IMPACT OF TLD ON BIRTH OUTCOMES IN SOUTH AFRICAN WOMEN: THE ORCHID COHORT

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BACKGROUND

- The global shift to tenofovir, lamivudine, and dolutegravir (TLD) has improved viral suppression in women with HIV (WWH) during pregnancy.
- With the evolution and implementation of new antiretroviral therapy (ART) regimens it is important to evaluate birth outcomes to determine any effect on maternal/infant health.
- With the increasing prevalence of obesity in places where HIV is most prevalent, little is known about how body composition may impact associations between HIV/TLD use during pregnancy and adverse birth outcomes.
- We assessed the impact of TLD use during pregnancy and maternal BMI on adverse birth outcomes in a cohort of South African WWH, specifically those on TLD.

METHODS

Study Population:

This is a secondary data analysis from the Obesogenic oRigins of maternal and Child metabolic Health Involving Dolutegravir (ORCHID) study that enrolled pregnant women seeking antenatal care in Cape Town, South Africa. WWH were receiving or initiating TLD. HIV-seronegative (HIV-) women were included as the control group. For this analysis we included all women with a known birth outcome.

Exposure:

- HIV/TLD status as determined by antibody test at enrolment
  - WWH receiving TLD at enrolment (continuers)
  - WWH switching from TL + efavirenz (TLE) to TLD (switchers)
  - WWH initiating TLD (naive)

Birth Outcomes:

- Live birth/pregnancy loss
- Preterm delivery (PTD: <37 weeks gestational age [GA])
- Low birthweight (LBW: <2500 grams)
- High birthweight: (HBW: >4000g)
- Small for gestational age (SGA: <10th percentile) using INTERGROWTH-21st standards
- Large for gestational age (LGA: >90th percentile) using INTERGROWTH-21st standards

In this cohort, we found no association between HIV/TLD use during pregnancy and adverse birth outcomes.

Analysis:

- Associations (adjusted odds ratios) were determined using multivariate logistic regression modeling in R.
- Models adjusted for maternal age, body mass index (BMI), education, alcohol use, and viral load (VL).

RESULTS

Table 1: Model results describing the odds of adverse birth outcomes

	Preterm Delivery		Low birthweight		High Birthweight		SGA		LGA	
	AOR 95% CI	**p-value**	**AOR 95% CI**	**p-value**	**AOR 95% CI**	**p-value**	**AOR 95% CI**	**p-value**	**AOR 95% CI**	**p-value**
HIV +	1.13 (0.80-1.59)	0.489	1.11 (0.81-1.51)	0.524	0.95 (055-1.59)	0.837	1.11 (0.84-1.47)	0.471	0.88 (0.60-1.26)	0.485
BMI category										
Under/Healthy	Ref.		Ref.		Ref.		Ref.		Ref.	
Overweight	0.72 (0.46-1.11)	0.143	0.67 (0.45-0.99)	0.045	1.80 (0.77-4.54)	0.189	0.82 (0.59-1.14)	0.232	1.45 (0.78-2.77)	0.243
Obese class 1	0.59 (0.36-0.96)	0.038	0.49 (0.31-0.77)	0.002	1.89 (0.79-4.86)	0.165	0.45 (0.30-0.66)	<0.001	2.03 (1.11-3.82)	0.024
Obese Class 2&3	0.86 (0.54-1.36)	0.525	0.57 (0.37-0.88)	0.011	4.18 (1.92-10.13)	0.001	0.32 (0.20-0.48)	<0.001	4.57 (2.64-8.29)	<0.001
Maternal age	0.99 (0.96-1.02)	0.530	1.00 (0.97-1.02)	0.839	1.02 (0.97-1.06)	0.503	1.00 (0.97-1.02)	0.746	1.04 (1.01-1.07)	0.014
Alcohol Use	1.18 (0.77-1.75)	0.435	1.72 (1.21-2.42)	0.002	0.83 (0.39-1.59)	0.596	1.99 (1.45-2.70)	<0.001	0.84 (0.50-1.33)	0.470
Education										
Any Basic Education	Ref.		Ref.		Ref.		Ref.		Ref.	
Any Highschool	1.89 (0.57-11.75)	0.386	0.74 (0.32-2.01)	0.515	0.73 (0.21-4.62)	0.675	0.52 (0.25-1.16)	0.088	1.22 (0.42-5.20)	0.752
Any Postsecondary Education	1.69 (0.42-11.33)	0.508	0.43 (0.14-1.38)	0.139	0.95 (055-1.59)	0.837	0.46 (0.19-1.18)	0.098	1.28 (0.36-6.07)	0.721

- We followed 1908 women (804 WWH, 1104 HIV-; mean age 28y, median GA at enrolment, 14w; median BMI at enrolment, 31kg/m2 [IQR, 25-35].
- Birth outcomes were known for 1869 women (98%) including 65 miscarriages (3.4%), 35 stillbirths (1.9%) and 1769 live births (1735 singletons).
- Pregnancy losses occurred similarly in WWH and HIV- women. Among singleton live births overall rates of prematurity, LBW, SGA and LGA were 9.4%, 12%, 13% and 12%, respectively, and did not differ between WWH and HIV- women.
- We found no association between HIV/TLD use in pregnancy and PTD, LBW, HBW, SGA, or LGA. (Table 1)

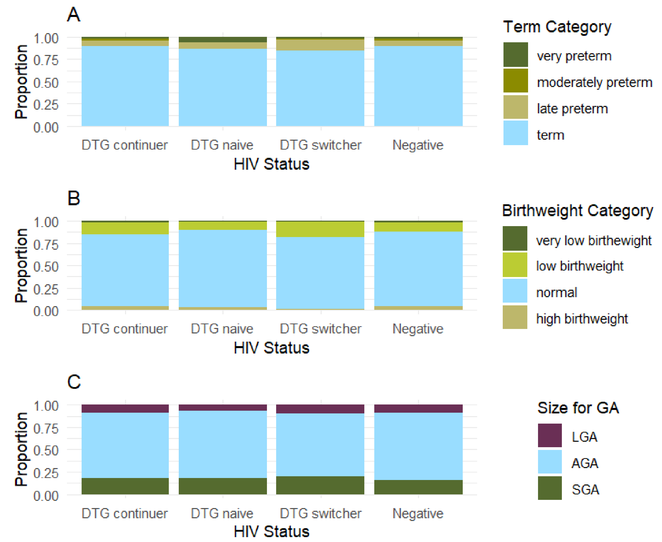


Figure 1: Birth outcomes by DTG Initiation (a) Gestational age at delivery, (b) weight at delivery, (c) size for gestational age at delivery.

- DTG initiation had no effect on birth outcomes (Figure 1)
- Maternal BMI did not affect the association between HIV/TLD use and any adverse birth outcomes (Table 1)
- Independent of HIV/TLD, higher BMI was associated with reductions in PTD, LBW and SGA and increases in HBW and LGA. (Table 1)

CONCLUSIONS

- There are few meaningful differences in birth outcomes between WWH on TLD and HIV- women in this setting where both HIV and obesity are prevalent.
- Maternal BMI appears to be the major driver of adverse birth outcomes in this cohort.

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