

# DOLUTEGRAVIR USE IS ASSOCIATED WITH HIGHER POSTPARTUM WEIGHT COMPARED TO EFAVIRENZ

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## BACKGROUND

- **Postpartum weight retention impacts cardiometabolic risk.**
- **Recent studies show higher weight gain with dolutegravir (DTG)-based antiretroviral therapy (ART) compared to other ART.**

## OBJECTIVES

**Assess the association of DTG with postpartum weight over time in women with HIV (WLHIV) in Botswana using comparator groups of women on efavirenz (EFV) and HIV-uninfected women.**

## METHODS

**Study Design:** Tshilo Dikotla cohort study, Gaborone, Botswana

### Inclusion Criteria:

- **Pregnant WLHIV and HIV-uninfected pregnant women**
- **≥ 18 years old**
- **With postpartum weight measurements 1-18 months postpartum**

### Exclusion Criteria:

- **Receiving ART other than tenofovir (TDF)/ emtricitabine (FTC)/dolutegravir (DTG) or TDF/FTC/efavirenz (EFV)**

### Primary Outcome:

- **Postpartum weight through 18 months**

### Exposure of Interest:

- **Maternal HIV/ART status**

### Statistical Analysis:

- **Mixed models were fit to assess the association between HIV/ART status and postpartum weight over time, adjusting for confounders**
- **Interaction terms between time and HIV/ART group were evaluated to assess for differences in weight trajectories**
- **Subgroup analysis was performed among WLHIV to further assess the association of DTG vs EFV and postpartum weight, adjusting for HIV specific factors**

TABLE 1. CHARACTERISTICS OF PREGNANT WOMEN AT ENROLLMENT

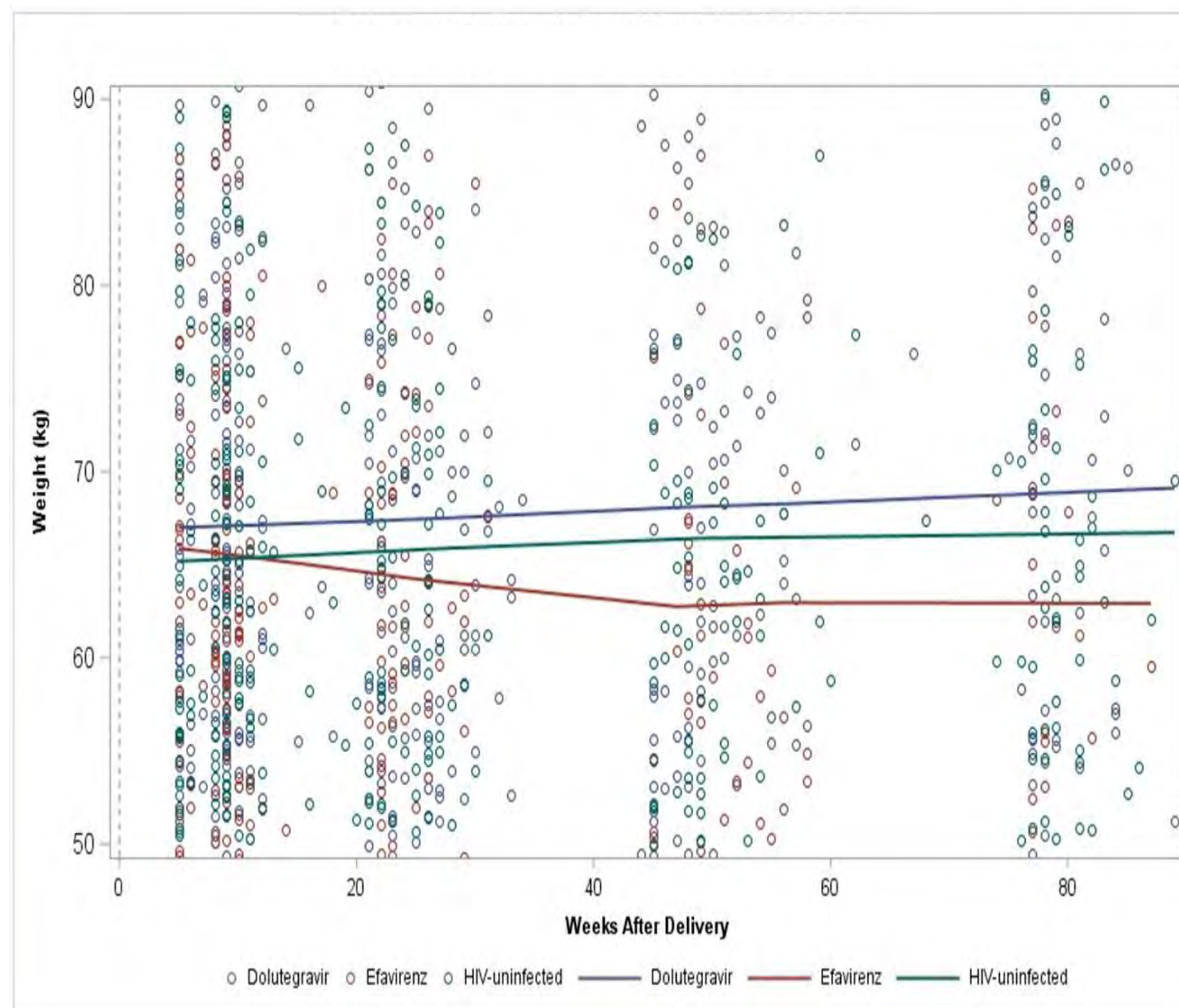
	WLHIV on DTG + TDF/FTC (n=170)	WLHIV on EFV + TDF/FTC (n=114)	HIV-uninfected (n=122)	p value
<b>Sociodemographic</b>				
Age (years)	28.5 (25.0 -34.0)	33.0 (28.0 -36.0)	25.0 (21.0 -29.0)	<0.01
Gestational age at delivery (weeks)	39.1 (37.9 -40.3)	39.1 (37.9 -40.3)	39.5 (38.3 -40.4)	0.30
Annual income (USD)				0.89
>\$12,000	74 (43.5)	54 (47.4)	60 (49.2)	
\$2,400 - \$11,999	76 (44.7)	40 (35.1)	43 (35.2)	
<\$2,400	17 (10.0)	15 (13.2)	16 (13.1)	
Unsure/Unknown	3 (1.8)	5 (4.4)	3 (2.5)	
Highest education secondary school or less	147 (86.5)	109 (95.6)	86 (70.5)	<0.01
Married	6 (3.5)	11 ( 9.6)	14 (11.5)	0.03
Employed	82 (48.2)	61 (53.5)	59 (48.4)	0.64
<b>Past Obstetric History</b>				
Gravidity	3.0 (2.0 - 3.0)	3.0 (2.0 - 4.0)	1.0 (1.0 - 3.0)	<0.01
Height (cm)	160 (156 - 165)	161 (156 - 166)	161 (156 - 166)	0.76
BMI (kg/m <sup>2</sup> ) at 4 wks postpartum	25.3 (21.8 -29.4)	24.5 (21.6 -27.6)	24.5 (21.7 -29.1)	0.32
Hypertensive at 4 wks postpartum*	18 (10.6)	12 (10.5)	14 (11.5)	0.96
Gestational Diabetes	10 (5.9)	14 (12.3)	8 (6.6)	0.12
Wt Gain in 2 <sup>nd</sup> /3 <sup>rd</sup> trimester (kg/wk)	0.2 (0.0 - 0.4)	0.1 (0.0 - 0.2)	0.3 (0.1-0.5)	<0.01
Breastfeeding duration (weeks)	19.0 (9.1 - 25.9)	22.6 (9.4 - 26.1)	35.7 (19.0 - 51.4)	<0.01
<b>HIV Clinical Disease at enrollment</b>				
CD4 cell count >500 (cells/mm <sup>3</sup> )	72 (42.6)	59 (51.8)	----	0.13
Log <sub>10</sub> HIV RNA level	1.6 (1.6 - 2.5)	1.6 (1.6 - 1.6)	----	0.09
On ART prior to pregnancy	60 (35.3)	98 (86.0)	----	<0.01

