Scientists determine dynamics of HIV transmission in UK heterosexuals

September 25 2009

Among heterosexuals in the United Kingdom (UK), HIV transmission can occur within networks of as many as 30 people, according to a new study by researchers at the University of Edinburgh, Scotland, and the Medical Research Council Clinical Trials Unit, London. Details are published September 25 in the open-access journal *PLoS Pathogens*.

The number of HIV-infected heterosexuals in the UK has been growing dramatically and now exceeds the number of HIV-infected homosexual men. Most are immigrants from sub-Saharan Africa, a group for which the pattern of virus transmission is poorly documented.

To better understand the dynamics of the heterosexual HIV epidemic within the UK, the research group, led by Professor Andrew Leigh Brown, applied the novel technique of phylodynamics, which reconstructs the pattern of viral sequence divergence in time in order to reveal the size of transmission clusters and the dynamics of transmission within them.

The team studied virus gene sequences from over 11,000 infected individuals, comprising 40% of the HIV-infected heterosexual population in the UK, making this one of the largest studies of its kind to date. By analyzing differences between the viral strains, they found clusters of related viruses that showed 5% of HIV transmissions to have occurred in networks of more than 10 people.

The authors note the importance to their work of the UK HIV Drug

Resistance Database, which contains viral DNA sequence information from over 30,000 infected individuals. Using this database, the researchers discovered that transmission clusters in the heterosexual population were smaller than those found among HIV-infected homosexual men and that transmission was also much slower. The study concludes that heterosexual transmission could be significantly reduced by early diagnosis and treatment.

"The slower dynamics of the heterosexual epidemic thus offer more opportunity for successful intervention, but it is essential that diagnosis is achieved as early as possible," said Professor Leigh Brown.

More information: Hughes GJ, Fearnhill E, Dunn D, Lycett SJ, Rambaut A, et al. (2009) Molecular Phylodynamics of the Heterosexual HIV Epidemic in the United Kingdom. *PLoS Pathog* 5(9): e1000590. doi:10.1371/journal.ppat.1000590

Source: Public Library of Science (news : web)