

Tenofovir alafenamide associated weight change in persons living with HIV

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BACKGROUND

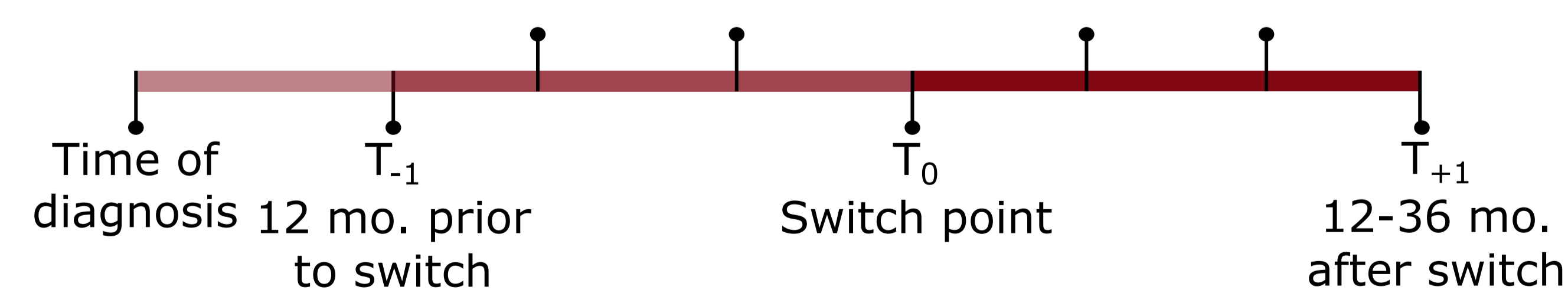
- Tenofovir alafenamide (TAF) is a prodrug of tenofovir (TFV) that is metabolized intracellularly to its active form, tenofovir diphosphate (TFV-DP)
- Benefits to TAF include less renal toxicity and effect on bone mineral density when compared to tenofovir disoproxil fumarate.
- There has been a shift towards morbidity and mortality due to non-communicable diseases in persons living with HIV
- Patients on ART have a higher incidence of developing obesity and increased risk of diabetes and cardiovascular disease
- Recent data has implicated integrase inhibitors, specifically dolutegravir, as causative agents of weight gain
- Minimal data has evaluated TAF as a possible contributor to weight gain

OBJECTIVE

- To evaluate weight change in patient switched from TDF to TAF, keeping constant the other components of their antiretroviral therapy.

