

## ABSTRACT

**Background:** Universal access to highly active antiretroviral therapy (HAART) is still elusive in most developing nations. We asked whether peer support influenced adherence and treatment outcome and if a single viral load (VL) could define treatment failure in a resource-limited setting.

**Methods:** A multicenter longitudinal and cross-sectional survey of VL, CD4 T cells, and adherence in 546 patients receiving HAART for up to 228 months. VL and CD4 counts were determined using *m2000* Abbott RealTime HIV-1 assay and FACS counters, respectively. Adherence was assessed based on pill count and on self-report.

**Results:** Of the patients, 55.8%, 22.2%, and 22% had good, fair, and poor adherence, respectively. Adherence, peer support, and regimen, but not HIV disclosure, age, or gender, independently correlated with VL and durability of treatment in a multivariate analysis ( $P < 0.001$ ). Treatment failure was 35.9% using sequential VL but ranged between 27% and 35% using alternate single VL cross-sectional definitions. More patients failed stavudine (41.2%) than zidovudine (37.4%) or tenofovir (28.8%,  $P = 0.043$ ) treatment arms. Peer support correlated positively with adherence ( $r^2, P < 0.001$ ), with nonadherence being highest in the stavudine arm. VL before the time of regimen switch was comparable between patients switching and not switching treatment. Moreover, 36% of those switching still failed the second-line regimen.

**Conclusion:** Weak adherence support and inaccessible VL testing threaten to compromise the success of HAART scale-up in Kenya. To hasten antiretroviral therapy monitoring and decision making, we suggest strengthening patient-focused adherence programs, optimizing and aligning regimen to WHO standards, and a single point-of-care VL testing when multiple tests are unavailable.