Body Composition Changes in People With HIV Switching to DTG/3TC or BIC/FTC/TAF

897

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BACKGROUND

- Switching to DTG/3TC (DOV) or BIC/FTC/TAF (BIK) in the PASO-DOBLE trial (ClinicalTrials.gov NCT04884139) showed noninferior efficacy of DOV vs. BIK and weight gain in both groups, which was significantly greater for BIK at 48 weeks.
- **We aimed to know how switching to DOV or BIK affects body composition and whether there are differences between the two regimens.**

METHODS

- Participants underwent **whole-body DXA scans** to assess total mass (TM), fat mass [total (FM) and regional, including abdominal (ABFM), visceral (VFM), and appendicular (LFM)], and lean mass [total (LM), and appendicular (ALM)] and a **single abdominal CT scan at L4 level** to measure subcutaneous (SAT), visceral (VAT), and total (TAT) fat area at baseline and 48 weeks.
- **Chi² test or Fisher's exact test and Student's t-test or Mann-Whitney test** were used to assess qualitative and quantitative variables. **Mixed linear models with repeated measures** were used to assess intra-arm changes in compartments. **Linear regression** (adjusted for sex, presence of TAF at baseline, age and race/ethnicity) were used to assess differences in body compartments in the pooled population and in FM, VFM, VAT or SAT in several **subgroups** (**sex, age, body mass index [BMI], baseline TDF, baseline EFV, or weight change >5%)**; in the subgroup analysis, adjustment was also made for the corresponding baseline variable.
- We also assessed changes in **DXA-defined obesity** with two definitions: 1) FM >25% men or >32% women; and 2) FM >8.2 kg/m² men or >11.8 kg/m² women), **sarcopenia** (ALM <7.0 kg/m² men; <5.5 kg/m² women), and **increased VAT** (>100 cm² for both men and women) in both groups.

RESULTS 1: BASELINE CHARACTERISTICS

- **447 (81%)** out of 553 participants had paired DXA and CT scans available.
- **Baseline characteristics** did not differ from those in main study (not shown).
- N (%) with **weight gain >5%:** DOV 45 (20.2%) vs. BIK 64 (28.6%) (P=0.047).

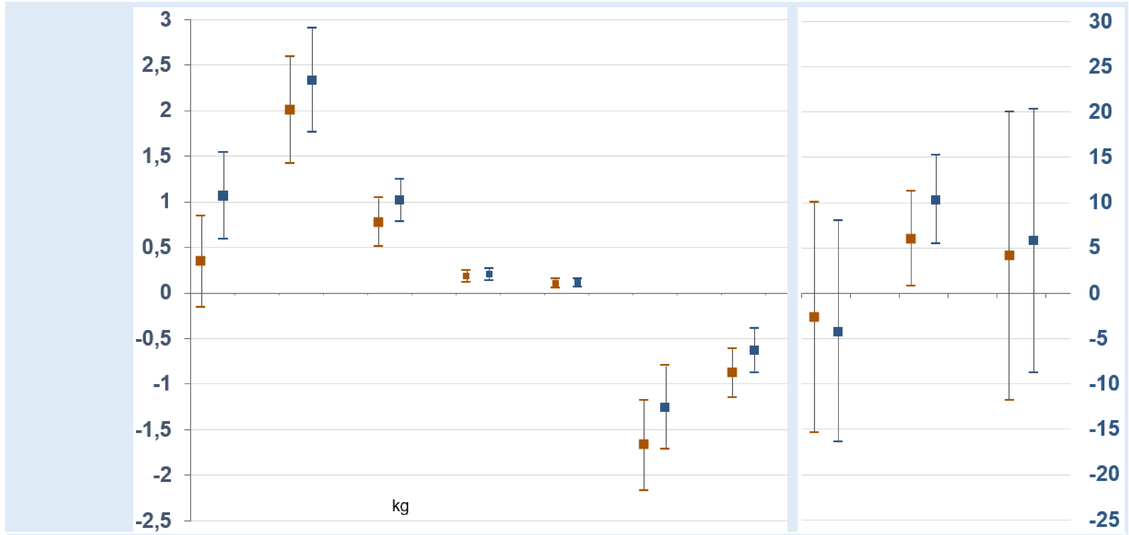
Baseline characteristics	DTG/3TC (n=223)	BIC/FTC/TAF (n=224)
Age (years)	49.6 (41.3 - 57.7)	51.4 (39.0 - 57.9)
Sex at birth		
Male	165 (74.0)	172 (76.8)
Female	58 (26.0)	52 (23.2)
Race/ethnicity		
White/Caucasian	158 (70.9)	168 (75.0)
White/Latino	55 (24.7)	49 (21.9)
Black	4 (1.8)	4 (1.8)
Other	6 (2.7)	3 (1.3)
Weight (kg)	73. 0 (64.0 - 84.0)	73.0 (64.0 - 83.0)
BMI (kg/m²)	25.2 (22.3 - 28.2)	25.0 (22.2 - 28.1)
Diet		
Unhealthy	6 (2.7)	5 (2.2)
Partially healthy	169 (75.8)	172 (76.8)
Healthy	27 (12.1)	24 (10.7)
Unknown	21 (9.4)	23 (10.3)
EEE (MET min/week)		
Moderate	419.6 (69.9 - 1678.3)	349.7 (58.3 - 1118.9)
Vigorous	683.0 (82.6 - 1814.7)	431.4 (49.0 - 1295.6)
Total	1797.2 (777.8 - 4274.5)	1602.6 (654.7 - 3475.5)
Baseline NRTI1		
TAF	57 (25.6)	65 (29.0)
TDF	79 (35.4)	88 (39.3)
ABC	52 (23.3)	40 (17.9)
No NRTI1	35 (15.7)	31 (13.8)
Baseline anchor		
NNRTI	119 (53.4)	119 (53.1)
of which EFV	*61 (27.4)*	*62 (27.7)*
INSTI	33 (14.8)	42 (18.8)
PI	69 (30.9)	60 (26.8)
>1 core drug	2 (0.9)	3 (1.3)