METHODS

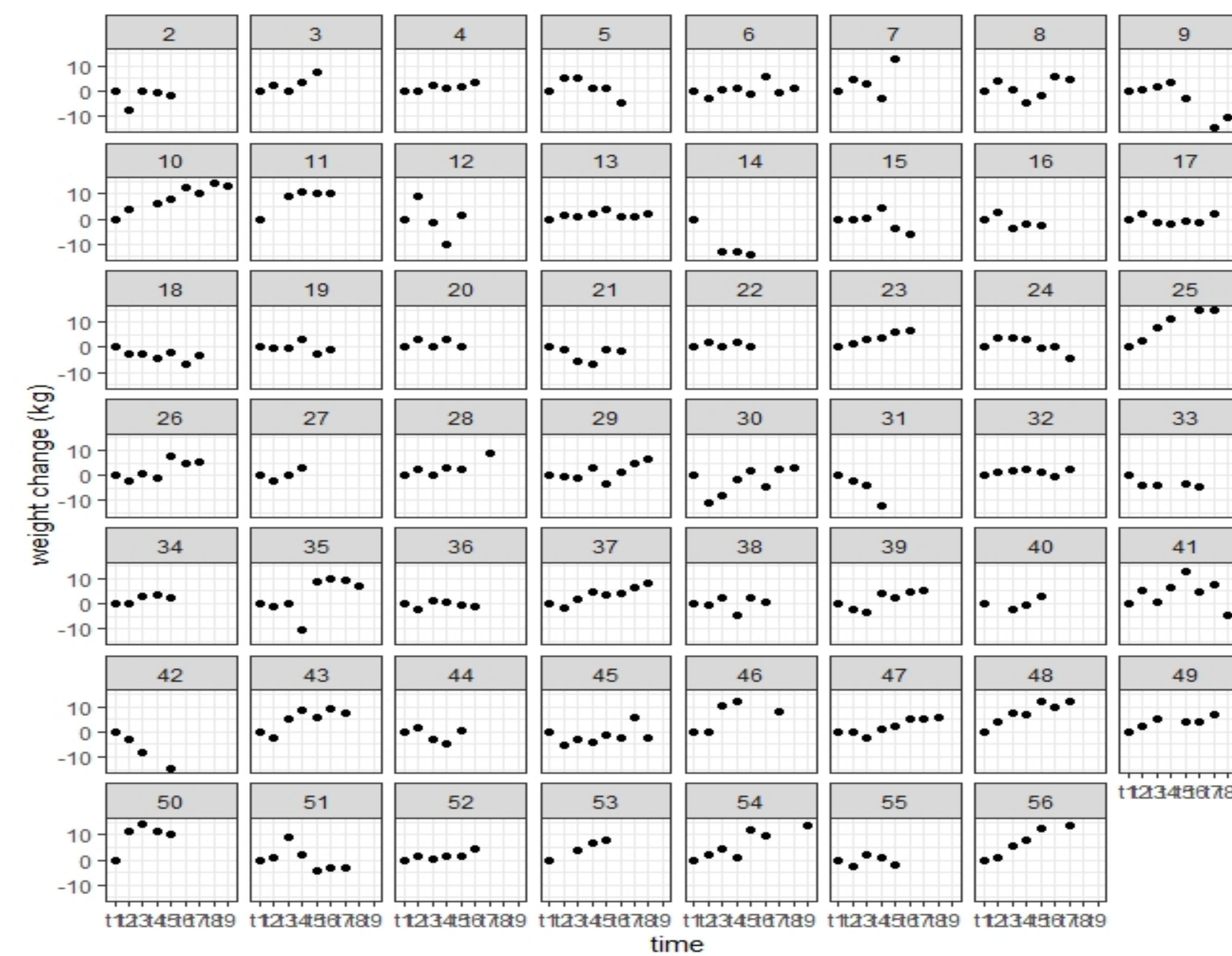
- Primary Outcome: change in weight (kg) after TAF switch
- Secondary Outcome: change in BMI after TAF switch
- Inclusion Criteria
 - Patients >18 years old who are HIV-positive and are patients at Immunology Clinic
 - On TDF regimen for at least 12 months
 - Switched to TAF regimen with no other ART changes
 - On TAF regimen for at least 12 months
- Exclusion Criteria
 - Pregnant or incarcerated patients
 - Inadequate documentation of weight:
 - Two weights, at least 4 weeks apart in both the pre- and post-switch periods
 - Amputation during study period
- At each encounter during the study period, the following data were collected:
 - Weight, CD4+ count, HIV RNA, and presence or absence of: hyperlipidemia, hypertension, diabetes, and active smoking



- Statistical analysis
 - Weight changes before and after switch were analyzed using a mixed effects model.
 - Confounders included in the model:
 - Presence of absence of: diabetes, hypertension, hyperlipidemia, and smoking status
 - Demographics: age, sex, race, height
 - Baseline ART class (INSTI, PI, NNRTI, or combination of INSTI + PI).

