Weight Gain Among Participants Switching to a Dolutegravir-based HIV Regimen in Kenya

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BACKGROUND

Dolutegravir (DTG) use has been associated with an increased risk for weight gain.

Previously reported significant weight gain in virologically suppressed PWH switching from efavirenz- to Integrase Strand Transfer Inhibitor -based regimens (esp. DTG).

We have previously demonstrated that ART-naïve patients starting DTG in Kenya gain significantly more weight compared to those starting Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI). (*Bourgi, JAIDS 2022*)

However, data exploring differences in the rate of weight gain following the switch to DTG in East Africa are limited.

METHODS

Inclusion Criteria:

- ✓ Participants enrolled in the Academic Model Providing Access to Healthcare **(AMPATH)** program
- ✓ On NNRTI ≥**24 months** prior to switching to DTG
- ✓ Excluded participants who switched due to virologic failure, women who were pregnant within 2 years of switching, and participants missing baseline BMI.

Statistical Analysis:

- ✓ Weights within **18 months of the switching date** were included in the longitudinal models of weights over time.
- ✓ Weights log transformed to see linear trends.
- ✓ Weight was modeled as **linear pre-switch** and **inverted exponential post switch**
- ✓ Weights over the follow-up period were modeled using two-stage piecewise non-linear **mixed effect models**.

Outcomes Assessed:

- ✓ **Primary:** Changes in the **rate of weight gain** following switching to DTG for overall participants.
- ✓ **Secondary:** Changes in the rate of weight gain following switching to DTG **by sex and baseline NNRTI regimen**

RESULTS

23,131 participants included in our

The Baseline NNRTI drug in the 2-year pre-switch was: **EFV only: 34%, NVP only 29%,** and **Both EFV & NVP: 37% (sequential)**

		Overall N=23,131	EFV Only 7,933 (34%)	NVP Only 6,669 (29%)
Age at switch (years)*		51 (44,57)	49 (42,56)	51 (46,57)
Female sex*		12,055 (52%)	3,716 (47%)	3,796 (57%)
Baseline BMI (kg/m²)*		22.2 (19.8,25.4)	22.0 (19.7,25.3)	22.7 (20.2,25.8)
Baseline BMI Category*	Underweight	2,834 (12%)	1,016 (13%)	672 (10%)
	Normal	13,861 (60%)	4,776 (60%)	3,922 (59%)
	Overweight or Obese	6,436 (28%)	2,141 (27%)	2,080 (31%)
Baseline CD4 count at switch (cells/mm³)*		183 (101,284)	259 (123,356)	157 (90,212)

Table 1. Baseline clinical and demographic characteristics of the study population. Continuous variables are reported in median (IQR). Categorical variables are reported as N(%). * p-value <0.0001. NNRTI: Non-Nucleoside Reverse Transcriptase Inhibitor. EFV: Efavirenz; NVP: Nevirapine; BMI: Body Mass Index

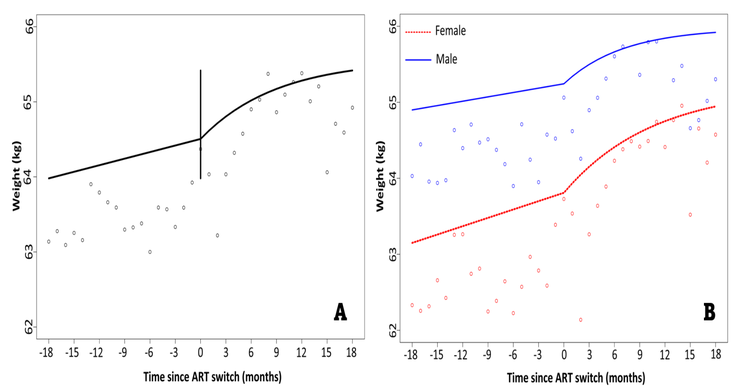

Figure 1. Changes in the rate of weight gain after ART switch for overall participants (A), and by gender (B). Rate of weight gain for overall participants: **0.35 kg/year (pre-switch)** vs. **0.7 kg/year (post-switch).** Rate of weight gain for female participants**: 0.44 kg/year (pre-switch)** vs. **0.9 kg/year (post-switch).** Rate of weight gain for male participants: **0.23 kg/year (pre-switch)** vs. **0.5 kg/year (post-switch)**

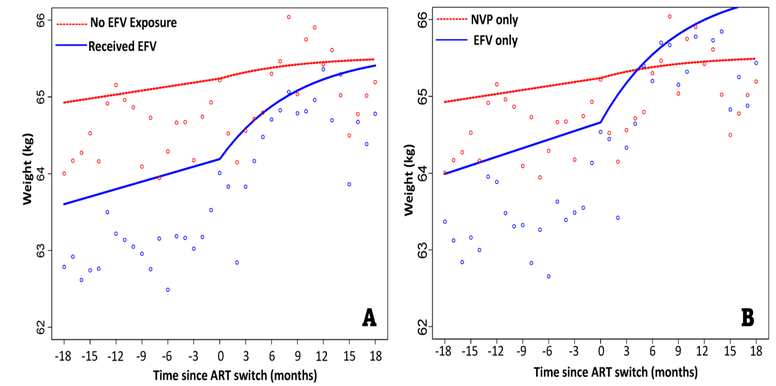

Figure 2. Changes in the rate of weight gain after ART switch by baseline NNRTI drug. In **A** EFV group includes participants exposed to EFV in 2 years pre-switch (EFV only + Both). In **B** compares participants who were on EFV only vs. NVP only.
Rate of weight gain for EFV-exposed participants**: 0.39 kg/year (pre-switch)** vs. **0.94 kg/year (post-switch).** Rate of weight gain for EFV-only participants: **0.44 kg/year (pre-switch)** vs. **1.2 kg/year (post-switch).** Rate of weight gain for NVP-only participants: **0.20 kg/year (pre-switch)** vs. **0.19 kg/year (post-switch)**

CONCLUSIONS

1. Overall, the rate of weight gain increased, albeit modestly, after switching from an NNRTI to a DTG-based regimen.
2. The rate of weight gain was significantly higher for females compared to males following DTG switch.
3. Participants switching from EFV-based regimens exhibited a significant increase in weight gain following DTG switch while participants switching from NVP-based regimens had no changes in the rate of weight gain.
4. Is the increase in the rate of weight gain observed a reflection of the **obesogenic effects of DTG** or a result of the **withdrawal of the anorectic effects of EFV**?

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