Treatment Persistence Among Treatment-Experienced People With HIV (PWH) Switching to Integrase Strand Transfer Inhibitor (INSTI)-Based Antiretroviral Regimens

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Conclusions

- Based on claims data from 29,358 people with HIV (PWH), BIC/FTC/TAF was the most common ARV selected among treatment-experienced PWH who switched to an INSTI-based regimen between January 1, 2020, and December 31, 2022
- 11% of treatment-experienced PWH had a second switch in therapy
- Women, those with Medicaid or Medicare coverage, and those with a higher comorbidity burden had an increased likelihood of secondary switch
- PWH treated with BIC/FTC/TAF were significantly less likely to subsequently switch than those starting DTG/3TC, CAB+RPV, DTG/3TC/ABC, DTG+FTC/TAF, or DTG+FTC/TDF
- High persistence on BIC/FTC/TAF was consistently observed among several subgroups: age >50 years, Medicare (borderline) and PWH with mental illness/substance abuse

Plain Language Summary

- Among almost 30,000 previously-treated people with HIV who started a new integrase inhibitor (INSTI)-based therapy between 2020-2022, most started BIC/FTC/TAF (Biktarvy®). Those who started BIC/FTC/TAF were more likely to stay on therapy versus switching to a new treatment compared to all other INSTI-based drug therapies
- Women, those with Medicaid or Medicare coverage, and those with a higher number of other conditions were more likely to switch their medication again

Introduction

- INSTI-based regimens have become the mainstay of combination antiretroviral (ARV) regimens, and are recommended by guidelines as the first-line treatment for HIV for most people[1]
- Discontinuation of these regimens has been associated with poor outcomes[2]
- Lack of persistence may be due to many factors such as poor adherence, side effects, toxicity, drug-drug interactions, the individual's choice, simplification, and the availability of new combinations[3]
- Understanding persistence patterns across different INSTI-based regimens could inform clinical practice

Objective

- Describe treatment patterns of PWH initiating INSTI-containing ARV treatments in a real-world US setting

Methods

- Prescription claims data from the IQVIA Longitudinal Access and Adjudication Dataset (LAAD) were utilized

Adults in the dataset between January 1, 2018, and July 31, 2023, were included if they:

- Had HIV-1, were ≥18 years old, with available sex data
- Had filed ≥1 pharmacy claim for an ARV with a newer INSTI-based regimen (CAB+RPV, DTG/ABC/3TC, BIC/FTC/TAF, DTG/3TC, DTG+FTC/TDF, DTG+FTC/TAF) from January 1, 2020, to December 31, 2022 (index date)
- Were continuously treated with a complete ARV regimen for at least 6 months before initiating an INSTI-based therapy

- Persistence was measured from the date of initiation of the index INSTI-based regimen until switch to a new regimen within a 60-day treatment gap, and was assessed via Cox proportional hazard models, accounting for age, sex, geographic region, insurance type, treatment index year, and comorbidities

Figure 1. Study Design

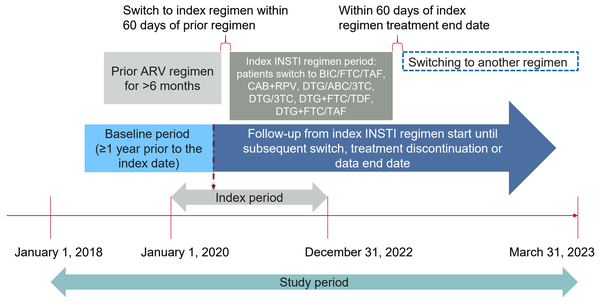


Table 1. Cohort Attritions

Criteria	N
PWH with INSTI-based regimens from January 1, 2020, to December 31, 2022	420,858
PWH who received ARV regimens for ≥6 months prior to switch, and switched within 60 days to an INSTI-based regimen	39,197
PWH with ≥1 HIV-1 diagnosis	34,267
PWH without prior pre-exposure prophylaxis	30,702
PWH without HIV-2 and HBV diagnosis at baseline	29,474
PWH aged ≥18 years at index INSTI with available sex data	29,348

