Treatment Switch Among US Medicare Beneficiaries With HIV

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Conclusions

- Among Medicare treatment-experienced (TE) people with HIV (PWH) and a subgroup with mental health and/or substance use disorders, individuals who initiated bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) had lower likelihood of switch versus those starting other regimens
- These findings may inform targeted strategies for optimal treatment selection for PWH given that treatment switch may be associated with increased health care costs[1] and poor clinical outcomes[2]

Plain Language Summary

- This real-world analysis looked at how long people with human immunodeficiency virus (HIV) insured by Medicare stayed on their therapies before switching to a new therapy. Over 30,000 people with HIV were included, of whom one third had mental health or substance use disorders. Nearly 3/4 of people with HIV initiated bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF)
- The study found that regardless of group (overall or those with mental health and/or substance use disorders), people with HIV had a significantly lower risk of switching to a new therapy when starting with B/F/TAF compared with dolutegravir (DTG)/lamivudine (3TC), DTG/abacavir/3TC, and multi-tablet regimens

Introduction

- Adherence and persistence to antiretroviral therapy (ART) are essential for optimal HIV treatment outcomes
- Medicare, a federally funded health insurance program for adults ≥ 65 years of age and for younger individuals with certain disabilities, covers approximately 28% of PWH in the United States[3]; however, few studies have evaluated ART treatment patterns in this population
- As HIV care has improved, an increased number of PWH are aging, and by 2030, it is anticipated that 23% of all ART users will be 65 or older[4]
- PWH enrolled in Medicare often have a higher prevalence of comorbidities such as mental health and substance use disorders, which can negatively impact adherence and persistence, leading to suboptimal HIV outcomes
- Assessing treatment patterns can facilitate therapy optimization among older adults living with HIV facing an increasing burden of comorbidities

Objective

- The goal of this study was to describe risk of treatment switch among Medicare-insured PWH overall and among those with mental health and substance use disorders

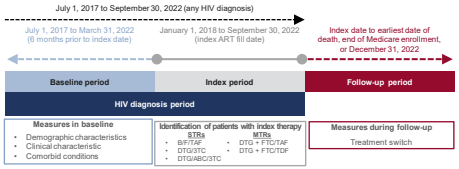
Methods

Study Design

- This retrospective cohort study used claims data from Medicare Fee-For-Service and Medicare Advantage programs. Patients from a 100% Medicare sample were identified using ICD-10-CM diagnosis codes for HIV during 2017–2022 (Figure 1)

Methods continued

Figure 1. Study Design



3TC, lamivudine; ABC, abacavir; ART, antiretroviral therapy; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; FTC, emtricitabine; TDF, tenofovir disoproxil fumarate.

- Study population: TE individuals aged ≥ 18 years and having continuous Medicare Parts A, B, and D coverage during the 6-month baseline and ≥ 3 months during the variable follow-up period
  - TE: defined as having a record of ART treatment prior to switching to or restarting the index regimen between January 1, 2018 and September 30, 2022
  - Index date: the earliest of either (1) date of switching from a non-index regimen to an index regimen; or (2) the date of restarting an index regimen after an interruption of at least 90 days
  - Baseline period: 6 months prior to index date
  - Follow-up period: from index date until death, discontinuation (having a ≥ 90-day gap between fills of the index ART), end of Medicare enrollment, or December 31, 2022; requiring at least 3 months' follow-up time

Study Cohorts, Covariates, and Outcomes

- Two cohorts were included: the overall TE PWH population and a subgroup of PWH with mental health and/or substance use disorders
- Covariates during 6-month baseline
  - Demographics, comorbid conditions, proportion of days covered (PDC) with ART, hospitalization, emergency department visits, skilled nursing facility admission, and total physician visits
- Outcomes during follow-up
  - Treatment switch was defined as starting a new regimen (different from the index regimen) within 90 days of the last fill of the index ART
  - Time to switch was measured from the index date to the switch date until censoring