Data are n (%) or median (interquartile range). All P values >0.5.
Diet: short Diet Quality Screener.
EEE: Estimation of energy expenditure according to physical activity.

Overall, the BIC/FTC/TAF group showed numerically greater changes in body fat and smaller changes in lean mass than the DTG/3TC group.

Differences in body compartment changes from baseline within each of the study groups were greater than those between groups.

RESULTS 2: INTRA- AND INTER-ARM CHANGES IN BODY COMPARTMENTS



		TM	FM	LFM	ABFM	VFM	LM	ALM	SAT	VAT	TAT
Mean change (95% CI) from baseline	DTG/3TC	0.3 (-0.2; 0.8)	**2 (1.4; 2.6)**	**0.8 (0.5; 1)**	**0.2 (0.1; 0.3)**	**0.1 (0.1; 0.2)**	**-1.7 (-2.2; -1.2)**	**-0.9 (-1.1; -0.6)**	-2.7 (-15.4; 10.1)	**6 (0.8; 11.2)**	4.1 (-11.8; 20)
	BIC/FTC/TAF	**1.1 (0.6; 1.5)**	**2.3 (1.8; 2.9)**	**1 (0.8; 1.2)**	**0.2 (0.1; 0.3)**	**0.1 (0.1; 0.2)**	**-1.3 (-1.7; -0.8)**	**-0.6 (-0.9; -0.4)**	-4.2 (-16.5; 8)	**10.3 (5.4; 15.2)**	5.8 (-8.8; 20.3)
Adjusted mean treatment difference (95% CI)		**0.80 (0.12; 1.49)**	0.46 (-0.31; 1.23)	**0.32 (0.00; 0.65)**	0.02 (-0.07; 0.12)	0.01 (-0.06; 0.07)	0.43 (-0.19; 1.04)	0.25 (-0.08; 0.59)	0.6 (-18.2; 17)	3.6 (-3.5; 10.7)	2.08 (19.3; 23.5)

RESULTS 3: COMPARTMENT CHANGES IN THE WHOLE POPULATION

- There were **significant increases in fat compartments** and **significant decreases in lean mass compartments**. The magnitude of fat changes was greater than that of lean mass changes.

Body compartment	Baseline (mean, SD)	Week 48 (mean, SD)	Mean change from baseline (95% CI)	Proportional mean change (95% CI)
DXA				
TM (Kg)	74.1 (15.7)	74.8 (15.6)	**0.70 (0.36; 1.05)**	**1.17 (0.70; 1.65)**
FM (Kg)	21.2 (10.3)	23.4 (10.0)	**2.17 (1.76; 2.58)**	**17.88 (14.61; 21.15)**
ABFM (Kg)	2.0 (1.3)	2.2 (1.3)	**0.20 (0.15; 0.24)**	**23.92 (18.64; 29.21)**
VFM (Kg)	1.0 (0.9)	1.1 (0.9)	**0.11 (0.08; 0.14)**	**82.49 (29.67; 135.30)**
LFM (Kg)	8.1 (4.3)	9.1 (4.1)	**0.90 (0.72; 1.07)**	**21.70 (17.93; 25.47)**
LM (Kg)	50.3 (10.2)	48.8 (9.7)	**-1.46 (-1.80; -1.13)**	**-2.58 (-3.20; -1.97)**
ALM (Kg)	23.0 (5.4)	22.2 (5.2)	**-0.75 (-0.93; -0.57)**	**-2.84 (-3.59; -2.09)**
CT at L4				
SAT (cm²)	625.6 (185.0)	622.1 (195.2)	-3.44 (-12.24; 5.36)	0.02 (-1.37; 1.41)
VAT (cm²)	122.1 (95.1)	130.2 (96.4)	**8.16 (4.59; 11.73)**	**21.15 (14.50; 27.80)**
TAT (cm²)	745.6 (267.1)	750.4 (276.5)	4.95 (-5.78; 15.67)	**1.47 (0.01; 2.93)**