Results

- We identified N=29,348 treatment-experienced PWH who switched to an INSTI-based regimen between January 1, 2020, and December 31, 2022
- Among treatment-experienced PWH initiating INSTI-based regimens, 61% (n=17,917) were treated with BIC/FTC/TAF, 27.4% (n=8,034) with DTG/3TC, 7.5% (n=2,186) with CAB+RPV, 2.0% (n=597) with DTG/3TC/ABC and 2.1% (n=574) with DTG+FTC/TAF or FTC/TDF
- Overall, treatment-experienced PWH initiating INSTI-based regimens were predominately male (76.8%), middle aged (median 49 years old), on commercial insurance (58.7%) and from the US South (46.6%) **(Table 2)**
- Approximately 1 in 5 PWH had hypertension or dyslipidemia; the mean Charlson Comorbidity Index (CCI) was 0.375 **(Table 3)**

Results

Table 2. Baseline Characteristics

n (%)	Overall (N=29,348)	BIC/FTC/TAF (N=17,917)	DTG/3TC (N=8034)	CAB+RPV (N=2186)	DTG/3TC/ABC (N=597)	DTG+ FTC/TAF (N=519)	DTG+ FTC/TDF (N=95)
Sex							
F	6815 (23.2)	4126 (23.0)	1817 (22.6)	439 (20.1)	178 (29.8)	205 (39.5)	50 (52.6)
M	22,533 (76.8)	13,791 (77.0)	6217 (77.4)	1747 (79.9)	419 (70.2)	314 (60.5)	45 (47.4)
Age group							
18-44 years	11,666 (39.8)	6981 (39.0)	2963 (36.9)	1163 (53.2)	256 (42.9)	242 (46.6)	61 (64.2)
45-65 years	14,704 (50.1)	9205 (51.4)	4076 (50.7)	888 (40.6)	283 (47.4)	223 (43.0)	29 (30.5)
65+ years	2978 (10.1)	1731 (9.7)	995 (12.4)	135 (6.2)	58 (9.7)	54 (10.4)	5 (5.3)
Treatment initiation year							
2020	10,608 (36.1)	8016 (44.7)	2051 (25.5)	0 (0)	267 (44.7)	214 (41.2)	60 (63.2)
2021	9334 (31.8)	5537 (30.9)	3006 (37.4)	413 (18.9)	197 (33.0)	152 (29.3)	29 (30.5)
2022	9406 (32.0)	4364 (24.4)	2977 (37.1)	1773 (81.1)	133 (22.3)	153 (29.5)	6 (6.3)
Method of payment							
Assistance	651 (2.2)	552 (3.1)	88 (1.1)	0 (0)	9 (1.5)	1 (0.2)	1 (1.1)
Cash	207 (0.7)	91 (0.5)	27 (0.3)	80 (3.7)	4 (0.7)	4 (0.8)	1 (1.1)
Commercial	17,225 (58.7)	10,220 (57.0)	5223 (65.0)	1180 (54.0)	336 (56.3)	218 (42.0)	48 (50.5)
Medicare	4805 (16.4)	2875 (16.0)	1360 (16.9)	352 (16.1)	97 (16.2)	107 (20.6)	14 (14.7)
FFS Medicaid	2234 (7.6)	1424 (7.9)	466 (5.8)	216 (9.9)	44 (7.4)	74 (14.3)	10 (10.5)
MGD Medicaid	4226 (14.4)	2755 (15.4)	870 (10.8)	358 (16.4)	107 (17.9)	115 (22.2)	21 (22.1)
Region							
North Central	4449 (15.2)	3032 (16.9)	926 (11.5)	300 (13.7)	98 (16.4)	74 (14.3)	19 (20.0)
Northeast	6366 (21.7)	3914 (21.8)	1633 (20.3)	575 (26.3)	114 (19.1)	113 (21.8)	17 (17.9)
Other	206 (0.7)	65 (0.4)	113 (1.4)	20 (0.9)	3 (0.5)	5 (1.0)	0 (0)
South	13,685 (46.6)	8027 (44.8)	4142 (51.6)	984 (45.0)	270 (45.2)	221 (42.6)	41 (43.2)
West	4642 (15.8)	2879 (16.1)	1220 (15.2)	307 (14.0)	112 (18.8)	106 (20.4)	18 (18.9)

