Ramping Up Treatment Rates Could Shrink U.S. HIV Epidemic by 2025

If the viral suppression rate reaches 73 percent in 2020 and 86 percent in 2025, HIV incidence could drop nearly 70 percent.

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If the United States hits ambitious targets in the diagnosis, treatment and viral suppression of HIV, the number of people living with the virus could finally begin to contract by 2025. Getting 73 percent of the HIV population virally suppressed by 2020 and 90 percent suppressed by 2025 would cause the annual rate of infection, known as HIV incidence, to drop nearly 70 percent by 2025.

Publishing their findings in Preventive Medicine, a pair of researchers analyzed 2010 to 2013 Centers for Disease Control and Prevention (CDC) HIV surveillance data and used mathematical modeling to project how hitting the aforementioned targets would affect key measures of the epidemic through 2025.

Authors Robert A. Bonacci, MD, MPH, of Brigham and Women's Hospital in Boston, and David R. Holtgrave, PhD, of Johns Hopkins Bloomberg School of Public Health, recently published an editorial in POZ stating that the 18 percent drop in estimated HIV infection rates seen between 2008 and 2014 is insufficient.

Throughout the 2010s, prevailing wisdom has held that just 30 percent of the U.S. HIV population has undetectable viral load (another term for being virally suppressed) and therefore is extremely unlikely to transmit the virus. This estimate is based on 2011 data and may have been an underestimate to begin with.

Recent evidence suggests that the U.S. viral suppression rate has been improving steadily. The CDC has cited this trend as a likely driver of the recent decline in HIV incidence.

The authors of the new study presumed that the United States would succeed in the ambitious targets established by the National HIV/AIDS Strategy of getting 90 percent of the HIV population diagnosed, 90 percent of that group on ARVs and 90 percent of that group virally suppressed by 2020, for an overall viral suppression rate of 73 percent. They also presumed that the corresponding so-called care continuum statistics for 2025 would be 95/95/95, which would yield an overall viral suppression rate of 86 percent.

According to Bonacci and Holtgrave's mathematical modeling, hitting those care continuum targets could reduce the annual HIV transmission rate by 46 percent by 2020 and by almost 70 percent by 2025.

The authors based their modeling on 2013 figures. They estimated that during that year the HIV incidence was 39,000; the transmission rate, or the number of times each 100 people with HIV transmitted the virus that year, was 3.53; the reproductive rate, or the estimated number of times each person living with HIV would transmit the virus during their lifetime, was 1.02; the number of people with HIV who died from any cause was 16,500; the death rate per 100,000 people with HIV was 1,494; and the number of people living with HIV was 1,104,600.

Hitting the 90/90/90 target by 2020 and the 95/95/95 target by 2025 would cause the incidence rate to fall to a respective 21,000 and 12,000, while the other figures would drop as follows: the transmission rate, to 1.74 and 0.98; the reproductive rate, to 0.5 and 0.28; the number of deaths, to 12,571 and 12,522; and the mortality rate, to 1,050 and 1,025. This would amount to 72 percent drops in both the transmission and reproductive rates between 2013 and 2025.

Between 2024 and 2025, when the fast declining incidence rate would drop below the more slowly declining death rate, the HIV population would finally begin to shrink, from 1,221,137 to 1,220,615 people.

To read a press release about the study, click here.

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