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HIV-1 and HIV-2: What's the Difference?

By Sally Robertson, BSc

HIV-1 and HIV-2 are closely related, but distinct viruses. They are both retroviruses belonging to the genus *Lentiviridae* and they are both transmitted in the same way.

Each of these viruses is thought to have arisen as a result of simian immunodeficiency virus (SIV) being introduced into the human population, although the origin for HIV-2 was the sooty mangabey (SIVsm), while for HIV-1, it was the chimpanzee (SIVcpz).

Globally, HIV-1 is the most prevalent type of HIV and is generally the virus that people are talking about if they mention HIV without specifying a type. HIV-2 is relatively uncommon. It is mainly concentrated in West Africa, where it is currently epidemic, although it has been reported in other countries. Cases of HIV-2 have been reported in France, Portugal, and in countries with colonial links to these nations as a result of immigration from and commercial ties to West Africa.

HIV-2 is associated with lower viral loads and is less infectious than HIV-1. The cells that HIV infects and destroys, called CD4+ cells, therefore decline in number at a slower rate than with HIV-1 and disease progresses more slowly. Around 90% of people with this infection are long-term, clinical non-progressors and recent estimates suggest that people with an undetectable HIV-2 viral load have similar survival chances to that of the general population. However, HIV-2 can suppress the immune system and lead to the development of AIDS, in which case a person develops the same symptoms and infections that are seen with HIV-1.

Management of HIV-1 and HIV-2

In contrast to HIV-1, there is little detailed knowledge about the management of HIV-2. Research into the immune system's response to commonly used forms of antiretroviral therapy (ART) has shown that ART is active against HIV-2. However, the increase in CD4+ cell count as a response to ART is greater among individuals infected with HIV-1 than among those infected with HIV-2. Furthermore, no controlled clinical trials of ART for HIV-2 have been carried out and no recommendations exist to guide decision making in the management of the immunosuppression and disease progression that can occur as a result of this condition. Together, these factors would mean that the optimum treatment approach to HIV-2 remains poorly understood.

Diagnosis of HIV-1 and HIV-2

The type of ART used to treat people with HIV-2 differs from that used to treat HIV-1, meaning it is essential to differentiate between the two viruses when testing people who are at risk of having HIV-2. Any samples that are submitted for HIV diagnostic testing should be screened using an enzyme immunoassay that is able to detect both HIV-1 and HIV-2 and any laboratory performing this screening should include algorithms for differentiating between the two viruses in repeatedly reactive samples. In the case of specimens that test negative for HIV-2 antibody but might have indeterminate HIV-1 antibody present, a Western blot can be used to confirm the presence of HIV-1 antibody.

Reviewed by Susha Cheriyaedath, MSc

Sources

- <http://www.avert.org/professionals/hiv-science/types-strains>
- www.hivguidelines.org/.../

Further Reading

- [What Causes AIDS?](#)
- [What is HIV/AIDS?](#)
- [AIDS Symptoms](#)
- [AIDS Pathophysiology](#)
- [AIDS Treatment](#)
- [AIDS Prognosis](#)
- [Living with HIV](#)

- [History of AIDS](#)
- [AIDS Stigma](#)
- [AIDS Transmission](#)
- [When Does HIV Become AIDS?](#)
- [HIV Care During Pregnancy](#)
- [HIV and Blood Transfusions](#)
- [HIV and Steroids](#)
- [HIV and Organ Transplants](#)

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