

HIV testing during early infection may reduce new cases in high-risk communities

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HIV (yellow) infecting a human immune cell. Credit: Seth Pincus, Elizabeth Fischer and Austin Athman, National Institute of Allergy and Infectious Diseases, National Institutes of Health

Detecting HIV earlier, through screening programs that can identify the virus shortly after infection, may lead to lower rates of HIV transmission in local epidemics, suggest findings from a new study published in *Clinical Infectious Diseases* and available online. After an acute infection screening program was implemented in San Diego, there were fewer new HIV diagnoses than would have been expected without such testing.

To screen for HIV, the program used nucleic acid and serology testing, which can detect the virus during the acute or primary stage of infection, as soon as 7 to 10 days after exposure, compared to several weeks or months for other tests. An estimated 30 to 50 percent of new infections originate from recently infected individuals, who carry higher viral loads. High-risk sexual behavior is also common during this stage, as individuals are often unaware of their status. The researchers believed that screening for primary infections would reduce HIV transmission during early infection and lead to lower overall incidence of the virus.

Their cohort study analyzed HIV testing data collected by the San Diego County Department of Public Health and the San Diego Primary Infection Cohort between 1996 and 2012, and used genetic analysis to identify local chains of transmission. Researchers focused on the city's central region, including the Hillcrest neighborhood, the center of the city's gay community and an area of high HIV incidence. It was in this neighborhood that the researchers established an [acute infection](#) screening program, the Early Test, in 2007. Approximately 100 fewer new HIV diagnoses were observed in the central region in 2012 than would have been expected without the Early Test program. Genetic analysis also suggested that HIV transmission chains were more likely to end in areas where the early testing was marketed.

"Our data suggests there was a decrease in incident diagnoses just based on testing for acute infection," said study author Sanjay R. Mehta, MD, of the University of California, San Diego. "We think that screening for

acute infection targeted to geographically focused high-risk populations can reduce incident infections."

Dr. Mehta noted that primary infection screening programs using the same methods have been introduced in other cities, including Seattle and San Francisco, but they are not yet widespread. He said that prevention efforts located in areas where HIV is prevalent would benefit from testing for primary infection.

Because the researchers conducted an observational study at a single site, their findings suggest but do not prove a cause-and-effect relationship between the Early Test program's methods and decreased incidence of HIV. However, they could influence more HIV testing facilities to offer primary infection screening. Dr. Mehta also believes that their methodology could benefit future studies. "We used a combination of methods, including epidemiological data and phylogenetic data, to understand the changes in incident diagnoses in a population," Dr. Mehta said. "This combination could be used in other studies to evaluate prevention programs or programs designed to reduce incidence of HIV."

Fast Facts

- Primary infection screening programs can detect HIV earlier than other routinely used screening methods, as soon as 7 to 10 days after exposure.
- This infection period, which is often missed by standard testing, is a time when someone has a high chance of passing on their infection. An estimated 30 to 50 percent of new HIV infections originate from recently infected individuals, who are often unaware of their status.
- After an Early Test program was implemented in San Diego, there were fewer new HIV diagnoses than would have been expected without this testing approach, suggesting that such

screening can reduce transmission in targeted, high-risk communities.

- The use of molecular epidemiology methods allowed researchers to see the effects of an intervention at a population level.

Provided by Infectious Diseases Society of America

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