Table 3. Comorbidities

n (%)	Overall (N=29,348)	BIC/FTC/TAF (N=17,917)	DTG/3TC (N=8034)	CAB+RPV (N=2186)	DTG/3TC/ABC (N=597)	DTG+ FTC/TAF (N=519)	DTG+ FTC/TDF (N=95)
Depression	2721 (9.3)	1662 (9.3)	623 (7.8)	297 (13.6)	64 (10.7)	62 (11.9)	13 (13.7)
Renal failure/ dialysis	105 (0.4)	61 (0.3)	27 (0.3)	8 (0.4)	2 (0.3)	7 (1.3)	0 (0)
Osteoarthritis	1817 (6.2)	1054 (5.9)	517 (6.4)	150 (6.9)	54 (9.0)	38 (7.3)	4 (4.2)
Obesity	1913 (6.5)	1063 (5.9)	542 (6.7)	199 (9.1)	53 (8.9)	46 (8.9)	10 (10.5)
Dyslipidemia	5229 (17.8)	3069 (17.1)	1574 (19.6)	399 (18.3)	105 (17.6)	68 (13.1)	14 (14.7)
Hypertension	5751 (19.6)	3393 (18.9)	1660 (20.7)	430 (19.7)	138 (23.1)	113 (21.8)	17 (17.9)
Substance abuse	1328 (4.5)	904 (5.0)	223 (2.8)	114 (5.2)	34 (5.7)	45 (8.7)	8 (8.4)
CCI, excluding HIV, mean (SD)	0.375 (1.27)	0.372 (1.27)	0.355 (1.18)	0.305 (1.09)	0.541 (1.62)	0.786 (2.18)	0.811 (2.20)

- 11.4% of treatment-experienced PWH starting an INSTI-based regimen had a second switch within the follow-up period. PWH on BIC/FTC/TAF had the lowest frequency of having a second switch (9.2%), followed by DTG/3TC (10.3%), CAB+RPV (17.7%), DTG/3TC/ABC (34.7%), DTG+FTC/TAF (37.6%) and DTG+FTC/TDF (73.7%)
- Likelihood of switching was higher for PWH with female sex, age 45-65 years (vs. 18-44 years), PWH with Medicaid or Medicare coverage, those initiating treatment in 2022 (vs. 2020), and those with osteoarthritis, obesity, hypertension, and higher CCI scores (all p<0.05)
- Among the subgroup above age 50 years, risk of treatment switch was similarly higher for all other regimens compared to BIC/FTC/TAF: HR 10.2 (5.6, 18.6) for DTG+FTC/TDF, HR 3.9 (2.9, 5.1) for DTG+FTC/TAF, HR 4.3 (3.3, 5.5) for DTG/ABC/3TC, HR 3.0 (2.4, 3.7) for CAB+RPV, and HR 1.2 (1.0, 1.4) for DTG/3TC (all p<0.05) **(Table 4)**
- Among the subgroup with Medicare and mental illness or substance use, risk of treatment switch was similarly higher for all other regimens compared to BIC/FTC/TAF (all p<0.05 except DTG/3TC among Medicare) **(Table 4)**