Statistical Analysis

- Kaplan-Meier curves and log-rank tests were used to compare treatment switch curves between ART regimens
- Inverse probability treatment weighting (IPTW) was conducted to control for differences in baseline demographics (eg, age, sex, race/ethnicity, dual Medicare/Medicaid status, and Medicare Part D low-income subsidy status), comorbidities (eg, hypertension, diabetes, cardiovascular disease, kidney disease, liver disease, mental illness, substance abuse, and HIV-related infections), and baseline PDC
- Multivariate Cox proportional hazard models were used to compare adjusted risk of switching, controlling for baseline hospitalization, emergency department visit, skilled nursing facility admission, and total physician visits, after IPTW

Results

Demographics and Characteristics

- Of 30,205 TE PWH, 22,312 patients (74%) were indexed on B/F/TAF, 2605 (9%) on DTG/3TC, 4523 (15%) on DTG/ABC/3TC, and 765 (3%) on multi-tablet regimens (MTRs) (Table 1)

Results continued

- Among TE PWH overall, demographic characteristics differed by index treatment; a higher proportion of those indexed on DTG/3TC were Non-Hispanic White and a lower proportion were Medicare/Medicaid dual-eligible and had Part D low-income subsidy compared with PWH receiving other ART regimens, particularly MTRs (Table 1)

Table 1. Baseline Characteristics for PWH Overall

	B/F/TAF N = 22,312	DTG/3TC N = 2605	DTG/ABC/3TC N = 4523	MTRs N = 765
Age, years, mean (SD)	58.0 (11.1)	61.7 (10.2)	57.4 (11.7)	54.1 (12.3)
Male sex, n (%)	16,139 (72)	1815 (70)	3173 (70)	513 (67)
Race/ethnicity, n (%)				
Non-Hispanic White	9971 (45)	1321 (51)	1804 (40)	320 (42)
Non-Hispanic Black	10,047 (45)	984 (38)	2216 (49)	361 (47)
Others	2294 (10)	300 (12)	503 (11)	84 (11)
Residence in large metropolitan area, n (%)	20,216 (91)	2395 (92)	4122 (91)	692 (90)
Medicare/Medicaid dual-eligible, n (%)	14,054 (63)	1470 (56)	2910 (64)	532 (70)
Part D low-income subsidy, n (%)	17,030 (76)	1751 (67)	3521 (78)	648 (85)
Charlson Comorbidity Index, mean (SD)	3.7 (2.6)	3.6 (2.6)	3.6 (2.8)	3.5 (2.9)
Comorbid conditions (≥ 20% for any regimen), n (%)				
Hypertension	8085 (36)	1038 (40)	1732 (38)	258 (34)
Mental illness	5449 (24)	569 (22)	1083 (24)	202 (26)
Substance abuse	4218 (19)	326 (13)	927 (20)	199 (26)
Infections (including hepatitis B and AIDS-related)	7272 (33)	693 (27)	1463 (32)	288 (38)

3TC, lamivudine; ABC, abacavir; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; MTR, multi-tablet regimen; PWH, people with HIV.

- For TE PWH with mental health and/or substance use disorders, demographic characteristics were generally similar to those of the overall cohort (Table 2)

Table 2. Baseline Characteristics for PWH With Mental Health and/or Substance Use Disorders

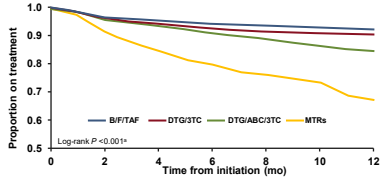
Baseline Characteristics	B/F/TAF N = 7590	DTG/3TC N = 752	DTG/ABC/3TC N = 1556	MTRs N = 303
Age, years, mean (SD)	56.2 (10.6)	59.9 (10.4)	56.0 (11.1)	52.5 (11.6)
Male sex, n (%)	5328 (70)	522 (69)	1065 (68)	212 (70)
Race/ethnicity, n (%)				
Non-Hispanic White	3661 (48)	417 (56)	706 (45)	142 (47)
Non-Hispanic Black	3187 (42)	251 (33)	699 (45)	131 (43)
Others	742 (10)	84 (11)	151 (10)	30 (10)
Residence in large metropolitan area, n (%)	6865 (90)	692 (92)	1417 (91)	272 (90)
Medicare/Medicaid dual-eligible, n (%)	5347 (70)	475 (63)	1089 (70)	229 (76)
Part D low-income subsidy, n (%)	6280 (83)	553 (74)	1300 (84)	268 (88)
Charlson Comorbidity Index, mean (SD)	4.7 (2.6)	4.7 (2.4)	4.8 (2.7)	4.7 (3.1)
Comorbid conditions (≥ 20% for any regimen), n (%)				
Hypertension	3621 (48)	397 (53)	797 (51)	152 (50)
Mental illness	5449 (72)	569 (76)	1083 (70)	202 (67)
Substance abuse	4218 (56)	326 (43)	927 (60)	199 (66)
Infections (including hepatitis B and AIDS-related)	3693 (49)	308 (41)	795 (51)	166 (55)

