Natural Selection Has Inched Up HIV's Infectiousness and Virulence

This finding does not suggest that HIV treatment will be any less effective at keeping people healthy or preventing transmission.

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Over time, natural selection has driven HIV to become slightly more infectious and virulent, Newsweek reports. This finding does not suggest, however, that antiretroviral (ARV) treatment will be any less effective at keeping people with the virus healthy or preventing them from transmitting HIV to others. Nor should this evolution of the virus compromise the effectiveness of pre-exposure prophylaxis (PrEP).

Researchers from the University of California, San Diego, and the Centers for Disease Control and Prevention (CDC) analyzed data from the National HIV Surveillance System regarding more than 40,000 people diagnosed with HIV. They focused on what are known as molecular clusters of HIV infection. These are groups of new diagnoses of the virus that are genetically closely related, suggesting that the virus was transmitted through a sexual network during a relatively short period of time.

The investigators looked specifically at subtype B of HIV, the most common strain in the United States.

Publishing their findings in Nature Communications, the researchers found that people with viruses that came from molecular clusters, compared with those that did not, tended to have higher viral loads at diagnosis. Higher viral loads are associated with a greater risk of transmission as well as faster HIV disease progression should an individual remain off ARVs.

Evolutionary logic suggests that viral strains that drive a higher viral load are more likely to be transmitted. Over time, this should lead the overall subtype B viral population to be more inclined toward the same.

The study authors also found that, overall, people's viral load at the time of diagnosis increased over the past decade, even after the researchers controlled for the estimated time that passed between individuals' infection and diagnosis.

The apparent shift in the overall infectivity of HIV over this period has been modest, perhaps

driving a 1% higher risk of contracting HIV for those diagnosed as a part of clusters compared with those not in clusters.

To read the Newsweek article, click here.

To read the study, click here.

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