

Origin of HIV & AIDS

Origins.jpg



HIV first began to spread along the historic trade routes of the Congo basin in the 1920s.

KEY POINTS:

HIV crossed from chimps to humans in the 1920's in what is now the Democratic Republic of Congo. This was probably as a result of chimps carrying the Simian Immunodeficiency Virus (SIV), a virus closely related to HIV, being hunted and eaten by people living in the area.

The origin of the Human Immunodeficiency Virus (HIV) has been a subject of scientific research and debate since the virus was identified in the 1980s. There is now a wealth of evidence on how, when and where HIV first began to cause illness in humans.

You can find out more about the origins and history of HIV through our [interactive timeline](#), where you can read, watch, listen and explore key events from the history of the epidemic.

The link between HIV and SIV

HIV is a type of lentivirus, which means it attacks the immune system. In a similar way, the Simian Immunodeficiency Virus (SIV) attacks the immune systems of monkeys and apes.¹

Research found that HIV is related to SIV and there are many similarities between the two viruses. HIV-1 is closely related to a strain of SIV found in chimpanzees, and HIV-2 is closely related to a strain of SIV found in sooty mangabeys.²

Did HIV come from monkeys?

In 1999, researchers found a strain of SIV (called SIVcpz) in a chimpanzee that was almost identical to HIV in humans.

The researchers who discovered this connection concluded that it proved chimpanzees were the source of HIV-1, and that the virus had at some point crossed species from chimps to humans.³

The same scientists then conducted more research into how SIV could have developed in the chimps. They discovered that the chimps had hunted and eaten two smaller species of monkeys (red-capped mangabeys and greater spot-nosed monkeys). These smaller monkeys infected the chimps with two different strains of SIV.

The two different SIV strains then joined together to form a third virus (SIVcpz) that could be passed on to other chimps. This is the strain that can also infect humans.⁴

How did HIV cross from chimps to humans?

The most commonly accepted theory is that of the 'hunter'. In this scenario, SIVcpz was transferred to humans as a result of chimps being killed and eaten, or their blood getting into cuts or wounds on people in the course of hunting.⁵ Normally, the hunter's body would have fought off SIV, but on a few occasions the virus adapted itself within its new human host and became HIV-1.

There are four main groups of HIV strains (M, N O and P), each with a slightly different genetic make-up. This supports the hunter theory because every time SIV passed from a chimpanzee to a human, it would have developed in a slightly different way within the human body, and produced a slightly different strain. This explains why there is more than one strain of HIV-1.⁶

The most studied strain of HIV is HIV-1 Group M, which is the strain that has spread throughout the world and is responsible for the vast majority of HIV infections today.

How did HIV-2 get passed to humans?

HIV-2 comes from SIVsmm in sooty mangabey monkeys rather than chimpanzees.⁷ The crossover to humans is believed to have happened in a similar way (through the butchering and consumption of monkey meat).

It is far rarer, and less infectious than HIV-1. As a result, it infects far fewer people, and is mainly found in a few countries in West Africa like Mali, Mauritania, [Nigeria](#) and Sierra Leone.⁸

When and where did HIV start in humans?

Studies of some of the earliest known samples of HIV provide clues about when it first appeared in humans and how it evolved. The first verified case of HIV is from a blood sample taken in 1959 from a man living in what is now Kinshasa in the Democratic Republic of Congo. The sample was retrospectively analysed and HIV detected. There are numerous earlier cases where patterns of deaths from common opportunistic infections, now known to be AIDS-defining, suggest that HIV was the cause, but this is the earliest incident where a blood sample can verify infection.⁹

Did HIV start in Africa?

Using the earliest known sample of HIV, scientists have been able to create a 'family-tree' ancestry of HIV transmission, allowing them to discover where HIV started.

Their studies concluded that the first transmission of SIV to HIV in humans took place around 1920 in Kinshasa in the Democratic Republic of Congo (DR Congo).¹⁰

The same area is known for having the most genetic diversity in HIV strains in the world, reflecting the number of different times SIV was passed to humans. Many of the first cases of AIDS were recorded there too.

How did HIV spread from Kinshasa?

The area around Kinshasa is full of transport links, such as roads, railways and rivers. The area also had a growing sex trade around the time that HIV began to spread. The high population of migrants and sex trade might explain how HIV spread along these infrastructure routes. By 1937, it had reached Brazzaville, about 120km west of Kinshasa.

The lack of transport routes into the North and East of the country accounts for the significantly fewer reports of infections there at the time.¹¹

By 1980, half of all infections in DR Congo were in locations outside of the Kinshasa area, reflecting the growing epidemic.¹²

Why is Haiti significant?

In the 1960s, the 'B' subtype of HIV-1 (a subtype of strain M) had made its way to Haiti. At this time, many Haitian professionals who were working in the colonial Democratic Republic of Congo during the 1960s returned to Haiti.¹³ Initially, they were blamed for being responsible for the HIV epidemic, and suffered severe racism, [stigma and discrimination](#) as a result.

HIV-1 subtype M is now the most geographically spread subtype of HIV internationally. By 2014, this subtype had caused 75 million infections.¹⁴

What happened in the 1980s in the USA?

People sometimes say that HIV started in the 1980s in the [United States of America \(USA\)](#), but in fact this was just when people first became aware of HIV and it was officially recognised as a new health condition.

