

# Short-term changes in HIV viral load and CD4+ cell count



HIV infection in antiretroviral therapy (ART)-naïve individuals is typically characterized by a rise in plasma HIV RNA (viral load) and a decline in CD4+ cell count. If left untreated, this eventually leads to opportunistic infections, development of AIDS and AIDS-related deaths. Although viral load and CD4+ cell count are well established prognostic markers of HIV disease progression some uncertainties remain over the rate of change of viral load prior to starting ART and the relationship with changes in CD4+ cell count. This study therefore worked to generate more precise estimates related to factors associated with short-term pre-ART changes in viral load and CD4+ cell count in a large cohort collaboration. The study measured viral loads and CD4+ cell counts from almost 35 000 ART-naïve individuals. Annual changes and factors associated with these changes were estimated using generalized estimating equations. The study showed that on average, the viral load continues to rise gradually in ART-naïve individuals and is therefore not a single set point. Meaning that the fact that levels tend to gradually increase over time should not be overlooked. The study therefore sought to explore the rate of change and

influence of other factors associated with these markers of HIV progression. They found that a faster rise in viral load was significantly associated with older age, and with a higher current viral load. With a current viral load showing to be a stronger predictor of CD4+ cell count depletion than baseline viral load. Factors that played no role were sex, race, or transmission by injecting drug use. The study concludes that in treatment naive individuals, viral load continues to increase over time especially in older patients with a corresponding rate of CD4+ cell count depletion.

[Nakagawa, F. et al. 2014. Factors associated with short-term changes in HIV viral load and CD4+ cell count in antiretroviral-naive individuals. \*AIDS\*.](#)