Continuous variables shown as median (interquartile range) and categorical variables shown as n (%). \*Defined as systolic blood pressure >140 mm Hg or diastolic blood pressure >90 mm Hg; ART=Antiretroviral Therapy; BMI=Body Mass Index; DTG=dolutegravir; EFV=efavirenz; FTC=emtricitabine; TDF=tenofovir; USD=US Dollars; WLHIV=women living with HIV

TABLE 2. MIXED MODELS FOR POSTPARTUM WEIGHT

WLHIV and HIV-uninfected pregnant women*			WLHIV^		
Exposure of Interest	Coefficient	p value	Exposure of Interest	Coefficient	p value
HIV/ART status			ART status		
WLHIV on DTG	5.0	<0.01	DTG	2.4	0.04
HIV-uninfected	6.4	<0.01	EFV	REF	--
WLHIV on EFV	REF	--			
*Adjusted for age, gestational diabetes, rate of weight gain in 2 <sup>nd</sup> -3 <sup>rd</sup> trimester, gestational age at delivery, and breastfeeding duration			^Adjusted for same confounders as above in addition to CD4, log <sub>10</sub> VL, and ART status at conception		

FIGURE. POSTPARTUM WEIGHT OVER TIME OF WOMEN BY HIV/ART STATUS



## RESULTS

- **Of 406 women, 170 received DTG and 114 EFV. Women on DTG or EFV were older than HIV-uninfected women (median age 28 vs 33 vs 25 years respectively,  $p<0.01$ ), and fewer had a college education (13.5% vs 4.4% vs 29.5% respectively,  $p<0.01$ ) (Table 1)**
- **Average weight gain per week (wk) between 2<sup>nd</sup> and 3<sup>rd</sup> trimester highest in HIV-uninfected women (0.3 vs 0.2 for DTG vs 0.1 kg/wk for EFV,  $p<0.01$ ) as was breastfeeding duration (35.7 vs. 19.0 for DTG vs. 22.6 wks for EFV,  $p<0.01$ ).**

## RESULTS

- **No differences in income, gestational diabetes (GDM), gestational age at delivery, or BMI at 1 month postpartum noted across groups**
- **Among WLHIV, no differences in CD4 or log viral load at enrollment were noted between ART group; more women on EFV were on their ART at conception (86% vs. 35.3%,  $p<0.01$ )**
- **Compared to HIV-uninfected women, WLHIV on DTG had similar postpartum weight through 18 months but were on average 5 kg heavier postpartum than WLHIV on EFV ( $\beta=5.0$ ,  $p<0.01$ ) after adjusting for confounders (Fig)**
- **No differences in slope trajectories were noted between groups (Table 2)**
- **This association persisted in subgroup analysis of WLHIV even after further adjusting for CD4, log<sub>10</sub> viral load, and ART at conception ( $\beta=2.4$  for DTG vs. EFV,  $p=0.04$ ) (Table 2)**

## CONCLUSIONS

- **WLHIV on DTG have persistently higher weight through 18 months postpartum than those on EFV in Botswana but similar weight to HIV-uninfected women**
- **Further studies to assess mechanisms of postpartum weight retention are needed**

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