Weight change following switch to dolutegravir in rural Kenya

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BACKGROUND

- Switch to dolutegravir (DTG) in treatment-experienced people living with HIV (PLH) may lead to excess weight gain in high income settings where obesity is common[1,2]
- There are limited data on weight changes following switch to DTG in low-income settings with lower prevalence of obesity
- In treatment-naïve PLH in sub-Saharan Africa, DTG is associated with more weight gain than efavirenz:
  - ADVANCE trial in South Africa: 3.2kg weight gain in women and 3.0kg weight gain in men after 48 weeks[3]
  - NAMSAL trial in Cameroon: 5.0kg weight gain in women and 4.0kg weight gain in men after 48 weeks[4]

Question: Do persons switching to DTG in rural Kenya experience large weight gain?

METHODS

- **Design:** Retrospective cohort study using electronic medical record data at eight rural HIV clinics in order to evaluate weight changes following switch to DTG
- **Population:** We included PLH ≥25 years of age who switched to DTG/TDF/3TC, were on ART for ≥1 year prior to DTG switch, and who had ≥1 weight measured in the 14 months before and the 14 months after switch
- **Analysis:** Using pre-switch weight and linear mixed models, we modeled expected post-switch weight trajectory for each participant if they had not switched to DTG, adjusting for age, sex, pre-switch ART regimen, & time. We contrasted observed vs. predicted weight at 12 months post-switch using non-parametric bootstrap in all participants and stratified by sex, BMI category, pre-switch viral suppression (<200 copies/mL) and those on TDF pre/post switch.

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Switch to dolutegravir in rural Kenya was not associated with large weight gain

RESULTS

- Among 2,836 PLH switching to DTG in rural Kenya (years 2018-2019), mean weight change was 0.8 kg over the 12 months pre-switch and 0.4kg over the 12 months post-switch.
- Observed post-switch weight trajectory was 0.5 kg less than predicted among all patients, and only 0.2 kg less than predicted among those on TDF pre- and post-switch.
- Among those on TDF throughout, observed 12-month weight was:
  - More than predicted for baseline underweight (2.9 kg, 95% CI 1.3 to 4.5);
  - Similar to predicted for women (0.6 kg, 95% CI -0.2 to 1.3), baseline suppressed (-0.8 kg, 95% CI -1.9 to 0.3), and baseline normal weight (-0.1 kg, 95% CI -0.7 to 0.5); &
  - Less than predicted for men (-1.0 kg, 95% CI -1.6 to -0.3) and baseline overweight/obese (-1.9 kg, 95% CI -3.2 to -0.6).

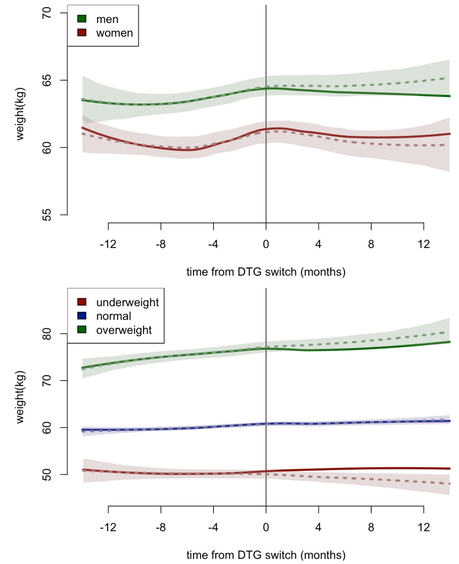
Table 1. Participant characteristics (n=2,836)

	Median (IQR)/ n (%)
Median age (years)	48 (40-46)
Weight at switch (kg)	61 (55-69)
Women (%)	1402 (49%)
BMI at switch	
Underweight (<18.5 kg/m^2)	317 (11%)
Normal weight (18.5 – 24.9 kg/m2)	1964 (70%)
Overweight (25 – 29.9 kg/m2)	427 (15%)
Obese (≥30 kg/m2)	109 (4%)
Viral load <200 copies/mL at switch	703/742 (95%)
ART anchor drug at switch	
NNRTI	2830 (99.8%)
PI	6 (0.2%)
NRTI at switch	
TDF	1850 (65%)
AZT	728 (26%)
d4T	258 (9%)

Table 2. Contrast of observed vs predicted 12-month post-DTG switch weight

	All (n=2,836)		On TDF pre-switch (n=1,850)	
	Est (kg)	(95% CI)	Est (kg)	(95% CI)
All	-0.5	(-0.9 to -0.1)	-0.2	(-0.7 to 0.4)
Men	-1.2	(-1.7 to -0.6)	-1.0	(-1.5 to -0.3)
Women	0.2	(-0.4 to 0.8)	0.6	(-0.2 to 1.4)
Underweight	2.2	(1.0 to 3.6)	2.9	(1.3 to 4.7)
Normal weight	-0.5	(-1.0 to 0.0)	-0.1	(-0.8 to 0.6)
Overweight/ Obese	-2.1	(-3.2 to -1.1)	-1.9	(-3.4 to -0.6)
Virally suppressed	-0.8	(-1.7 to 0.0)	-0.8	(-1.9 to 0.3)

Figure 1. Observed (solid line) vs. predicted (dashed line) weight trajectories among participants on TDF pre/post DTG switch (n=1850)



CONCLUSIONS

- In contrast to reports of large weight gain following switch to DTG in high-income settings, we observed slightly less weight increase than predicted based on pre-switch trajectory among ART-experienced adults in rural Kenya.
- When restricting to those on TDF pre- and post-switch, switch from NNRTI to DTG was not associated with large weight gain.

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ADDITIONAL KEY INFORMATION

Questions? Email me at Matt.Hickey@ucsf.edu

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