

Weight changes associated with patients with high BMI after initiation or switching ART regimen

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Background: Weight gain associated with antiretroviral therapy (ART) use has been documented in several naïve and treatment experienced studies in people with HIV (PWH), however, weight gain in the setting of pre-existing obesity among PWH has not been well defined.

Methods: This retrospective study analyzed differences in body mass index (BMI) and weight in PWH who initiated or switched an ART regimen, between 2013 and 2018, over 48-weeks from a single, underserved clinic with a total patient population of 1,400. An electronic medical record (EMR) search resulted in 241 subjects on initial query; 149 of whom met the inclusion criteria of: (1) Diagnosis of HIV-1 (2) BMI of ≥ 35 at any point while on ART. 120 subjects had complete data throughout the 48 weeks. 12 outliers were removed to achieve a normal distribution prior to data analysis. Therefore the final sample population consisted of 108 subjects. Demographic data, BMI and weight were captured at baseline, week 24 and week 48 based on the initiation or switch of ART regimen. Data was analyzed with SPSS version 26.0. Frequencies and means were described. ART classes were defined as (1) integrase inhibitor (INI) based regimen, (2) protease inhibitor (PI) based regimen, (3) non-nucleoside reverse transcriptase inhibitor (NNRTI) based regimen, or (4) INI + PI based regimen.

Results: 52.8% of this study population were female and 74.1% identified their race as Black. Additional demographics are described in Table 1 & Table 2. The overall sample population experienced an mean increase in BMI of 2.2, PWH on INI based regimen BMI increased 2.1, PWH on PI based regimen BMI increased 2, PWH on NNRTI based regimen BMI increased 1.2 and PWH on INI + PI regimen BMI increased 5.7 over the 48 week period (Graph 1). When analyzing weight, 43.5% experienced greater than 5% change in weight over 48 weeks. PWH on an INI based regimen gained an average of 6.1 kg (43.2% experienced greater than 5% change in weight), PWH on PI based regimen gained an average of 5.9 kg, PWH on NNRTI based regimen gained an average of 3.2 kg and PWH on an INI + PI regimen gained an average of 16.4 kg (Graph 2).

Conclusions: In patients with BMI over 35 who initiated or switched their ART regimen there was a significant increase in BMI and weight over 48 weeks. This increase was greatest in PWH on INI (6.1 kg) and INI + PI based regimens (16.4 kg). The greatest weight increase occurred in the first 24 weeks with weight plateauing after 48 weeks.

Table 1: Final Sample Population = 108

	Frequency	Percent	Mean	Median
Age			46.5	47
Gender: Female	57	52.8%		
Race: Black	80	74.1%		
Ethnicity: Non-Hispanic	101	93.5%		
Baseline CD4 Count			595.7	562
Tx Status: Experienced	80	74.1%		
Tx Status: Naïve	28	25.9%		
INI based regimen	81	75%		
PI based regimen	14	13%		
NNRTI based regimen	9	8.3%		
INI + PI based regimen	4	3.7%		

Table 2: Baseline Mean Data based on ART Group

	INI (n=81)	PI (n=14)	NNRTI (n=9)	INI+PI (n=4)
Age	46.48 (Mdn=48)	44 (41.5)	50.33 (48)	46.5 (44.5)
Female	54.3% (44)	42.9% (6)	55.6% (5)	50% (2)
Black	76.5% (62)	64.3% (9)	66.7% (6)	75% (3)
Non-Hispanic	95.2% (77)	100% (14)	88.9% (8)	50% (2)
Tx Experience	75.3% (61)	64.3% (9)	88.9% (8)	50% (2)
Baseline BMI	38.3 (38.2)	35.6 (37)	38.2 (34.1)	36.1 (37.3)
Baseline Weight	244 (242)	235.3 (221.9)	227.6 (222.6)	220.8 (223)
Baseline CD4	627.6 (590.5)	491.1 (514)	617 (743)	223.75 (228.5)

