact their clinical practice, were not assessed
  - Demographic data on HIV-1-trained clinicians were limited, with race, ethnicity, and education attainment neighborhood approximates used

References: **1.** UNAIDS 90-90-90: Treatment for all. Available at https://www.unaids.org/en/resources/909090 (Accessed October 2025). **2.** Grisham K, Crowley JS. Quick Take. Ryan White HIV/AIDS Program. Available at https://oneill.law.georgetown.edu/wp-content/uploads/2025/05/ONL_QT_Ryan_White_HIV_Effective_P11_A-KJ.pdf. (Accessed October 2025). **3.** Landovitz RJ, et al. AIDS Patient Care STDS. 2016; 30:395–408. **4.** CDC. Ending the HIV Epidemic in the US (EHE). Available at https://www.cdc.gov/ehe/php/jurisdictions-plans/index.html (Accessed October 2025). **5.** Addressing the HIV Workforce Gap. AIDS Education and Training Center. Available at: https://aidsetc.org/resource/addressing-hiv-workforce-gap (Accessed October 2025). **6.** Masiano SP, et al. J Int AIDS Soc. 2019;22:e25286.

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Conflicts of Interest: **Dona Khoshabafard, Juan Yang, Julia Green, Gina Brown, Amy Weinberg,** and **Li Tao** are all employees and shareholders of Gilead Sciences, Inc.