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Antiretroviral Therapy Persistence Following a Change or Restart in Regimen Among People With HIV

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Conclusions

- A greater percent of treatment-experienced (TE) people with HIV (PWH) restarting or switching to bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) were persistent on treatment at 1 year compared with dolutegravir (DTG)-based regimens
- This finding was also observed among a subset of TE Medicare Advantage (MA) enrollees despite older age and greater burden of comorbidities
- Among MA enrollees, B/F/TAF had the lowest risk of nonpersistence overall compared with DTG-based regimens
- The study had several limitations, including challenges in capturing adherence data through medical claims for injectable therapy due to variations in days supplied (eg, 30 vs 60 days), potential biases with claims data, and lack of generalizability to the broader HIV population

Plain Language Summary

- This study looked at how long people with human immunodeficiency virus (HIV) stayed on their HIV medicine after switching to a new one or restarting treatment
- A higher percentage of people who took bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) stayed on therapy at 1 year compared with other therapies. This result was also seen in people with Medicare Advantage insurance
- People with HIV on B/F/TAF were more likely to stay on treatment over time than those taking other commonly used HIV medications

Introduction

- Discontinuation of antiretroviral therapy (ART) has been linked to poor outcomes for PWH.[1] Prior studies revealed that single-tablet regimens were associated with better adherence and lower risk of hospitalization compared to multi-tablet regimens among PWH[2]
- Understanding real-world treatment patterns among PWH and in key subgroups can support evidence-based decision-making, improve health outcomes, and reduce the economic burden of HIV
- Matching patients with the appropriate care could reduce the impact of suboptimal adherence on clinical outcomes

Objective

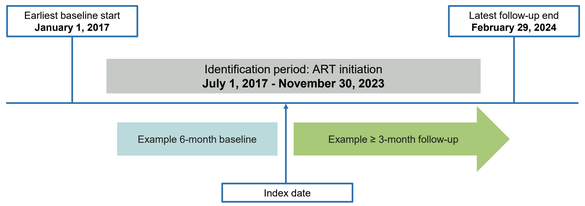
- Describe and compare regimen persistence for PWH after switching or restarting ART, overall and among MA enrollees

Methods

- This retrospective study utilized medical and pharmacy claims data from the Optum Research Database, including patients with commercial insurance or MA with Part D coverage
- PWH switching or restarting ART between July 1, 2017, and November 30, 2023, were included (**Figure 1**)
  - The index line of therapy was defined at the time of ART switch or restart
- Our primary outcome of nonpersistence was defined as the earliest of ART discontinuation (gap in all ART ≥90 days), switch, add-on, or death. Time to nonpersistence was defined as time until primary outcome, with censoring for end of continuous enrollment or study period
- Index regimens of interest were:
  - Bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF)
  - Dolutegravir/lamivudine (DTG/3TC)
  - Dolutegravir/abacavir/lamivudine (DTG/ABC/3TC)
  - Dolutegravir + emtricitabine/tenofovir alafenamide (DTG+F/TAF)
  - Dolutegravir + emtricitabine/tenofovir disoproxil fumarate (DTG+F/TDF)
  - Cabotegravir + rilpivirine (CAB+RPV)
- Analysis was conducted in the overall TE population and among a subset enrolled in MA
- Inverse probability treatment weighting was implemented to adjust for demographic characteristics, baseline clinical measures, and baseline healthcare cost and utilization. Kaplan-Meier analysis was conducted after weighting to examine the effect of regimen selection on ART persistence at 1 year. Hazard ratios from Cox proportional hazard models were examined, controlling for residual differences in covariates for the entire follow-up period

Methods (Cont.)

Figure 1. Patient Observation Period



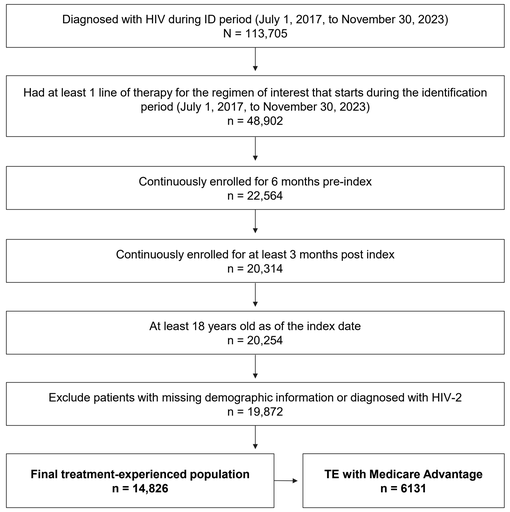
ART, antiretroviral therapy.

