Quality of Immune Recovery Markers for Patients on Antiretroviral Therapy

Both aCD4 and its increases after starting ART poorly correlate with CD4% and CD4/CD8 increments, and significantly overstate the immune recovery rates.

The absolute CD4/CD8 ratio is a more stable marker of immune recovery rates in HIV-infected patients beginning antiretroviral therapy (ART) than absolute CD4+ T lymphocyte count (aCD4), and this should be considered when monitoring patient response after treatment initiation, according to a study published in *PLoS One*.

Patients age >18 years who maintained HIV-RNA suppression in more than 95% of determinations were selected for analysis from a prospectively followed cohort of patients who began ART between January 2000 and March 2016. Immune recovery was defined as aCD4>650/μl, [**CD4**](https://www.infectiousdiseaseadvisor.com/hivaids-advisor/predicting-mortality-in-hiv-and-hepatitis-c-virus-coinfection/article/809276/)percentage (CD4%) ≥38%, or CD4/CD8 ≥1, and selected patients (N=1164) were analyzed with a median follow-up time of 5 years.

Regardless of baseline aCD4, increases in the patients' CD4%, aCD4, and CD4/CD8 were their highest in the first year of ART and significantly lower thereafter. Annual aCD4 increases poorly correlated with those of CD4/CD8 (r=0.101-0.192; *P* <.001) and CD4% (r=0.143-0.250; *P*<.001). However, annual increases in CD4% were highly correlated with CD4/CD8 (r=0.765-0.844; *P*<.001).

The median intra-annual variation coefficients for CD4%, CD4/CD8, and aCD4 were 6.6, 8.5, and 12.5, respectively. By 5-year follow-up, 66.7% of patients achieved aCD4>650/μl, 41.6% achieved CD4%≥38%, and 42.1% achieved CD4/CD8≥1. Only 31% of patients achieved target values for both aCD4 and CD4/CD8.

Study investigators conclude that "both aCD4 [levels] and [its] increases after starting [[**antiretroviral treatment**](https://www.infectiousdiseaseadvisor.com/clinical-charts/antiretroviral-treatments/article/419037/)] poorly correlate with CD4% and CD4/CD8 increments, and significantly overstate the [immune recovery] rates assessed by CD4% and CD4/CD8. Moreover, both CD4% and CD4/CD8 are more stable markers than aCD4 and should be taken into account to assess the [immune recovery] rates in HIV-infected patients."

**Reference**

Milanés-Guisado Y, Gutiérrez-Valencia A, Trujillo-Rodríguez M, Espinosa N, Viciana P, López-Cortés LF. [**Absolute CD4+ T cell count overstate immune recovery assessed by CD4+/CD8+ ratio in HIV-infected patients on treatment**](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0205777) [published online October 22, 2018]. *PLoS One*. doi: 10.1371/journal.pone.0205777