HIV Superinfection: More Questions Than Answers

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Studies have reported HIV superinfection incidence rates of between 0 and 7.7 percent per year, but these data, as with much of the understanding about the phenomenon of people with HIV becoming infected with a second strain of the virus, are relatively hazy, and much more research is needed. Scientists published a review of the available research on superinfection in The Lancet in which they said that newer methods allow for improved detection of the phenomenon; that clinicians should encourage safer sexual and injection drug methods to HIV-positive patients to prevent superinfection because it may negatively impact health outcomes; and that the existence of superinfection has implications for vaccine research because it indicates the body's inability to prevent a new infection with its own immune response.

Superinfection was first documented in 2002. It occurs when someone who is already infected with HIV is exposed to different strain of HIV and becomes infected with that as well. Two different strains of HIV can enter the same cell and bind their genetic material to become what is known as a recombinant virus. An estimated 10 percent of HIV-1 infections involve recombinant viruses, which the paper argues is evidence of superinfection.

Observational studies and case reports in the United States, Canada, Europe, Australia, Asia and Africa have all documented cases of HIV superinfection. According to the paper, "The widespread observation of superinfection suggests it is a substantial problem and has been under-reported."

Superinfection incidence rates vary widely between studies, with many reporting none at all. Factors affecting this data include study design, the population studied, the frequency of antiretroviral use, the length of follow-up in the study and the methods used to detect superinfection. One study in Uganda actually found that the incidence rate of superinfection was about the same as the rate of initial infection in the same area.

The paper reports that superinfection can take place more than two years after initial infection.

Scientists generally agree that superinfection will cause a spike in viral load. However, whether this will lead to higher viral loads over time is unclear; studies have produced contradictory results. Studies have been as inconclusive about how superinfection may affect CD4 levels.

The paper states that superinfection research findings "provide a sobering fact for HIV vaccine

design—that initial HIV infection and the host's subsequent immune responses are not fully protective against a new HIV challenge." However, the authors say that vaccine researchers can still tease apart which parts of the natural immune response could be effective, and can study superinfection to see how the immune system reacts to the introduction of a new HIV strain.

To read the study abstract, click here.

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