In 1981, a few cases of rare diseases were being reported among gay men in New York and California, such as Kaposi's Sarcoma (a rare cancer) and a lung infection called PCP.^{15 16} No one knew why these cancers and opportunistic infections were spreading, but they concluded that there must be an infectious 'disease' causing them.

At first the disease was called all sorts of names relating to the word 'gay'.¹⁷ It wasn't until mid-1982 that scientists realised the 'disease' was also spreading among other populations such as haemophiliacs and heroin users.^{18 19} By September that year, the 'disease' was finally named AIDS.²⁰

It was only in 1983 that the HIV virus was isolated and identified by researchers at the Pasteur Institute in France. Originally called Lymphadenopathy-Associated Virus (or LAV) the virus was confirmed as the cause of AIDS, when scientists working at the USA National Cancer Institute isolated the same virus and called it HTLV-III. LAV and HTLV-III were later acknowledged to be the same.

What is the 'Four-H-Club'?

In 1983, the Centers for Disease Control (CDC) in the United States listed the main at-risk groups, including partners of people with AIDS, people who inject drugs, haemophiliacs and people who

have recently been to Haiti. At the time that cases of AIDS began to emerge in the USA, the absence of definitive information about HIV and its link to AIDS, inflated the panic and stigma surrounding the epidemic. Before long people began to talk colloquially of a “4-H Club” at risk of AIDS: homosexuals, haemophiliacs, heroin addicts and Haitians, contributing to further stigmatisation.²¹

Photo credit: ©Flickr/Joseph King

- 1. Worobey, M. et al (2010) 'Island biogeography reveals the deep history of SIV' *Science* 329(5998):1487
- 2. Sharp, P.M. & Hahn, B.H. (2011) 'Origins of HIV and the AIDS pandemic' *Cold Spring Harbour Perspectives in Medicine* 1(1):a006841
- 3. Gao, F. et al (1999) 'Origin of HIV-1 in the chimpanzee *Pan troglodytes*' *Nature* 397(6718):436-441
- 4. Bailes, E. et al (2003) 'Hybrid Origin of SIV in Chimpanzees' *Science* 300(5626):1713
- 5. Sharp, P.M. and Hahn, B.H. (2011) 'Origins of HIV and the AIDS pandemic' *Cold Spring Harbour Perspectives in Medicine* 1(1):a006841
- 6. Sharp, P.M. & Hahn, B.H. (2011) 'Origins of HIV and the AIDS pandemic' *Cold Spring Harbour Perspectives in Medicine* 1(1):a006841
- 7. Chen, Z. et al (1997) 'Human Immunodeficiency Virus Type 2 (HIV-2) Seroprevalence and Characterization of a Distinct HIV-2 Genetic Subtype from the Natural Range of Simian Immunodeficiency Virus-Infected Sooty Mangabeys' *Journal of Virology* 71(5):3953-3960
- 8. Sharp, P.M. & Hahn, B.H. (2011) 'Origins of HIV and the AIDS pandemic' *Cold Spring Harbour Perspectives in Medicine* 1(1):a006841
- 9. *Science* (1998) 'Oldest Surviving HIV Virus Tells All' (accessed 11/01/2016)
- 10. Faria, N.R. et al (2014) 'The early spread and epidemic ignition of HIV-1 in human populations' *Science* 346(6205):56-61
- 11. BBC News (2014, 3 October) 'Aids: Origin of pandemic 'was 1920s Kinshasa'
- 12. Faria, N.R. et al (2014) 'The early spread and epidemic ignition of HIV-1 in human populations' *Science* 346(6205):56-61
- 13. Faria, N.R. et al (2014) 'The early spread and epidemic ignition of HIV-1 in human populations' *Science* 346(6205):56-61
- 14. University of Oxford News (2014, 3 October) 'HIV pandemic's origins located'
- 15. Hymes, K.B. et al (1981) 'Kaposi's sarcoma in homosexual men: A report of eight cases' *Lancet* 2(8247):598-600
- 16. Centers for Disease Control (CDC) (1981, 4 July) 'Kaposi's Sarcoma and Pneumocystis Pneumonia among Homosexual Men- New York City and California' *MMWR Weekly* 30(4):305-308
- 17. Brennan, R.O. & Durack, D.T. (1981) 'Gay compromise syndrome' *Lancet* 2(8259):1338-1339
- 18. Centers for Disease Control (CDC) (1982, 9 July) 'Opportunistic infections and Kaposi's Sarcoma among Haitians in the United States' 31(26):353-4,360-1
- 19. Centers for Disease Control (CDC) (1982, 16 July) 'Epidemiologic notes and Reports Pneumocystis carinii Pneumonia among persons with hemophilia A' *MMWR Weekly* 31(27):365-367
- 20. Centers for Disease Control (CDC) (1982, 24 September) 'Current Trends Update on Acquired Immune Deficiency Syndrome (AIDS)- United States' *MMWR Weekly* 31(37):507-508,513-514
- 21. Farmer, P. (1992) 'AIDS and Accusation: Haiti and the Geography of Blame' University of California Press

Last updated: 5 December 2017

Next full review: 11 January 2020

Last full review: 11 January 2017

CTA reference:
HIV Timeline

