Real-World Persistence of Bictegravir- Versus Dolutegravir-based Single Tablet Regimens in a Large Urban Canadian HIV Centre

Poster P098

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Conclusions

- STRs containing INSTIs proved to have robust persistence with discontinuations less than 30% with a long median time to discontinuation of 402 days. BIC/FTC/TAF had a preferable profile of persistence over DTG-containing STR regimens overall and over ABC/3TC/DTG, making it a continued important choice as an ART in first-line therapy and for switch.

Plain Language Summary

- People who have human immunodeficiency virus (HIV) and take a single tablet HIV medication regimen (antiretrovirals) containing an integrase strand transfer inhibitor (INSTI) are highly likely to continue taking the medication longer-term (more than three quarters) suggesting fewer negative side effects or concerns.
- B/FTC/TAF (an HIV single tablet regimen) was taken longer than single tablet regimens with dolutegravir (another INSTI antiretroviral)
- B/FTC/TAF continues to be an important treatment option for people living with HIV

Introduction

- Current guidelines for first-line antiretroviral therapy (ART) and subsequent switches have increasingly recommended the use of single-tablet regimens (STRs) that incorporate integrase strand transfer inhibitors (INSTIs) such as bictegravir (BIC) and dolutegravir (DTG)[1]
- Clinically, it is important to determine which ART regimens offer better tolerability and result in fewer discontinuations when treating HIV[2]. If a regimen can be initiated and maintained without adverse side effects, toxicity, or virologic failure, patients living with HIV are more likely to adhere to ART. This concept is referred to as persistence.
- Persistence with medications is influenced by numerous factors, including decisions made by the providers, the availability of new treatment, and the behaviour of the patient.
- Regimen persistence is associated with improved health outcomes for patients with HIV, and it is critical to effective ART[3].
- Assessing the persistence of a regimen is important, as discontinuation of a treatment regimen can lead to the possibility of resistance-associated mutations (RAMS), increased visits and laboratory work testing, and higher healthcare utilization which requires increased resource and time commitment from patients and care providers.

Purpose

- Persistence is a critical and underexplored field within ART literature. In this study, we compared the regimen persistence between BIC/FTC/TAF and DTG-containing STRs, both combined and to 3-drug regimen (DR) and 2-DR DTG-containing regimens (i.e., ABC/3TC/DTG, 3TC/DTG and RPV/DTG).

Methods

Study Design

- We conducted retrospective analyses of longitudinal data to December 31, 2023, from patients living with HIV receiving care at the Maple Leaf Medical Clinic (MLMC) in Toronto, Canada. Patients who were started on or switched to STRs containing an INSTI, ABC/3TC/DTG, 3TC/DTG, RPV/DTG, or BIC/FTC/TAF between January 1, 2016, to December 31, 2022 were included. Analyses were conducted using data from the electronic medical records (EMR) system at MLMC. Research ethics clearance was obtained from the University of Toronto; individual consent was waived due to the retrospective, low-risk nature of the study.

Outcome of Interest

- The primary outcome of interest was regimen persistence which was defined as the time to STR discontinuation; this was calculated as the number of days from the STR baseline start date until STR discontinuation (which was defined as discontinuation of the STR prescription or a delay in STR prescription refill in the MLMC EMR system by > 90 days). The discontinuation could include a switch to another ART regimen or complete ART discontinuation. Switching from ABC/3TC/DTG to 3TC/DTG was considered a "non-discontinuation" as it would be considered as a "not clinically significant simplification".

Primary Analysis

- Kaplan-Meier curves were used to estimate the time to discontinuation for each STR regimen group (BIC/FTC/TAF vs. DTG-containing STRs) censoring patients who remained on therapy at the end of follow-up (December 31, 2023) and differences were evaluated using the Log-rank test. Unadjusted and adjusted risk of discontinuation were assessed with Cox proportional hazard models.
- All covariates listed above were initially included in a non-parsimonious fashion. A two-tailed value <0.05 was considered significant. Due to the low number of outcomes, refinement of the multivariable model was done using backward elimination. Additional Poisson regression was conducted to confirm results. Statistical analyses were performed using R version 4.4.0 (R Core Team, 2024).

