CD4 Cell Counts at Antiretroviral Therapy Initiation in Botswana Have Been Increasing

TO THE EDITOR—The World Health Organization (WHO) guidelines on antiretroviral therapy (ART) have been revised to recommend initiation at higher CD4 counts [1, 2]. If followed, CD4 cell counts at therapy initiation in countries adopting these guidelines should increase. However, a recent meta-analysis [3] suggested that this has not occurred. An editorial commentary in the same edition suggests an ecological fallacy in the meta-analysis and shares data from 5 settings where CD4 cell counts at therapy initiation has increased over time [4]. We provide additional evidence from Botswana, a country with a long-standing antiretroviral program that was not included in the study.

We conducted a secondary analysis of a prospective cohort study in Botswana designed to investigate the effect of efavirenz metabolism polymorphisms on outcomes. This study was approved by the Institutional Review Boards at the University of Pennsylvania and the Ministry of Health in Botswana. ART-treatment naive patients initiating their first regimen between 2009 and 2013 had CD4 counts assessed at baseline. Using a generalized linear model, the CD4 cell counts at therapy initiation were regressed on calendar time, included separately as months and years since study initiation. Effect modification was assessed with interaction terms in the models.

Of the 941 patients enrolled, 915 had CD4 counts available, 463 (51%) were males, and the median age at therapy initiation was 37 years (interquartile range [IQR] 33–44). A statistically significant increase in CD4 cell count at presentation over time was observed in models that considered time in months and in years. The median CD4 cell count at therapy initiation over years 2009–2013 was 134 cells/µL, 163 cells/µL, 162 cells/µL, 209 cells/µL and 238 cells/µL, respectively. Specifically, for each consecutive month a 2.6 cells/µL increase in CD4 cell count was observed (P-value <.01), and for each progressive (consecutive) year, the CD4 cell count at initiation increased by 25.6 cells/µL (P-value <.001). The increase remained significant when controlling for age, sex, and site of enrollment. Males presented with significantly lower median CD4 cell counts than females (172 vs 211 cells/µL); however, there was no effect modification of the increase in CD4 cell counts per year by sex (P-value =.82).

These results suggest that in Botswana the CD4 cell count at therapy initiation has increased significantly over time. We acknowledge that the ART program in Botswana may have a higher success rate than other countries because of strong political will and resource commitment. While CD4 cell count at ART initiation has increased over time, it is still lower than the thresholds recommended by the WHO. Although encouraging, these data also suggest the need to further identify and address barriers to accessing care in a timely fashion, particularly in men, even in settings with mature HIV programs such as Botswana.

Notes

Financial support. This work was supported by a grant from National Institutes of Health (NIH) (R01 MH080701) and the Penn Center
for AIDS Research (R. G.), an NIH funded program (P30 AI 045008).

Potential conflicts of interest. All authors: No potential conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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