Longitudinal Viral Outcomes in Kenyan Youth With HIV Switching to Dolutegravir-Based Therapy

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BACKGROUND

Dolutegravir (DTG)-based antiretroviral therapy (ART) is now recommended in all treatment lines in resource limited settings. Data on global implementation and longitudinal impact of DTG rollout for children and adolescents living with HIV (CAWH) can inform care and policy.

METHODS

In a well characterized longitudinal cohort (since 2010) of perinatally infected CAWH cared for at the Academic Model Providing Access to Health care (AMPATH) in western Kenya, we determined viral outcomes, and compared outcomes between CAWH with and without provider-initiated switch to DTG-based regimens. During the 24-month follow up, viral load (VL) was tested at 6-month intervals and drug resistance genotyping was performed for VL>1,000 copies/mL and interpreted with Stanford HIV Drug Resistance Database tools. Differences in proportions were estimated using Fisher's exact test.

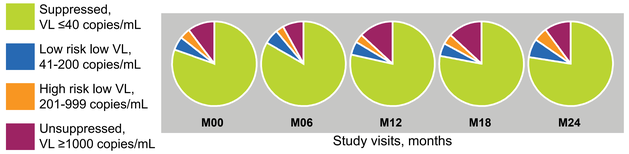


Figure 1. Viral load in study participants by visit.

Among Kenyan youth with HIV, longitudinal data support switching to DTG-based antiretroviral therapy. Lack of major INSTI resistance upon failure is encouraging, yet cumulative failures mandate close adherence, viral load and drug resistance monitoring in this vulnerable population.

RESULTS

Of 445 CAWH followed for 24 months between July '20-October '23 (median age 17 years; 49% female; median 11 years on ART), viral suppression was stable at 78%-83% (Fig. 1). Of the 445, 86% were on DTG-based regimens (more with time; Fig. 2), and 14% remained on older regimens (2% NNRTI- and 98% PI-based) by 24 months. Among 342 CAWH on DTG-based regimens at 24 months, 313 (92%) were suppressed at that timepoint, 119 (35%) had VL>40, and 78 (23%) had VL>1,000 at any follow up time point (Table 1). Among 53 CAWH on non-DTG-based regimens, 43 (81%) were suppressed at 24 months (p<0.05), 38 (72%) had VL>40, and 28 (53%) had VL>1,000 at any follow up time point (Table 2).

RESULTS (cont.)

Of 229 patient visits with VL>1,000 copies/mL in at least one timepoint during follow up, 173 sequences were available, including 91 from 59/342 (17%) CAWH on DTG-based regimens and 77 from 39/54 (72%) CAWH on non-DTG-based regimens. Any drug resistance was present in 52% of those on DTG-based, and in 91% of those on non-DTG-based regimens (p<0.001), including major PI drug resistance mutations (DRMs) in 2% vs. 15% (p<0.02), NRTI DRMs in 29% vs. 72% (p<0.001) and NNRTI DRMs in 44% vs. 79% (p<0.001), respectively. No major INSTI DRMs were detected, with accessory INSTI DRMs identified in 12% vs. 8% (p >0.05) (Tables, 1,2; Fig. 3).

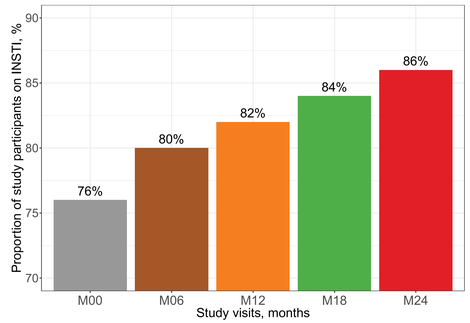


Figure 2. Study participants on INSTI-based regimens.

Table 1. Drug resistance among study participants on INSTIs

Study visit, months	VL > 1,000 cp/mL	Geno-typed*	Any DR	PI Major DR	NRTI DR	NNRTI DR	INSTI Minor DR
0	27	26	20 (77%)	4	12	15	3
6	21	18	10 (56%)	0	7	10	2
12	38	27	15 (56%)	1	10	14	2
18	37	27	16 (59%)	1	8	13	2
24	30	14	6 (43%)	0	3	6	0

VL: viral load; DR: drug resistance. * Genotyping has not yet been attempted for all samples.

Table 2. Drug resistance among study participants not on INSTIs

Study visit, months	VL > 1,000 cp/mL	Geno-typed*	Any DR	PI Major DR	NRTI DR	NNRTI DR	INSTI Minor DR
0	19	18	16 (89%)	2	10	14	2
6	13	12	11 (92%)	1	7	10	1
12	18	13	11 (85%)	1	8	11	0
18	16	11	10 (91%)	1	7	8	2
24	10	2	2 (100%)	0	1	2	0

VL: viral load; DR: drug resistance. * Genotyping has not yet been attempted for all samples.

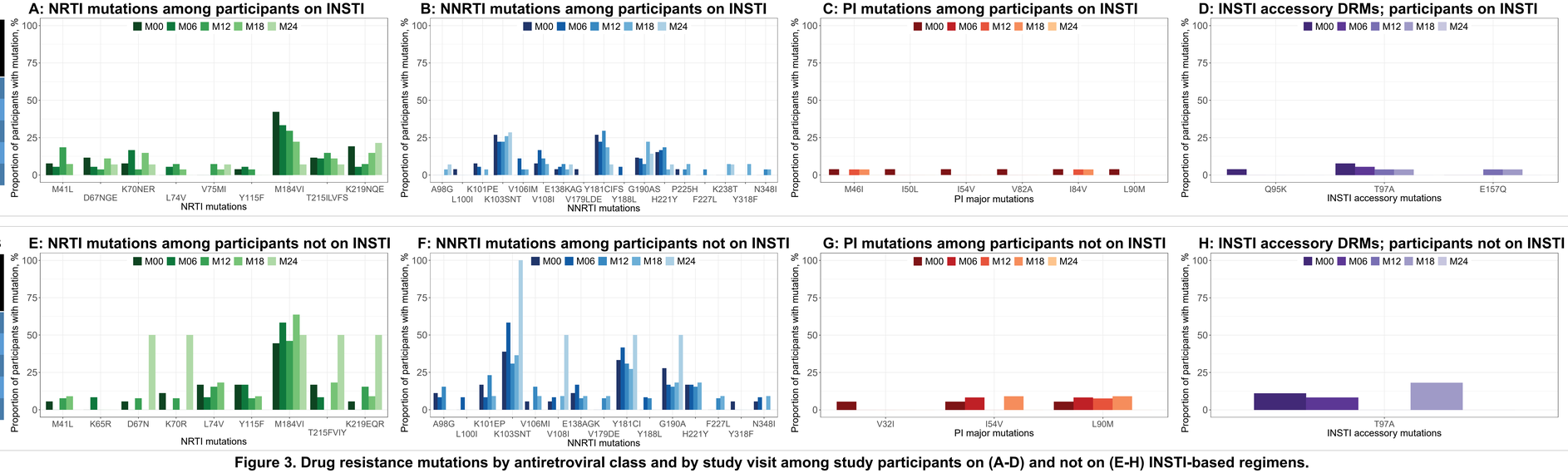


Figure 3. Drug resistance mutations by antiretroviral class and by study visit among study participants on (A-D) and not on (E-H) INSTI-based regimens.