Figure 2. Time to Treatment Switch Among PWH on INSTI-Based Therapy

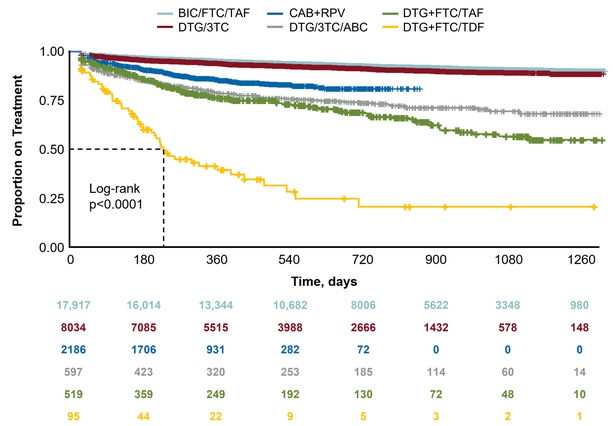
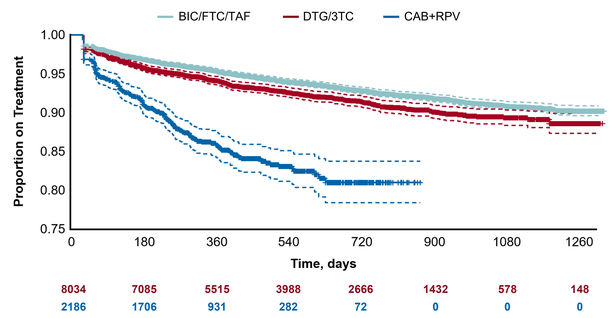


Figure 3. Time to Treatment Switch Among PWH on the Top 3 INSTI-Based Therapies



95% confidence intervals are shown using dashed lines; note the y-axis scale ranges from 0.75-1.00.

Table 4. Adjusted Cox Model Summary of Risk of Treatment Switch (Hazard Ratio) by Different Subgroups

Medication	All	Age 50+	Medicare	Mental illness or substance abuse
BIC/FTC/TAF	ref.	ref.	ref.	ref.
DTG/3TC	1.3 (1.1, 1.4)	1.2 (1, 1.4)	1.0 (0.8, 1.3)	1.3 (1.1, 1.7)
CAB+RPV	2.9 (2.5, 3.4)	3.0 (2.4, 3.7)	3.1 (2.3, 4.2)	2.8 (2.1, 3.7)
DTG/3TC/ABC	4.2 (3.5, 5)	4.3 (3.3, 5.5)	4.1 (2.7, 6.3)	3.5 (2.4, 5.3)
DTG+FTC/TAF	4.8 (4, 5.7)	3.9 (2.9, 5.1)	2.9 (1.8, 4.6)	5.2 (3.7, 7.2)
DTG+FTC/TDF	14.5 (10.9, 19.2)	10.2 (5.6, 18.6)	14.7 (7.1, 30.1)	11.9 (6.8, 20.8)

Models adjusted for sex, age, insurance type, geographic region, treatment initiation year, osteoarthritis, obesity, hypertension, and CCI score. Sensitivity analyses using a 90-day period for switching were consistent with the base case.

References: 1. Department of Health and Human Services Guidelines Panel for the Use of Antiretroviral Agents in Adults and Adolescents With HIV. Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents With HIV. https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-arv (accessed March 12, 2024). **2.** Ahdieh Grant L, et al. *AIDS*. 2001;15:2101-8. **3.** Chastain D, et al. *J Int Assoc Prov AIDS Care*. 2019;18:2325958219867325.

Abbreviations: ARV, antiretroviral; BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG/3TC, dolutegravir/lamivudine; CAB+RPV, cabotegravir+rilpivirine; CCI, Charlson Comorbidity Index; DTG/3TC/ABC, dolutegravir/lamivudine/abacavir; DTG+FTC/TAF, dolutegravir + emtricitabine/tenofovir alafenamide; DTG+FTC/TDF, dolutegravir + emtricitabine/tenofovir disoproxil fumarate; HR, hazard ratio; INSTI, integrase strand transfer inhibitor; PWH, people with HIV

Acknowledgments: This study was sponsored by Gilead Sciences, Inc.

Disclosures: CYC, **MJC**, **WZ**, **MdB**, **MC**, and **CT** are employees of Gilead Sciences, Inc. and own stocks/shares in Gilead Sciences, Inc.

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Annual Meeting of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR); May 5–8, 2024; Atlanta, GA, USA