Results

Study Sample

- In total, 113,705 individuals had a diagnosis of HIV, and of those, 14,826 either switched or restarted one of the index regimens were eligible for the study (**Figure 2**). After weighting, mean age was 53 years, 20% of PWH were female, 44% were White, and 42% were enrolled in an MA plan (**Table 1**)
- The mean (SD) Quan-Charlson comorbidity score was 4.2 (2.2) for the overall sample and 5.0 (2.4) for the MA subgroup (**Table 1**)

Figure 2. Patient Sample Attrition



ID, identification.

Results (Cont.)

Table 1. Weighted Demographics and Clinical Characteristics by Index Regimen

Overall	Total N = 14,826	B/F/TAF n = 8992	DTG/3TC n = 1771	DTG/ABC/3TC n = 2068	DTG+F/TAF n = 1296	DTG+F/TDF n = 217	CAB+RPV n = 482
Age, years, mean (SD)	52.8 (13.0)	52.7 (13.0)	53.2 (13.3)	52.7 (12.9)	52.7 (13.1)	54.3 (14.0)	52.7 (13.3)
Age ≥ 50 years (%)	62.6	62.7	62.3	63.4	61.6	65.7	59.8
Female sex (%)	19.9	19.7	19.8	20.9	20.0	18.5	21.4
Race/ethnicity (%)							
White	44.3	44.4	43.3	44.4	43.9	43.7	46.1
Hispanic	13.5	13.8	13.5	12.0	13.8	14.7	12.3
Black	32.2	31.9	32.8	32.8	32.5	33.8	33.1
Asian	1.8	1.8	1.7	2.1	1.6	1.5	1.5
Charlson comorbidity index, mean (SD)	4.2 (2.2)	4.2 (2.2)	4.2 (2.2)	4.3 (2.2)	4.2 (2.2)	4.1 (2.1)	4.4 (2.0)
Comorbidities (%)							
Chronic kidney disease	13.9	13.9	14.1	13.5	14.1	15.0	14.8
Lipid disorders	42.5	42.2	42.3	42.5	42.5	42.9	46.4
Hepatitis B/C	7.1	6.9	6.8	7.7	7.2	6.4	7.3
Mental health disorders	32.9	32.8	32.0	33.2	33.4	35.7	35.4
Medicare Advantage	**Total n = 6131**	**B/F/TAF n = 3708**	**DTG/3TC n = 744**	**DTG/ABC/3TC n = 799**	**DTG+F/TAF n = 532**	**DTG+F/TDF n = 80**	**CAB+RPV n = 268**
Age, years, mean (SD)	61.3 (10.5)	61.2 (10.4)	62.1 (10.6)	61.1 (10.2)	60.6 (11.2)	61.7 (10.9)	62.3 (9.5)
Age ≥ 50 years (%)	86.7	86.8	87.4	86.4	84.0	85.9	89.9
Female sex (%)	30.2	29.8	32.0	32.7	29.6	16.4	30.2
Race/ethnicity (%)							
White	40.9	40.4	42.0	41.8	38.3	44.6	46.7
Hispanic	10.4	11.2	8.9	9.1	8.1	13.7	9.9
Black	38.9	38.6	39.1	38.2	43.0	36.4	35.3
Asian	0.9	1.0	1.0	0.7	0.8	0.0	0.4
Charlson comorbidity index, mean (SD)	5.0 (2.4)	4.9 (2.4)	5.1 (2.3)	5.1 (2.5)	5.0 (2.3)	4.6 (2.2)	5.0 (2.1)
Comorbidities (%)							
Chronic kidney disease	24.5	25.1	23.8	22.8	25.0	22.9	22.6
Lipid disorders	54.0	54.3	53.5	53.6	52.1	53.6	57.0
Hepatitis B/C	11.7	10.9	13.7	13.0	11.4	9.1	14.0
Mental health disorders	43.4	43.3	38.0	47.2	43.7	51.1	44.9

B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB+RPV, cabotegravir + rilpivirine; DTG/ABC/3TC; dolutegravir/abacavir/lamivudine; DTG/3TC, dolutegravir/lamivudine; DTG+F/TAF, dolutegravir + emtricitabine/tenofovir alafenamide; DTG+F/TDF, dolutegravir + emtricitabine/tenofovir disoproxil fumarate; SD, standard deviation.

