Body composition changes in people with HIV switching from or maintaining TDF-based regimens

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893

Background

Several studies have demonstrated that switching from tenofovir disoproxil fumarate (TDF) to tenofovir alafenamide (TAF) is associated with significant weight gain in people with HIV (PWH). Weight trajectories must be considered in the context of pre-switch trends, wherein a previous ART regimen may be a significant confounder. This is especially true for regimens containing TDF, which are both known to have a weight suppression effect. However, data regarding body composition are missing. **The objective of the study** was to explore body composition (BC) changes in PWH switching from or maintaining TDF-based ART.

Methods

- This was an observational longitudinal study including ART-experienced PWH attending the Modena HIV Metabolic Clinic (Italy) from 2004 to Feb 2024 with at least 3 assessments for BC, measured by dual energy X-ray absorptiometry (DEXA).
- BC comprised total lean and fat mass, including trunk fat. Baseline (time 0, T0) was defined as the first available DEXA in which TDF-based ART was recorded (Figure 1).
- In the switching groups, time 1 (T1) was the date of switching to TAF (group 2) or abacavir (ABC) and/or lamivudine (3TC)-based ART (group 3), while in PWH who maintained TDF (group 1) was the closest date to other two groups (Figure 1).
- Groups were matched for median time duration between T0 and T1. Time 2 (T2) was defined as 2 years after the switch in all groups.

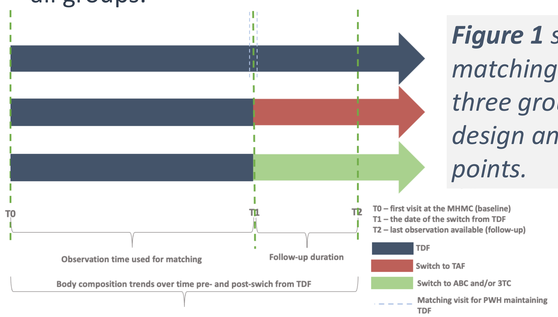


***Figure 1** shows matching criteria for three groups,, study design and three time points.*

- The effect of switching from or maintaining TDF on BC changes was explored in the linear mixed model adjusted for age and sex.

Maintaining TDF-based regimens was associated with reduction in total lean mass, while switching to TAF was associated with stabilization of both lean and fat mass.

Results

A total of 1235 PWH were included (29.5% women). At T0, median age was 45 yrs, median BMI was 23.4 kg/m2, median CD4 cell count 590 c/microL.

***Table 1**. Demographic and anthropometric characteristics at switch time in PWH maintain TDF or switching to TAF or ABC and/or 3TC.*

Characteristic	TDF (N = 289)	ABC and/or 3TC (N = 599)	TAF (N = 347)	p
Male sex, N (%)	177 (61%)	426 (71%)	267 (77%)	<0.001
Age, years, median (Q1, Q3)	47 (42,52)	50 (45,55)	53 (48,58)	<0.001
Current CD4 cell count, cells/microL, median (Q1, Q3)	600 (458,808)	689 (500,909)	697 (539,915)	<0.001
CD4/CD8 ratio, median (Q1, Q3)	0.85 (0.65,1.19)	0.87 (0.64,1.23)	1.00 (0.74,1.32)	<0.001
Body mass index, kg/m2, median (Q1, Q3)	23.6 (21.0,25.8)	23.4 (21.4,25.9)	24.5 (22.2,26.9)	<0.001
DEXA total bone mass, kg, median (Q1, Q3)	2.29 (1.96,2.59)	2.34 (2.02,2.64)	2.53 (2.17,2.85)	<0.001
DEXA total lean mass, kg, median (Q1, Q3)	50 (41,56)	49 (42,55)	48 (42,53)	0.081
DEXA trunk fat mass, kg, median (Q1, Q3)	8.0 (5.9,10.0)	8.6 (6.3,11.7)	11.0 (8.4,14.3)	<0.001
DEXA total fat mass, kg, median (Q1, Q3)	15 (11,19)	16 (12,22)	21 (16,25)	<0.001
DEXA, total weight, kg, median (Q1, Q3)	67 (58,76)	68 (60,76)	71 (62,79)	0.013

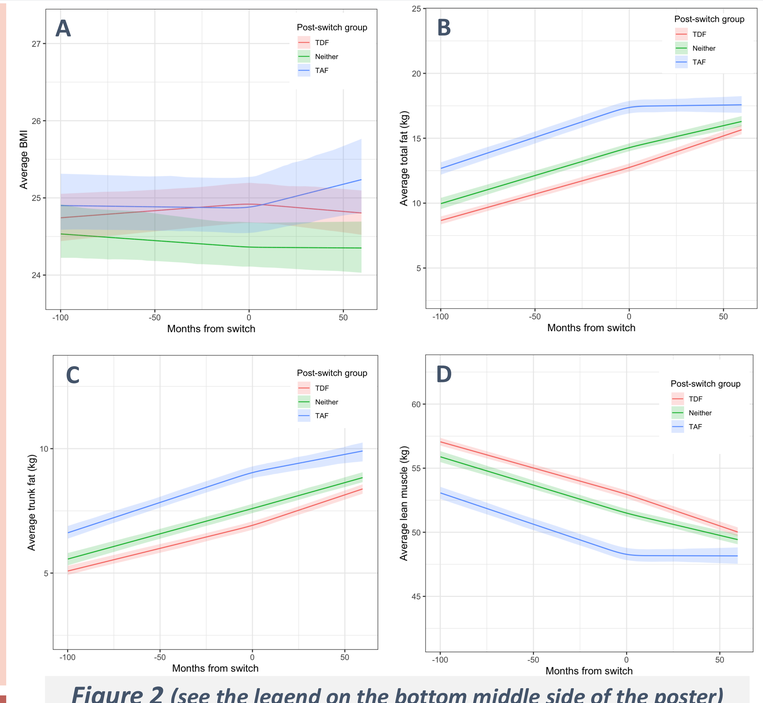


***Figure 2** (see the legend on the bottom middle side of the poster)*

***Figure 2.** BMI (A), total fat mass (B), trunk fat (C) and lean mass (D) trends over time for PWH maintaining TDF or switching to TAF or ABC and/or 3TC. β estimations of these trends are shown in Table 2.*

***Table 2** shows β estimations of body composition changes over time from switch time (time 1) and follow-up at 24 months (time 2).*

	(β estimate, 95% confidence intervals)	p	vs. Slope TDF (β estimate, 95% confidence intervals)	p
BMI	0.18 (0.07, 0.29)	<0.01	0.03 (-0.02, 0.09)	0.299
Total lean mass	1.06 (0.87, 1.26)	<0.01	0.33 (0.24, 0.41)	<0.01
Total fat mass	-1.02 (-1.21, -0.83)	<0.01	-0.33 (-0.42, -0.25)	<0.01
Trunk fat mass	-0.22 (-0.37, -0.07)	<0.01	-0.08 (-0.15, -0.02)	0.011

Discussion and conclusions

- After 2 years of follow-up, maintaining TDF was associated with slight reduction in BMI and reduction in total lean mass, suggesting that weight loss observed with TDF regimens might be related to unhealthy lean loss.
- Switching to TAF (vs. maintaining TDF) was associated with an increase in BMI and the stabilization of both lean and fat mass, suggesting a likely neutral effect of TAF on total weight and body composition.

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