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Racial/ethnic disparities in estimated undiagnosed HIV infection among adolescents and adults in the United States, 2017–2021

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Abstract

In 2021, there were an estimated 153 500 persons aged at least 13 years with undiagnosed HIV infection. Estimated rates among Black/African American, Hispanic/Latino, and White persons were used to assess disparity trends from 2017 to 2021. Rates decreased across two absolute and relative disparity measures. Despite these declines, Black and Hispanic persons had rates 8.3 and 4.2 times the rate of White persons in 2021. Increased testing and innovative efforts are needed to address HIV-related disparities.

Despite advances in HIV prevention and care, there were an estimated 1.2 million persons aged at least 13 years with HIV infection at the end of 2021, and approximately 153 500 persons had an undiagnosed HIV infection [1]. Increased HIV morbidity and mortality are likely to occur among persons with an undiagnosed infection. Although the proportion of persons with undiagnosed HIV infection decreased from 14% in 2017 to 12.7% in 2021, disparities in HIV diagnoses remain [1,2]. The Estimated HIV Incidence and Prevalence in the United States report from 2017 to 2021 revealed higher estimated percentages of undiagnosed HIV infections among male individuals compared with female individuals across all HIV transmission categories, among persons aged 13–24 years compared with older age groups, and among persons belonging to racial and ethnic minority groups compared with White persons [1]. In particular, Black/African American (herein referred to as Black) persons and Hispanic/Latino (herein referred to as Hispanic) persons remain the most disproportionately affected populations [2]. Understanding these disparities are important because HIV transmission rates are largely attributed to high rates of undiagnosed infections and accompanying high viral loads of HIV among persons with an untreated infection [3].

Preventing new HIV infections is a priority of The *National HIV/AIDS Strategy (NHAS) for the United States 2022–2025* [4]. NHAS complements the Ending the HIV Epidemic in

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Conflicts of interest

There are no conflicts of interest.

the United States (EHE) initiative, which seeks to reduce new HIV infections in the United States by 75% in 2025 and at least 90% by 2030 [5]. To our knowledge, no studies have assessed national-level trends in disparities of undiagnosed HIV infections among racial and ethnic groups, which is important for monitoring progress toward these national HIV goals.

We used the estimated HIV prevalence of persons aged at least 13 years with diagnosed or undiagnosed infection at year end and adjusted population data from the Centers for Disease Control and Prevention (CDC) AtlasPlus to assess annual rates of undiagnosed HIV infection for years 2017–2021 [1,6,7]. Our analysis focused on the racial/ethnic groups that represented greater than 90% of the total estimated number of undiagnosed HIV infections in 2021. Rates of undiagnosed HIV infections per 100 000 population were calculated using adjusted population denominators among Black, Hispanic, and White persons.

We used one absolute (rate difference) and one relative (rate ratio) disparity measure to calculate the 5-year trend in disparities of undiagnosed HIV infection from 2017 to 2021. Absolute disparity rates were calculated as the annual rate of estimated undiagnosed HIV infections among Black persons minus the rate among White persons (i.e. Black-to-White rate difference) and the rate among Hispanic persons minus the rate among White persons (i.e. Hispanic-to-White rate difference) [8]. Relative disparity rates were calculated by dividing the annual rate of estimated undiagnosed HIV infections among Black persons by the annual rate of White persons (i.e. Black-to-White rate ratio) and the rate among Hispanic persons by the rate of White persons (i.e. Hispanic-to-White rate ratio) [8]. Estimated annual percentage change (EAPC) and 95% confidence intervals (CIs) were calculated to assess trends of undiagnosed HIV infection. Trends were considered statistically significant if the EAPC CIs excluded 0. Analyses were conducted using SAS software (version 9.4; SAS Institute, Inc., Cary, North Carolina, USA).

