The Incidence and Severity of Drug Interactions Before and After Switching Antiretroviral Therapy to Bictegravir/Emtricitabine/Tenofovir alafenamide in Treatment Experienced Patients

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Background

- Switching antiretroviral therapy (ART) in virally suppressed patients living with HIV can simplify treatment, improve tolerability, limit long-term toxicity, and reduce costs.
- Switching ART may also mitigate drug interactions (DIs) with concomitant medications (CMs) or lead to new interactions requiring intervention to maintain treatment efficacy and safety.
- Studies show that switching to bictegravir, emtricitabine and tenofovir alafenamide (BIC/FTC/TAF) is safe and effective, but have not assessed changes in the incidence and severity of DIs when patients switch to this regimen.

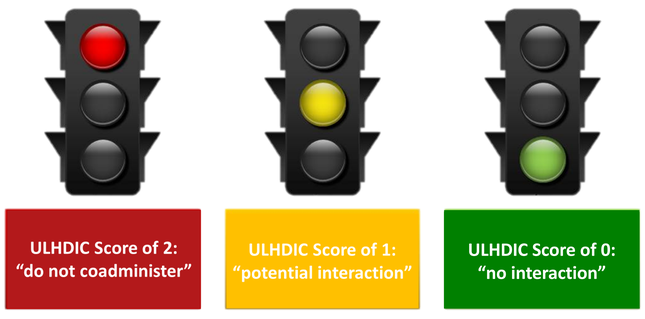
Objective

- The primary outcome was to measure the proportion of patients experiencing DIs before and after the ART switch.
- The secondary outcome was to measure changes in DI scores before and after the ART switch.

Methods

- The study was a retrospective cohort study of 95 patients switched to BIC/FTC/TAF using patient chart records from an urban HIV clinic
- Subjects with HIV infection who underwent ART switches to BIC/FTC/TAF between 6/2014 and 5/2018.
- The University of Liverpool HIV Drug-interaction Checker (ULHDIC) was used for two DI analyses per patient. The first assessed patients' pre-switch ART regimens with their CM list. The second assessed the same CM list with BIC/FTC/TAF.
- The result of each ART-CM assessment was given a numerical score (Figure 1).
- The scores were summed to generate a total DI score for each patient pre- and post-ART switch. Median pre- and post-switch scores were then calculated for comparison.
- The McNemar test was used to analyze changes in the proportion of changes experiencing DIs.
- The Wilcoxon Signed Rank test was used to analyze changes in DI scores before and after the ART switch.

Figure 1. ULHDIC Interaction Assessment and Scoring



Results

Table 1. Baseline characteristics of patients prior to switch to BIC/FTC/TAF

Characteristics	Total (n=95)
Median age, years (range)	54 (23-77)
Male sex, n (%)	69 (73%)
Race – n (%)	
Black or African American	54 (57%
White or Caucasian	26 (28%)
Hispanic	10 (11%)
Asian	4 (4%)
Median duration of infection, years (range)	12 (1-32)
Median duration of ART, years (range)	9 (1-26)
HIV-1 RNA < 200 copies/ml, n (%)	67 (91%)
Median ART regimens prior to switch, n (range)	2 (1-5)
Median number of concomitant medications, n (range)	6 (1-25)
Polypharmacy, n (%)	62 (65%)

Figure 2. ART regimen prior to switch to BIC/FTC/TAF

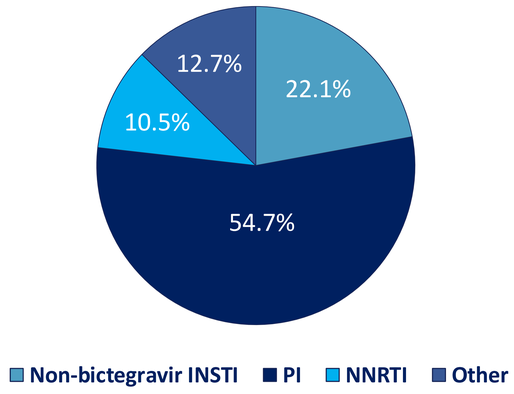


Figure 3. Interaction scores pre- and post-switch to BIC/FTC/TAF

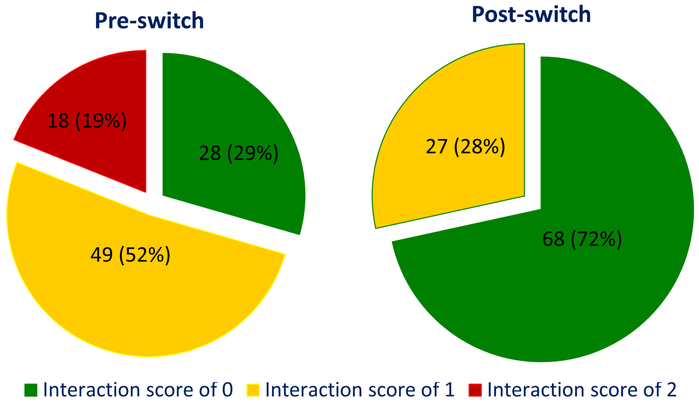


Figure 4. Proportion of patients experiencing DIs before and after the ART switch*

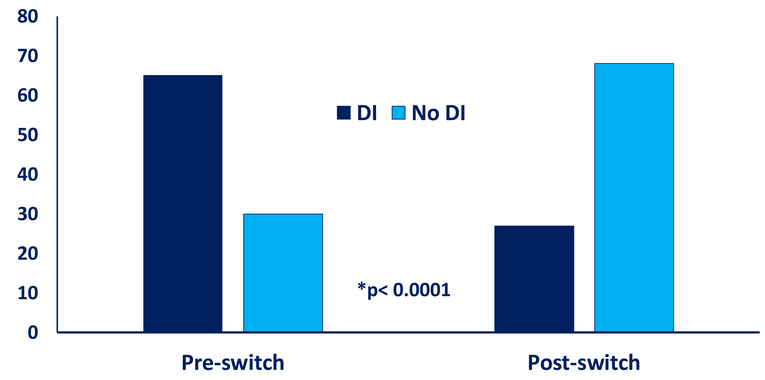


Table 2. Changes in DI scores before and after the ART switch*

	Pre-switch	Post-switch
Median DI score	1	0
Range	1-10	0-3

*p<0001

Conclusion

- Switching ART to BIC/FTC/TAF decreased the incidence and severity of drug interactions in this sample of treatment experienced patients living with HIV.
- Although there was an overall decrease in drug interactions , some interactions emerged indicating the continued importance of monitoring ART drug interactions
- Switching to BIC/FTC/TAF should be considered in eligible patients that are receiving concomitant medications to reduce the risk of DIs.

Limitations

- Subjects were primarily male (73%), which limits applicability to all HIV patients.
- The accuracy of data relied on completeness of the medical record, which can lead to poor external validity.
- A single centered study can limit the external validity of the results.
- Clinical significance of interactions is not reflected in the drug interaction score.

References

1. HIV Drug Interactions. University of Liverpool. https://www.hiv-druginteractions.org.
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3. Sax PE, Pozniak A, Montes ML, et al. Coformulated bictegravir, emtricitabine, and tenofovir alafenamide versus dolutegravir with emtricitabine and tenofovir alafenamide, for initial treatment of HIV-1 infection (GS-US-380-1490): a randomised, double-blind, multicentre, phase 3, non-inferiority trial. Lancet. 2017 Nov 4:390(10107):2073-2082.