



# Weight and Lipid Changes after Switch to Dolutegravir-based Regimens in IDU and Non-IDU within the UCD ID Cohort



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## Background

Increasing evidence from clinical trials and observational studies shows an association between use of Integrase Strand Transfer Inhibitors (INSTI), especially Dolutegravir (DTG), and weight gain in people with HIV (PWH)<sup>1</sup>. However, some studies suggest that weight gain might be limited to female subjects and people of African origin<sup>2</sup>, and data on people with a history of intravenous drug use (IDU) is lacking. The aim of this study was to evaluate weight and lipid changes following switch to DTG over 96 weeks in IDU and non-IDU.

## Methods

We conducted an observational, retrospective analysis on all subjects enrolled in the UCD ID cohort who were switched to DTG. Patients with weight recorded prior to switch (within 3 months pre-switch) and 48 and/or 96 weeks post-switch (with a window of 3 months) were eligible for the study. Weight and lipids (total cholesterol, LDL, HDL, total cholesterol/HDL ratio) were recorded at baseline, 48 and 96 weeks, alongside subject's demographic and clinical data.

Paired sample t test was used to analyse weight and lipid changes within each group at 48 and 96 weeks post switch. Non-parametric Mann-Whitney test was used to assess the difference in weight and lipid changes between IDU and non-IDU at 48 and 96 weeks post switch to DTG.

DEMOGRAPHICS (N=138)	IDU (N=73)	NON IDU (N=65)
Age (Years)	48 (44-53.5)	49 (38-55)
Gender		
Male	48	50
Female	25	15
Ethnicity		
Caucasian	73	64
African Origin	0	1
RF for transmission		
IDU	73	0
MSM	0	39
Heterosexual Contact	0	26
Comorbidities & Behavioural Variables		
Diabetes	4	1
HTN	3	14
Active smoking	61	35
Methadone Therapy	56	1
Active IDU	11	0
Hep C Coinfection	69	5
Psychiatric Medications	35	16

Fig.1

DEMOGRAPHICS (N=138)		IDU (N=73)	NON IDU (N=65)
HIV status	Undetectable viral load at switch	49	43
	Detectable viral load at switch	24	21
	Mean viral load at switch (copies/ml)	20051 (1645-93771)	38205 (2085-155843)
	Median Duration of HIV infection (yrs)	15	10
	Median Duration of HIV treatment (yrs)	11	8
Treatment pre switch	NRTI backbone:		
	FTC/TDF	44	34
	FTC/TAF	10	4
	3TC/ABC	10	6
	Other	2	4
	3 <sup>rd</sup> Agent:		
	INSTI	7	11
	NNRTI	6	22
	PI	53	15
	Treatment Naïve:	7	17
Backbone post switch			
	FTC/TDF	23	30
	FTC/TAF	12	13
	3TC/ABC	34	16
	Other	4	6

Fig.2

## Results

Overall, 204 subjects were eligible for the study. Of these, 96 patients (53 IDU and 43 non-IDU) had weight recorded at baseline and 48 weeks, and 90 patients (43 IDU and 47 non-IDU) had weight recorded at baseline and 96 weeks. (Fig. 1,2) The median weight at 48 weeks was significantly higher than at baseline in both groups (IDU: 65kg (56.3; 76.9) to 69.5kg (59.7; 81.6), p 0.007, Non IDU: 73.45kg (66.82; 82.45) to 74.25kg (67.02; 86.87), p 0.003). (Fig. 3). The median weight at 96 weeks was significantly higher in non-IDU only (73.4kg (66.3; 82) to 77.6kg (70.55; 86.7), p <0.001). (Fig. 3)

There was not a significant between-group difference in % weight change between baseline and 48 weeks (IDU: 2.26% (-3.81; 14.93), non-IDU: 3.43% (-0.88; 8.12), p 0.954), and between baseline and 96 weeks (IDU: -0.48% (-6.06; 10), non-IDU: 5.52% (0.72; 13.33), p 0.346). (Fig. 4) Of note, weight change in non-IDU at 96 weeks was >5%, which is generally considered clinically significant. No significant change in lipid parameters between baseline and 48 and 96 weeks was observed in IDU and non-IDU.