Table 1 shows estimated annual rates, EAPCs, and outcomes from two disparity measures for undiagnosed HIV infection. From 2017 to 2021, the annual rate of estimated undiagnosed HIV infections decreased among Black persons by 8.7% from 195.6 to 178.5 (EAPC=−2.30; CI=−2.54 to −2.06), Hispanic persons by 10.3% from 101.5 to 91.0 (EAPC=−2.79; CI=−3.08 to −2.51), and White persons by 3.6% from 22.4 to 21.6 (EAPC=−0.81; CI=−1.12 to −0.49). The Black-to-White rate difference decreased by 9.4% and the Black-to-White rate ratio decreased by 4.6%. The Hispanic-to-White rate difference decreased by 12.2% and the Hispanic-to-White rate ratio decreased by 6.7%.

Despite declines in rates and EAPCs, Black and Hispanic persons with estimated undiagnosed HIV infection had a rate that was 8.3 and 4.2 times the rate of White persons in 2021. These findings highlight the persistence of HIV-related disparities.

To address these disparities, testing remains necessary to diagnose HIV infections. Testing in clinical settings would need to increase by at least three-fold to reach the national EHE goals [9]. Also, HIV self-testing is effective in increasing awareness of one's HIV status [10,11] and has cost-saving benefits [12]. The COVID-19 pandemic led to an increase in self-testing; however, resources and focused efforts are needed to improve uptake among populations disproportionately impacted by HIV [4,13].

Whole-person strategies to increase testing efforts in clinical settings including the status-neutral approach (i.e. engagement and provision of HIV services, regardless of one's HIV status) and partner services to persons with diagnosed HIV are needed [2,14]. Lessons from COVID-19 underscore the benefit of having broader support systems (e.g. receiving concurrent STI/HIV testing, social services support – including housing, food or employment needs, and referrals for harm reduction, substance use, or mental health services) to maximize health outcomes and minimize the barriers to seeking healthcare (e.g. transportation to appointments, out-of-pocket costs, stigma).

Data in this report are subject to limitations. First, the accuracy of incidence, prevalence, and proportion of undiagnosed estimates based on CD4⁺ data relies on the accuracy of the CD4⁺ depletion model (e.g. the CD4⁺ depletion model is correct and diagnosis delay was not significantly changed in recent years) [6]. Second, our trend analysis focused on the 5-year period inclusive of 2020, the time in which service interruptions during the COVID-19 pandemic had significant impacts on data reported to CDC. Despite these limitations, our results provide data to support the need for interventions and strategies to continue the progress towards reducing racial and ethnic disparities and increase testing among populations disproportionately impacted by HIV.

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Availability of data:

the data that support the findings of this study are openly available.

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Racial and ethnic disparities of estimated undiagnosed HIV infections among persons aged at least 13 years, by selected characteristics, United States, 2015–2019.

Table 1.

	2017	2018	2019	2020	2021	EAPC of Rates, 2017–2021 (95% CI)
Rate (per 100 000)						
Black/African American	195.6	192.0	187.4	182.7	178.5	–2.30 (–2.54 to –2.06)
Hispanic/Latino ^a	101.5	99.8	97.2	93.5	91.0	–2.79 (–3.08 to –2.51)
White	22.4	22.2	22.1	21.9	21.6	–0.81 (–1.12 to –0.49)
Absolute disparity measures						
Black-to-White rate difference	173.2	169.8	165.3	160.8	156.9	–
Hispanic-to-White rate difference	79.1	77.6	75.1	71.6	69.4	–
Relative disparity measures						
Black-to-White rate ratio	8.7	8.6	8.5	8.3	8.3	–
Hispanic-to-White rate ratio	4.5	4.5	4.4	4.3	4.2	–

Rates are per 100 000. Rates of undiagnosed HIV infections per 100 000 population were calculated using adjusted population denominators among Black/African American, Hispanic/Latino, and White persons. Absolute disparity rates were calculated as the difference between the rate of each racial/ethnic group. Relative disparity rates were calculated as rate ratios between each racial/ethnic group. Rate differences and ratios were calculated comparing Black/African American persons and Hispanic/Latino persons to White persons. CI, confidence interval; EAPC, estimated annual percentage change.

^aHispanic/Latino persons can be of any race.