Index Line of Therapy: Duration

- B/F/TAF had the longest mean line of therapy duration (18.8 months) compared with other ARTs: DTG/ABC/3TC (17.7), DTG+F/TAF (17.0), DTG/3TC (13.7), CAB+RPV (8.9), and DTG+F/TDF (8.5) ($P < 0.05$)
- Duration was generally longer in the MA group: B/F/TAF (19.9 months), DTG/ABC/3TC (18.0), DTG+F/TAF (17.1), DTG/3TC (13.8), CAB+RPV (10.3), and DTG+F/TDF (9.4) ($P < 0.05$)

Index Line of Therapy: Adherence

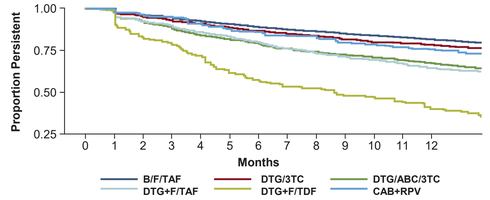
- Compared with B/F/TAF (73.5%), the percentage of patients who were adherent (proportion of days covered [PDC] > 85%) was numerically similar for DTG/3TC (75.4%), CAB+RPV (71.2%), and DTG+F/TDF (65.8%). Adherence was significantly lower ($P < 0.05$) for DTG/ABC/3TC (69.7%) and DTG+F/TAF (66.5%)
- Compared with B/F/TAF (74.4%), the percentage of MA patients who were adherent (PDC > 85%) was not statistically different between DTG/3TC (74.5%), DTG+F/TDF (71.1%), and CAB+RPV (66.0%). Adherence was significantly lower ($P < 0.05$) for DTG+F/TAF (67.4%) and DTG/ABC/3TC (65.0%)

Persistence

- From weighted Kaplan-Meier analysis in the overall sample, the percentage of PWH persistent at 1 year was significantly greater ($P < 0.05$) for B/F/TAF versus DTG/3TC, DTG+F/TDF, DTG/ABC/3TC, DTG+F/TAF, and numerically greater but not statistically different versus CAB+RPV (**Figure 3**, **Table 2 left**), although comparisons cannot be reliably calculated with CAB+RPV due to the limited available sample size and variation with days supplied. Similar results were seen among MA beneficiaries (**Figures 4, Table 2 right**)
- Risk of nonpersistence was significantly greater ($P < 0.05$) for DTG/ABC/3TC, DTG+F/TAF, and DTG+F/TDF versus B/F/TAF in the overall population, and significantly greater ($P < 0.05$) for DTG-based regimens versus B/F/TAF in MA group (**Table 3**)

PWH persistent at 1 year were significantly greater ($P < 0.05$) for B/F/TAF versus DTG/3TC, DTG/ABC/3TC, DTG+F/TAF, and DTG+F/TDF

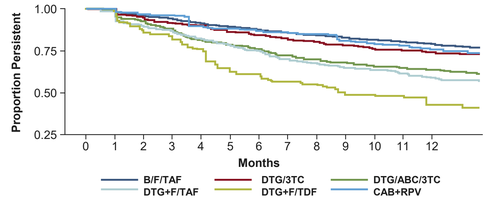
Figure 3. Weighted Kaplan-Meier Analysis of Persistence – Overall



B/F/TAF	8992	8619	8019	7613	7141	6737	6361	6030	5757	5456	5172	4945	4688
DTG/3TC	1771	1652	1512	1409	1323	1218	1148	1084	1010	917	859	797	748
DTG/ABC/3TC	2068	1988	1770	1648	1522	1441	1362	1243	1177	1103	1049	998	944
DTG+F/TAF	1296	1239	1117	1049	974	923	884	803	749	711	675	633	595
DTG+F/TDF	217	209	175	158	139	106	95	86	78	68	64	55	47
CAB+RPV	482	455	411	382	337	300	276	252	238	208	199	173	160