Results

Study Population

- A total of 1732 patients were in the analyses who started or were switched to BIC/FTC/TAF (n= 1187), ABC/3TC/DTG (n=359), 3TC/DTG (n=113), and DTG/RPV (n=73). Of those taking BIC/FTC/TAF, 203 were new starts and 984 switches. Of those taking ABC/3TC/DTG, 53 were new starts and 306 switches. Of those taking 3TC/DTG, 5 were new starts and 108 switches. And of those taking DTG/RPV 1 was a new start and 72 switches.

Table 1. Discontinuation proportions, rates, and times comparison for BIC/FTC/TAF vs. 3TC/ABC/DTG vs. 3TC/DTG vs DTG/RPV compared by STR

	BIC (n = 1187)	DTG (n = 545)	P value
Regimen Start Year, median [Q1, Q3]	2020 [2019, 2021]	2018 [2016, 2020]	< 2.2e-16*
Baseline Age, median [Q1, Q3]	48 [36, 56]	48 [38, 56]	0.5952
Gender, N (%)			4.715e-09*
Cis Men	1085 (91.4)	452 (82.9)	
Cis Women	79 (6.7)	87 (16.0)	
Trans Women	23 (1.9)	6 (1.1)	
Ethnicity, N (%)			0.0154*
White	654 (55.1)	284 (52.1)	
Black	196 (16.5)	113 (20.7)	
Latin American	114 (9.6)	54 (9.9)	
Asian	108 (9.1)	47 (8.6)	
Indigenous	7 (0.6)	13 (2.4)	
Other	12 (1.0)	4 (0.7)	
Unknown	96 (8.1)	30 (5.5)	
Baseline VL, N (%)			0.0062*
Undetectable	833 (70.2)	388 (71.2)	
Detectable	270 (22.7)	85 (15.6)	
Unknown	84 (7.1)	72 (13.2)	
Baseline VL Bin, N (%)			0.0345*
<50	864 (72.8)	395 (72.5)	
50-200	33 (2.8)	15 (2.8)	
>200 - 10000	64 (5.4)	26 (4.8)	
>10000	142 (12.0)	37 (6.8)	
Unknown	84 (7.1)	72 (13.2)	
Baseline CD4, median [Q1, Q3]	567 [396, 728]	576 [412, 742]	0.1230
Baseline CD4 Bin, N (%)			0.2265
>=500	714 (60.2)	334 (61.3)	
200 - <500	382 (32.2)	171 (31.3)	
<200	67 (5.6)	20 (3.7)	
Unknown	24 (2.0)	20 (3.7)	
HIV Diagnosis Year, median [Q1, Q3]	2007 [2000, 2015]	2006 [1999, 2013]	0.0015*
HIV Diagnosis Year Bin, N (%)			0.0080*
Pre 2010	685 (57.7)	353 (64.8)	
On/After 2010	493 (41.5)	190 (34.9)	
Unknown	9 (0.8)	2 (0.4)	
On First Regimen, N (%)	203 (17.1)	59 (10.8)	0.0009*

Regimen Persistence and Median Time to Discontinuation

- By December 31, 2023, 387 (22.3%) had discontinued their STR by a median of 402 days (IQR 151, 871). 224 (18.9%) in the BIC/FTC/TAF, 163 (29.9%) in the overall DTG-containing STR group, 126 (35.1%) in the ABC/3TC/DTG group, 18 (15.9%) in the 3TC/DTG, and 19 (26.0%) in the RPV/DTG group discontinued their regimen by December 31, 2024.