3TC, lamivudine; ABC, abacavir; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; MTR, multi-tablet regimen; PWH, people with HIV.

Time to Switch and Adjusted Hazard of Switch

- In weighted Kaplan-Meier analyses, a higher proportion of PWH indexed on B/F/TAF remained on treatment longer before switching compared with other regimens in both the overall cohort and subgroup with mental health and/or substance use disorders ($P < 0.001$) (Figures 2-3)

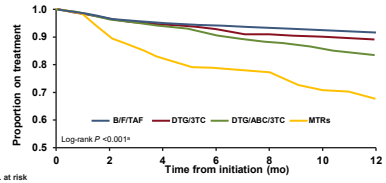
Figure 2. Weighted Kaplan-Meier Curves for Time to Switch for People with HIV Overall



No. at risk							
B/F/TAF	22,312	20,818	19,308	18,008	16,820	15,737	14,768
DTG/3TC	265	2442	2240	2043	1845	1633	1484
DTG/ABC/3TC	4523	3722	3196	2790	2443	2160	1920
MTRsb	765	516	349	259	201	160	112

aP < 0.001 for the difference across treatment groups. bMTRs included DTG + F/TAF or DTG + F/TDF. 3TC, lamivudine; ABC, abacavir; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; MTR, multi-tablet regimen

Figure 3. Weighted Kaplan-Meier Curves for Time to Switch for People with HIV and Mental Health and/or Substance Use Disorders



No. at risk							
B/F/TAF	7590	7039	6536	6093	5721	5342	5014
DTG/3TC	752	701	649	604	542	490	442
DTG/ABC/3TC	1556	1262	1092	960	840	739	652
MTRsb	303	196	121	93	72	64	37

aP < 0.001 for the difference across treatment groups. bMTRs included DTG + F/TAF or DTG + F/TDF. 3TC, lamivudine; ABC, abacavir; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; MTR, multi-tablet regimen.

Adjusted Hazard of Switch

- In the adjusted Cox proportional hazard models after IPTW, the adjusted risk of switch was higher for DTG/3TC, DTG/ABC/3TC, and MTRs compared with B/F/TAF, both overall and for PWH with mental health and/or substance use disorders (Table 3)

Table 3. Adjusted Hazard of Switch Among Treatment-Experienced Medicare Beneficiaries With HIV

Cohorts	Regimens	Sample Size	HR	95% CI	*P* Value
PWH overall	B/F/TAF	22,312	Ref		
	DTG/3TC	2605	1.28	(1.13, 1.45)	< 0.0001
	DTG/ABC/3TC	4523	2.67	(2.47, 2.89)	< 0.0001
	MTRs	765	5.37	(4.60, 6.26)	< 0.0001
PWH with mental health an/or substance use disorders	B/F/TAF	7590	Ref		
	DTG/3TC	752	1.34	(1.08, 1.67)	0.0071
	DTG/ABC/3TC	1556	2.49	(2.19, 2.84)	< 0.0001
	MTRs	303	4.56	(3.51, 5.91)	< 0.0001

3TC, lamivudine; ABC, abacavir; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; HR, hazard ratio; MTR, multi-tablet regimen; PWH, people with HIV; Ref, reference.

Limitations

- This study was limited to only looking at treatment switch, and we did not assess treatment interruptions or discontinuations or reasons for switching
- Treatment groups were unbalanced as almost 3 out of 4 PWH initiated B/F/TAF, and it is unknown if treatment choice was selected based on factors which could not be measured within claims data

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