B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB+RPV, cabotegravir + rilpivirine; DTG/ABC/3TC; dolutegravir/abacavir/lamivudine; DTG/3TC, dolutegravir/lamivudine; DTG+F/TAF, dolutegravir + emtricitabine/tenofovir alafenamide; DTG+F/TDF, dolutegravir + emtricitabine/tenofovir disoproxil fumarate.

Figure 4. Weighted Kaplan-Meier Analysis of Persistence – Medicare Advantage



B/F/TAF	3724	3562	3314	3163	2953	2798	2662	2526	2417	2300	2190	2097	1996
DTG/3TC	754	707	648	604	575	517	496	467	432	400	367	340	316
DTG/ABC/3TC	842	813	737	686	620	587	556	510	479	456	436	415	398
DTG+F/TAF	546	519	455	438	400	373	352	323	308	291	278	261	245
DTG+F/TDF	104	103	89	82	72	51	48	44	43	36	36	34	23
CAB+RPV	210	205	191	184	162	146	137	125	116	99	94	90	82

B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB+RPV, cabotegravir + rilpivirine; DTG/ABC/3TC; dolutegravir/abacavir/lamivudine; DTG/3TC, dolutegravir/lamivudine; DTG+F/TAF, dolutegravir + emtricitabine/tenofovir alafenamide; DTG+F/TDF, dolutegravir + emtricitabine/tenofovir disoproxil fumarate.

Table 2. Weighted Kaplan-Meier Percent Persistent at 1 Year

	Overall		Medicare Advantage	
	%	*P* Value	%	*P* Value
B/F/TAF	81.7	Ref.	79.1	Ref.
DTG/3TC	78.3	0.011	74.0	0.024
DTG/ABC/3TC	67.6	< 0.001	63.9	< 0.001
DTG+F/TAF	64.5	< 0.001	59.0	< 0.001
DTG+F/TDF	39.8	< 0.001	42.8	< 0.001
CAB+RPV	75.5	0.063	75.7	0.513

B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB+RPV, cabotegravir + rilpivirine; DTG/ABC/3TC; dolutegravir/abacavir/lamivudine; DTG/3TC, dolutegravir/lamivudine; DTG+F/TAF, dolutegravir + emtricitabine/tenofovir alafenamide; DTG+F/TDF, dolutegravir + emtricitabine/tenofovir disoproxil fumarate.

Table 3. Adjusted Weighted Proportional Hazard Model of Persistence

		Persistence	
	Index Regimen	Hazard Ratio (95% CI)	*P* Value
Overall	B/F/TAF	Ref.	-
	DTG/3TC	1.08 (0.94-1.25)	0.298
	DTG/ABC/3TC	1.74 (1.58-1.92)	< 0.001
	DTG+F/TAF	1.99 (1.80-2.20)	< 0.001
	DTG+F/TDF	5.01 (4.15-6.06)	< 0.001
	CAB+RPV	1.23 (0.87-1.73)	0.234
Medicare Advantage	B/F/TAF	Ref.	-
	DTG/3TC	1.26 (1.03-1.53)	0.023
	DTG/ABC/3TC	1.89 (1.64-2.17)	< 0.001
	DTG+F/TAF	2.12 (1.83-2.45)	< 0.001
	DTG+F/TDF	4.47 (3.35-5.97)	< 0.001
	CAB+RPV	1.12 (0.68-1.84)	0.660

B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB+RPV, cabotegravir + rilpivirine; DTG/ABC/3TC; dolutegravir/abacavir/lamivudine; DTG/3TC, dolutegravir/lamivudine; DTG+F/TAF, dolutegravir + emtricitabine/tenofovir alafenamide; DTG+F/TDF, dolutegravir + emtricitabine/tenofovir disoproxil fumarate.

References: 1. Nyaku M, et al. *AIDS Care*. 2019;31(5):599-608. **2.** Sax PE, et al. *PLoS One*. 2012;7:e31591.

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