Understanding the Impact of HIV: Diagnoses, Incidence, and Prevalence

National HIV surveillance data are critical for tracking progress against HIV and informing the development, implementation, and evaluation of prevention and treatment programs. To use these data, it's critical to understand three related, but distinct, concepts: HIV diagnoses, incidence, and prevalence.

	HIV Diagnoses	HIV Incidence	HIV Prevalence
What question does it address?	How many people have received an HIV diagnosis?	How many new HIV infections have occurred, both diagnosed and undiagnosed?	How many people are living with HIV?
Definition	The number of people who have received an HIV diagnosis in a given time period, regardless of when they were first infected	The estimated number of people newly infected with HIV in a given time period, whether or not they have been diagnosed	The estimated number of people with HIV alive at a given time, regardless of when they were infected or whether they have received a diagnosis
Example	CDC reports that 38,281 people received an HIV diagnosis in the U.S. (all 50 states and D.C.) during 2017.[1]	CDC estimates that 38,700 people ages 13 and over were newly infected with HIV in the U.S. during 2016.[2]	CDC estimates that 1,140,400 people ages 13 and over were living with HIV (both diagnosed and undiagnosed) in the U.S. at the end of 2016.[3]
Where the data come from	Health departments report to CDC all confirmed HIV infections diagnosed in their jurisdiction as well as clinical information about each infection, such as the earliest CD4 cell count and if the person has died.		
How it's calculated	CDC sums and tabulates the number of diagnoses reported by health departments.	After infection, CD4 cell counts steadily decline in untreated persons; the lower the CD4 cell count at diagnosis, the longer the person has been infected with HIV. CDC calculates the estimated number of new infections (both diagnosed and undiagnosed) using a model that approximates when each infection occurred based on the earliest CD4 cell count after diagnosis.	CDC estimates the number of people who have ever been infected (both diagnosed and undiagnosed), then subtracts the reported total number of people with diagnosed HIV who have died.

[1] Centers for Disease Control and Prevention. Diagnoses of HIV Infection in the United States and Dependent Areas, 2017; Table 1a, page 17. *HIV Surveillance Report, 2017*; vol. 29. http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Published November 2018. Accessed February 2019.

[2] Centers for Disease Control and Prevention. Estimated HIV incidence and prevalence in the United States, 2010–2016; Table 1a, page 20. *HIV Surveillance Supplemental Report* 2019;24(No. 1). http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Published February 2019. Accessed February 2019.

[3] Centers for Disease Control and Prevention. Estimated HIV incidence and prevalence in the United States, 2010–2016; Table 7, page 47. *HIV Surveillance Supplemental Report* 2019;24(No. 1). http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Published February 2019. Accessed February 2019.

National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention
Division of HIV/AIDS Prevention

	HIV Diagnoses	HIV Incidence	HIV Prevalence
How it's useful	The number of diagnoses helps CDC understand *trends in the burden of disease*. For example, these data can help identify the areas and populations with the greatest need for HIV care and treatment services.	CDC uses incidence data to monitor *trends in HIV transmission*, both overall and in key populations. Incidence data also help CDC measure the effectiveness of prevention efforts.	CDC uses prevalence data to capture the *overall impact of HIV* and to measure the total number of people who need access to HIV treatment and care services.
Key strengths and limitations	Diagnosis data can provide detailed information about where infections are occurring and how different groups of people are affected (e.g., age, gender, race/ethnicity). Diagnosis data are available more quickly than incidence and prevalence estimates. However, the number of HIV diagnoses for the most recent year that data are available are considered preliminary. They should not be used to analyze trends until at least a year after they are first reported to account for delays in data reporting and duplicate reporting.	By identifying when new infections occurred, incidence estimates are very useful for prevention efforts. However, incidence estimates may not be available for some geographic areas or subpopulations with a relatively small number of cases. In these circumstances, diagnosis data can be used as a proxy for incidence.	Prevalence estimates give the best picture of how many people are alive with HIV. However, it currently takes at least 18 months from the end of a year for CDC to make a reliable estimate of prevalence during that year due to delays in the reporting of deaths.

For More Information:
Call 1-800-CDC-INFO (232-4636)
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