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## Multiple footholds for HIV in UK

**The HIV epidemic in the UK cannot be traced back to just one source, research suggests.**

Instead, work led by University College London suggests the virus gained a foothold on at least six independent occasions.

The findings also suggest changes in sexual behaviour, rather than advances in drug therapy, have had most impact in slowing the spread of disease.

Details are published in Proceedings of the National Academy of Sciences.

The researchers examined genetic data on a widely found form of the virus called HIV-1 subtype B.

They found it spread through the UK via at least six large transmission chains of men having sex with men.

This, they said, suggests subtype B strains were introduced separately into the UK in the early-to-mid 1980s.

### Initial acceleration

After an initial period of exponential growth in infection rates, the spread generally slowed in the early 1990s.

The researchers believe this was more likely to be due to changes in sexual behaviour than from reduced infectiousness resulting from antiretroviral therapy.

In the early stages, the number of people infected in each transmission chain a year doubled on average - similar to pattern thought to have occurred in the US during the 1980s.

Current infection rates seem to be highest in the most recent infection chain identified by the study - suggesting spread of the virus is being fuelled by people only recently infected themselves.

Researcher Dr Deenan Pillay said: "Our study suggests that the HIV-1 subtype B epidemic currently circulating the UK is made up of at least six established chains of transmission, introduced in the early and mid 1980s.

"This goes against the prevailing belief that one initial entry of HIV-1 was responsible for the spread of the epidemic."

Dr Pillay said that since 1990 condom use in the gay community had significantly increased. This might explain why infection rates in the transmission chains had slowed.

"Antiretroviral therapy may also have impacted on transmission rates, but our evidence does not demonstrate this.



Condom use may be a big factor

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"You would expect growth rates to decrease in the late rather than early 1990s around the time that potent therapy became widely used if this was the case.

"Instead, we see little correlation between widespread availability of treatment and reduction of transmission."

### Testing vital

Michael Carter, of the HIV information service Aidsmap, said: "It seems pretty good sense to me that HIV was introduced into the UK by more than one individual in the 1980s.

"Behavioural change did make a huge impact to the instance of HIV and other sexually transmitted infections amongst gay men.

"Indeed, it shows how a community can stay sexually active and still reduce the risk of HIV, contrary to the arguments put forward by the US abstinence lobby."

Mr Carter highlighted the finding that the spread of HIV was probably fuelled by people who had only recently been infected. He said many probably did not know they were carrying the virus.

"The study underlines the importance of people who think that they may have been at risk of HIV of testing and obtaining treatment."

Ford Hickson, an expert in HIV transmission from Sigma Research, took issue with the idea that HIV in the UK originated from so few sources.

He said: "Health Protection Agency surveillance tells us that last year about 17% of gay men diagnosed with HIV in the UK had migrated to the UK with HIV (rather than having caught it here), and this proportion is always likely to have been substantial, so the idea that even six men are 'responsible' for introducing HIV to the UK is vaguely ridiculous."

He also stressed that both anti-retroviral drugs, and behavioural change were important factors in the effort to curb spread of HIV.

More than 57,700 people in Britain have been diagnosed with HIV-1 since the first identification of Aids in 1982.

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## New findings about the spread of HIV in the UK

21. March 2005 19:56

**Contrary to the prevailing belief that the HIV epidemic in the UK can be traced back to one source, a new study by Oxford and London scientists suggests that HIV spread via at least six independent virus introductions and subsequent transmission chains.**

The findings also show that growth rates in HIV infection decreased substantially in the early 1990s. The timing in this slow-down of HIV transmission suggests that it is more likely that the spread was controlled by changes in sexual behaviour (such as increased condom use) rather than antiviral therapy, which was not widely introduced until the late 1990s.

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The study, by University College London (UCL), the Health Protection Agency and the University of Oxford, found that HIV-1 subtype B spread through the UK via at least six large transmission chains of men having sex with men. It is published in the latest issue of the Proceedings of the National Academy of Sciences.

Dr Oliver Pybus in Oxford University's Zoology Department, one of the authors on the paper, said: 'This study shows that the structure of the HIV-1 epidemic in the UK is more complex than previously thought. There appear to be six established chains of transmission, each introduced in the early and mid 1980s, which have persisted in the UK to the present day. This goes against the prevailing belief that one initial entry of HIV-1 was responsible for the spread of the epidemic.'

The study statistically analysed the epidemic history of the HIV-1 subtype B strain from sampled gene sequence data. Molecular data on HIV-1 has become increasingly available since the introduction of routine HIV-1 gene sequencing for drug resistance. Scientists used this data to follow the changing number of infected individuals through time and estimate the demographic parameters shaping the epidemic. Dr Pybus said: 'There is a genetic structure to the epidemic that hasn't been looked at before - by studying genetic data we can see which particular strains are circulating, rather than just looking at how many people are infected.'

More than 57,700 people in the UK have been infected with HIV-1 since the first identification of AIDS in 1982. Despite a recent increase in heterosexually acquired infections within the UK, predominantly originating in sub-Saharan Africa, one of the most prevalent subtypes of virus within the country remains subtype B, which is mainly transmitted through sex between men.

Dr Pybus said: 'A paper recently published in the British Medical Journal on HIV infections acquired through heterosexual intercourse in the UK, taken together with our paper, which is mainly looking at homosexual transmission, gives a good overall picture of HIV in the UK. The BMJ paper finds that 90 per cent of heterosexuals infected with HIV acquired the virus outside the UK, suggesting that onward heterosexual transmission in the UK is being controlled reasonably well. In contrast, our research shows that over the last 15 years at least six chains of onward transmission among men having sex with men have become established. So a substantial proportion of infections in men having sex with men are acquired in the UK, rather than abroad. However, a significant increase in condom use has been reported since 1990 and this could explain the decrease in rates of transmission observed in the UK.'

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