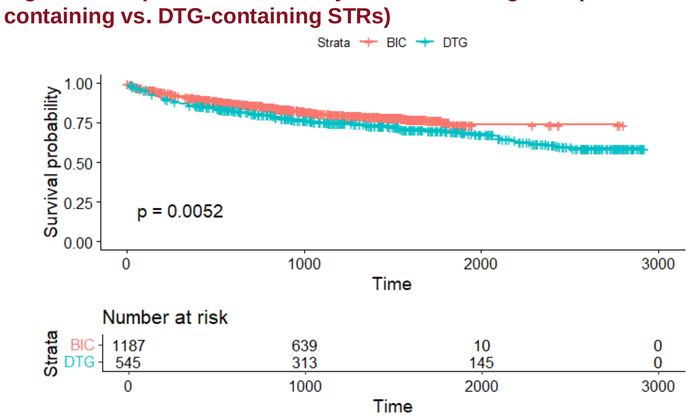
Table 2a. Discontinuation proportions, rates, and times comparison for BIC- versus DTG-containing single tablet regimens compared by INSTI

	BIC (n = 1187)	DTG (n = 545)	P value
Regimen Status, N (%)			NA
Ongoing	833 (70.2)	315 (57.8)	
Discontinued	224 (18.9)	163 (29.9)	
Censored	130 (11.0)	67 (12.3)	
Discontinued, N (%)	224 (18.9)	163 (29.9)	4.221e-07*
Discontinuation Rate, n per 1000 person-years [95%CI]	65.6 [57.3, 74.8]	82.2 [70.1, 95.9]	N/A
Time to Discontinuation, median [Q1, Q3]	383 [140, 774]	479 [156, 1042]	0.0793
Discontinuation Reason, N (%)			0.2042
Adverse Event	114 (9.6)	68 (12.5)	
Patient Preference	49 (4.1)	36 (6.6)	
Cost/Coverage	17 (1.4)	12 (2.2)	
Compliance Issue	11 (0.9)	17 (3.1)	
Physician Preference	12 (1.0)	15 (2.8)	
Viral Suppression Failure	13 (1.1)	7 (1.3)	
Other	8 (0.7)	8 (1.5)	

Table 2b. Discontinuation proportions, rates, and times comparison for BIC/FTC/TAF vs. 3TC/ABC/DTG vs. 3TC/DTG vs DTG/RPV compared by STR

	BIC/FTC/TAF (n = 1187)	3TC/ABC/DTG (n=359)	3TC/DTG (n=113)	DTG/RPV (n=73)	P value
Regimen Status, N (%)					N/A
Ongoing	833 (70.2)	181 (50.4)	91 (80.5)	43 (58.9)	
Discontinued	224 (18.9)	126 (35.1)	18 (15.9)	19 (26.0)	
Censored	130 (11.0)	52 (14.5)	4 (3.5)	11 (15.1)	
Discontinued, N (%)	224 (18.9)	126 (35.1)	18 (15.9)	19 (26.0)	8.582e-10*
Discontinuation Rate, n per 1000 person-years [95%CI]	65.6 [57.3,74.8]	82.4 [68.6, 98.1]	71.9 [42.6, 113.7]	93.5 [56.3, 146.1]	N/A
Time to Discontinuation, median [Q1, Q3]	383 [140, 774]	501 [154, 1282]	523 [331, 689]	209 [110, 623]	0.0382*
Discontinuation Reason, N (%)					0.0385*
Adverse Event	114 (9.6)	53 (14.8)	5 (4.4)	10 (13.7)	
Patient Preference	49 (4.1)	24 (6.7)	8 (7.1)	4 (5.5)	
Cost/ Coverage	17 (1.4)	12 (3.3)	0 (0)	0 (0)	
Compliance Issue	11 (0.9)	14 (3.9)	3 (2.7)	0 (0)	
Physician Preference	12 (1.0)	13 (3.6)	0 (0)	2 (2.7)	
Viral Suppre-ssion Failure	13 (1.1)	6 (1.7)	1 (0.9)	0 (0)	
Other	8 (0.7)	4 (1.1)	1 (0.9)	3 (4.1)	

Figure 2a. Kaplan Meier curve by INSTI-based regimen (BIC-containing vs. DTG-containing STRs)



N=1732, number of events = 387

References

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