RESULTS

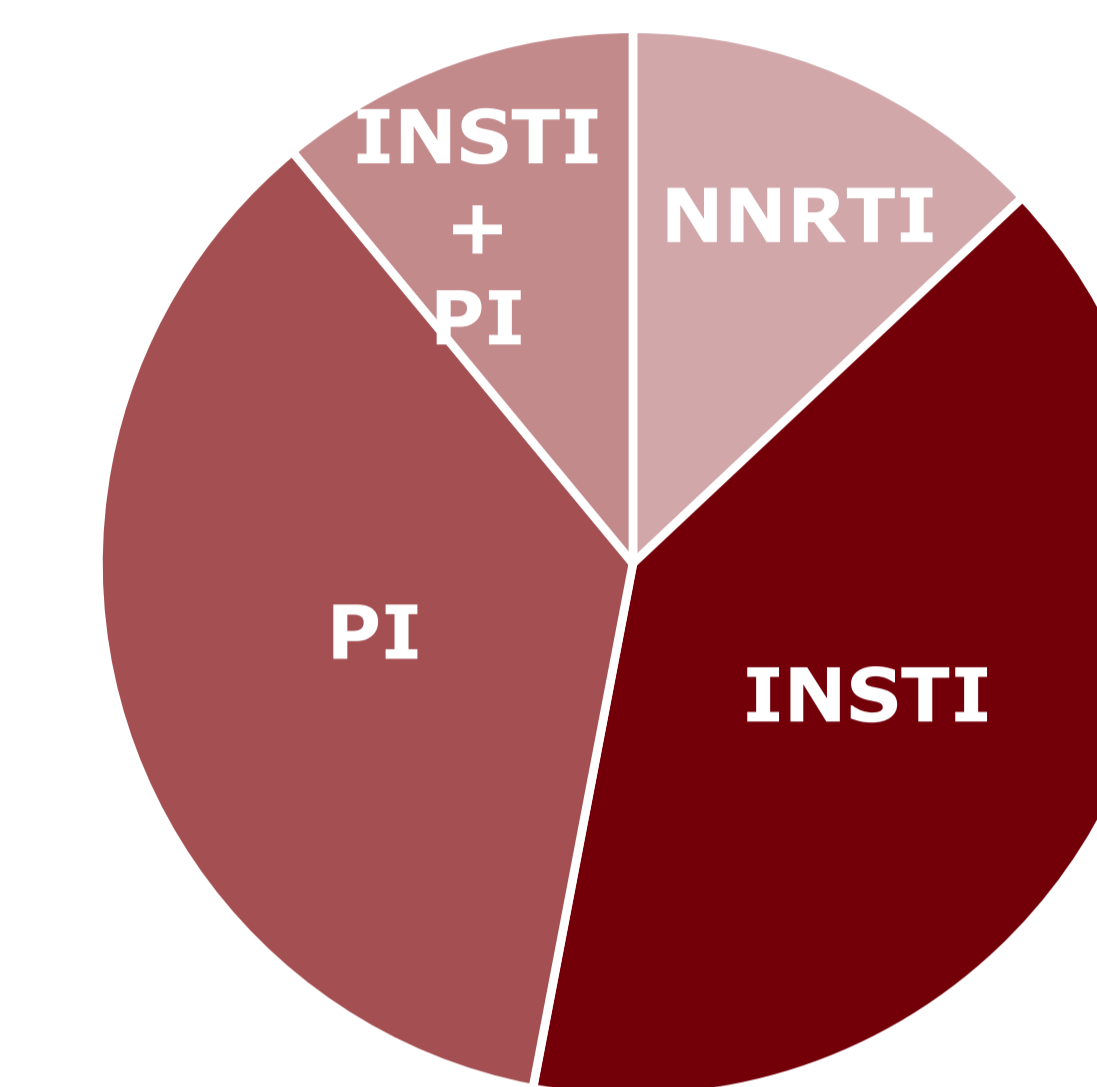
Individual Weight Profiles



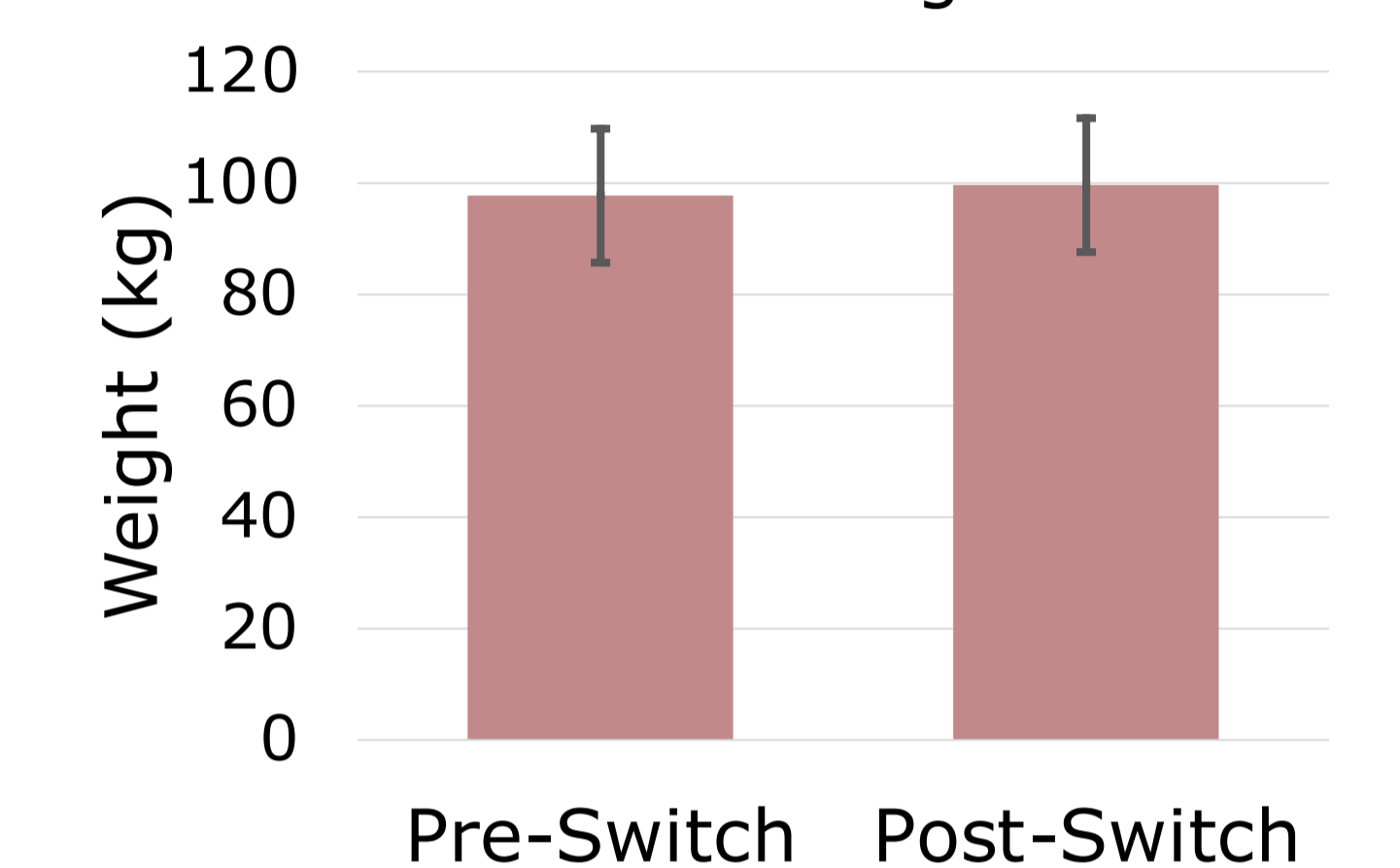
Baseline Characteristics (n=55), n (%)

Age in years, mean (SD)	45.9 (12.6)
Sex, male	37 (67)
Race/Ethnicity	
White	10 (18)
Hispanic	1 (2)
Black	40 (73)
Other	4 (7)
Anthropometrics	
Weight (kg), mean (SD)	85.9 (23.5)
BMI (kg/m ²), mean (SD)	28.1 (6.9)
Obese (BMI >30)	21 (38)
Overweight (BMI >25)	37 (67)
CD4, mean (SD)	544 (246.8)
Years since diagnosis, mean (SD)	10 (6.6)
Smoker	12 (22)
Comorbidities	
Diabetes	1 (2)
Hypertension	18 (33)
Hyperlipidemia	9 (16)

Baseline Antiretroviral Regimen



Change in Estimated Marginal Mean Weight



	Pre-Switch Weight (kg)	Post-Switch Weight (kg)	Difference (kg), 95% Confidence Interval	P-value
All patients (n=55)	97.7	99.7	1.91 (0.25, 3.57)	0.024
Male	83.4	84.2	0.73 (-0.98, 2.43)	0.402
Female	112.0	115.1	3.09 (0.54, 5.65)	0.018
NNRTI (n=7)	86.8	87.2	0.40 (-3.38, 4.18)	0.83
INSTI (n=28)	102.6	102.3	-0.33 (-2.41, 1.74)	0.753
PI (n=26)	90.3	90.8	0.60 (-1.50, 2.70)	0.575
INSTI + PI (n=6)	111.3	116.3	6.97 (3.02, 10.92)	0.0006

DISCUSSION

- In a predominantly black population, there was a statistically significant change in the primary endpoint
- Statistical significance was primarily driven by patients who are female and patients who were on both an INSTI and a PI
- Due to small sample size and lack of a control group, no definitive conclusions can be drawn
- We did not assess adherence to therapy, socioeconomic status, or physical activity level which could have affected the results of this evaluation
- More data are needed to further examine the metabolic effects of TAF

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