RESULTS 4: EXPLORATORY SUBGROUP ANALYSES

- **TDF and EFV at baseline were associated with a significant difference in DXA FM and VFM mass changes between BIC/FTC/TAF and DTG/3TC.** There were no differences in CT VAT or SAT by subgroups (not shown).

		DTG/3TC	BIC/FTC/TAF	Adjusted mean treatment difference (95% CI)
Total Fat Mass (FM) (kg)	Male Female	1.74 (4.55) 2.74 (4.07)	2.2 (4.4) 2.77 (4)	0.52 (-0.39; 1.44) -0.06 (-1.51; 1.39)
	<50 years ≥50 years	1.76 (4.75) 2.26 (4.11)	3.01 (4.83) 1.75 (3.73)	0.95 (-0.26; 2.17) -0.12 (-1.12; 0.88)
	<25 kg/m² ≥25 kg/m²	2.27 (3.89) 1.76 (4.9)	2.72 (3.52) 1.95 (4.96)	0.32 (-0.61; 1.24) 0.51 (-0.7; 1.72)
	TDF No TDF	1.25 (4.55) 2.41 (4.34)	3.11 (4.51) 1.83 (4.12)	**1.94 (0.6; 3.28)** -0.44(-1.39; 0.51)
	EFV No EFV	0.97 (4.28) 2.39 (4.46)	3.49 (5.04) 1.89 (3.92)	**2.32 (0.72; 3.92)** -0.32 (-1.19; 0.56)
	Δweight ≤5% Δweight >5%	1.11 (4.16) 5.52 (3.74)	1 (3.76) 5.65 (3.79)	-0.1 (-0.93; 0.72) 0.33 (-1.1; 1.76)
Visceral Fat Mass (FM) (kg)	Male Female	0.07 (0.38) 0.19 (0.28)	0.12 (0.36) 0.1 (0.22)	0.04 (-0.05; 0.12) -0.09 (-0.19; 0.01)
	<50 years ≥50 years	0.06 (0.33) 0.15 (0.38)	0.13 (0.31) 0.1 (0.35)	0.05(-0.04; 0.13) -0.05 (-0.15; 0.06)
	<25 kg/m² ≥25 kg/m²	0.11 (0.28) 0.1 (0.41)	0.14 (0.25) 0.08 (0.4)	0.03 (-0.04; 0.1) -0.02 (-0.13; 0.09)
	TDF No TDF	0.02 (0.28) 0.15 (0.39)	0.14 (0.35) 0.1 (0.32)	**0.12 (0.02; 0.22)** -0.06 (.0.14; 0.03)
	EFV No EFV	0.02 (0.3) 0.14 (0.37)	0.17 (0.36) 0.09 (0.32)	**0.13 (0.01; 0.25)** -0.05 (-0.12; 0.03)
	Δweight ≤5% Δweight >5%	0.06 (0.35) 0.31 (0.31)	0.03 (0.3) 0.32 (0.31)	-0.04 (-0.11; 0.04) 0.01 (-0.11; 0.14)

Data are mean (SD). Out of 123 persons with EFV, 103 (84%) were with TDF.

RESULTS 5: CHANGES IN OBESITY, SARCOPENIA, AND ↑VAT

		DTG/FTC		BIC/FTC/TAF		Inter-arm comparison
			Intra-arm comparison		Intra-arm comparison	
Obesity (DXA FM >%)	Baseline Week 48	128 (57.7) 159 (71.6)	**P<0.001**	127 (57.0) 164 (73.5)	**P<0.001**	P=0.924 P=0.672
Obesity (DXA FM >kg/m²)	Baseline Week 48	66 (29.7) 75 (33.8)	P=0.078	61 (27.4) 81 (36.3)	**P<0.001**	P=0.601 P=0.620
Sarcopenia (DXA ALM <kg/m²)	Baseline Week 48	41 (18.5) 45 (20.3)	P=0.541	43(19.3) 42 (18.8)	P=1	P=0.904 P=0.721
VAT (CT >100 cm²)	Baseline Week 48	113 (52.3) 119 (55.1)	P=0.327	96 (42.6) 113 (52.3)	**P=0.005**	P=0.123 P=0.630

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