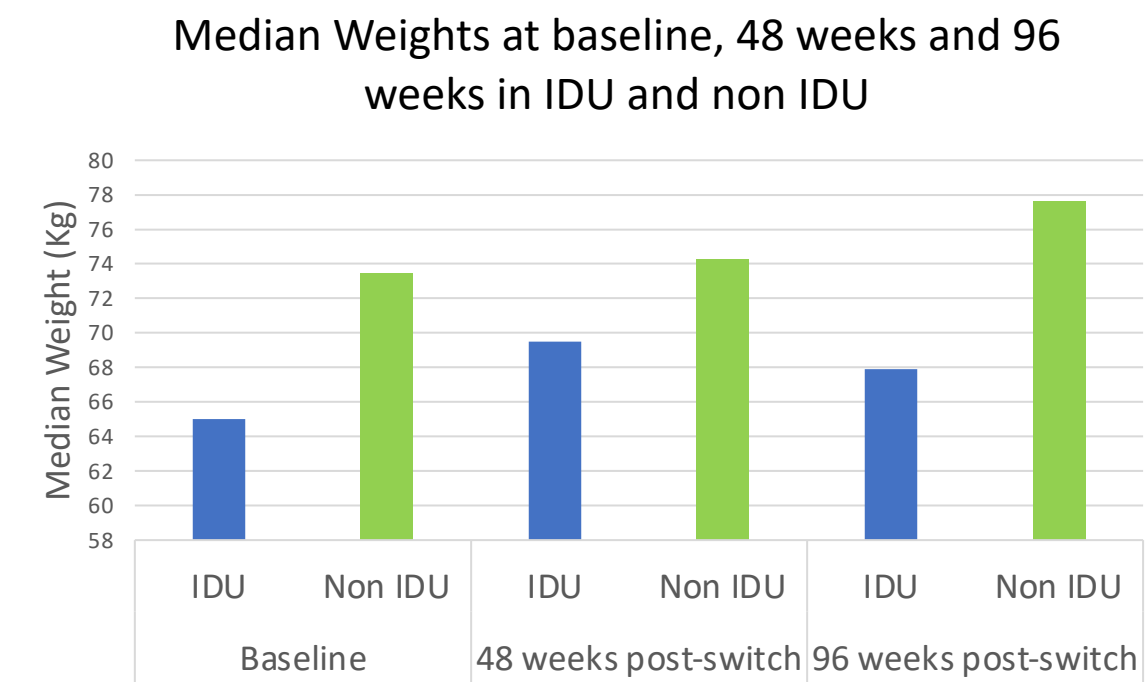


Fig. 3

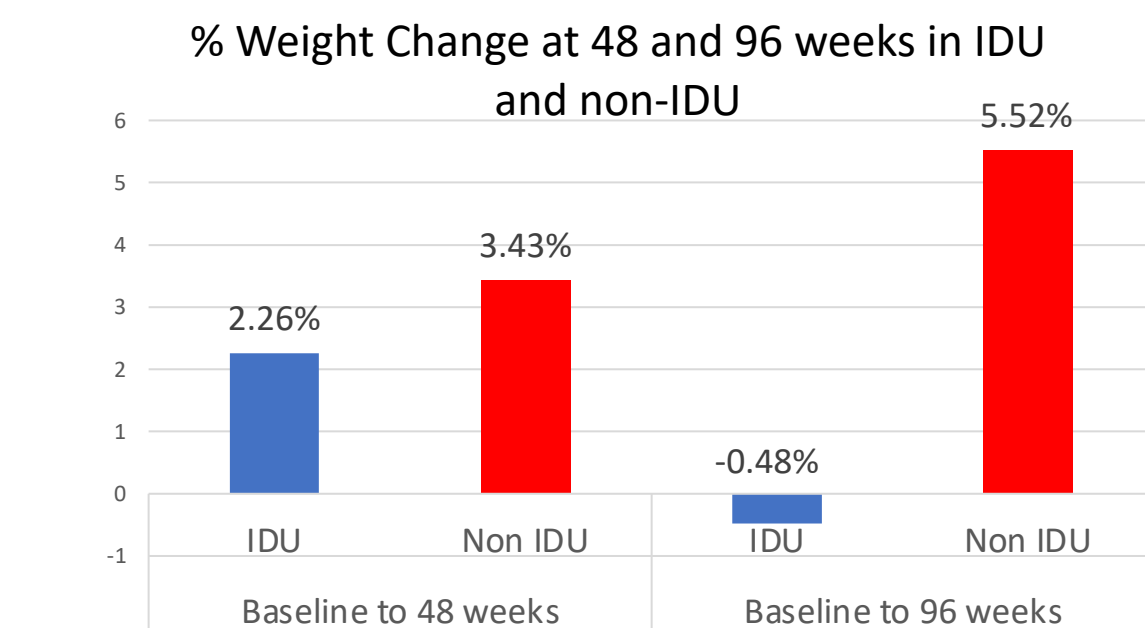


Fig. 4

## Conclusion

Switch to DTG resulted in a significant median weight gain at 48 weeks in both IDU and non-IDU, without any difference in % weight change between the two groups. Our results suggest that weight change following switch to DTG might be widespread among different sociodemographic groups. Future studies should focus on clarifying the specific factors associated with weight gain in the different subgroups of patients, as well as exploring possible strategies aimed at preventing weight gain and assessing whether this is reversible or not, for example following switch to different regimens.

## References

- Sax P et al. Weight Gain Following Initiation of Antiretroviral Therapy: Risk Factors in Randomised Comparative Clinical Trials. Clin Infect Dis. 2020 Sep 12; 71(6):1379-1389.
- Venter W et al. Dolutegravir plus Two Different Prodrugs of Tenofovir to Treat HIV. NEJM. 2019 Aug 29; 381:803-815.