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Persistence and Virologic Outcomes of People with HIV (PWH) with Suboptimal Adherence on B/F/TAF or Dolutegravir-Based Single-Tablet Regimens

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Conclusion

Among PWH switching regimens, most switched to B/F/TAF.

Consistent with previously published data associated with suboptimal adherence (1,2), we identified a higher proportion of people prescribed B/F/TAF who were younger, non-white, less frequently on commercial insurance, had lower CD4 counts and were less likely to be suppressed at baseline, possibly yielding greater non-adherence compared to DTG based regimens.

After controlling for differences through propensity score matching (PSM), a greater proportion of PWH switched to B/F/TAF had suboptimal adherence vs. DTG/3TC, but similar virologic efficacy. PWH on B/F/TAF were more likely to stay on B/F/TAF than DTG based single tablet regimens (STRs).

These findings support the use of B/F/TAF as an effective option for PWH needing adherence support, with B/F/TAF potentially offering potential greater forgiveness in the setting of missed doses.

Plain Language Summary

Both B/F/TAF and DTG single-tablet regimens were effective at keeping HIV under control, even for people who sometimes missed doses. B/F/TAF users tended to be younger and have more challenges with adherence, but still showed strong outcomes, suggesting B/F/TAF may offer flexibility when doses are missed.

Background

- Sustained HIV RNA suppression requires both reliable adherence and durable persistence with anti-retroviral therapy (ART), ideally through once-daily single-tablet regimens (STRs) that simplify dosing, reduce partial non-compliance and improve treatment outcomes (2)
- Forgiving regimens, such as those containing 2nd generation integrase strand transfer inhibitors (INSTIs), with high inhibitory quotients, a long terminal half-life, or lower likelihood of resistant mutations, are preferred for PWH.
- Observational data suggests that B/F/TAF maintains suppression with adherence >70% while DTG/3TC may be more vulnerable to virologic rebound when adherence falls below 80% (3)
- This study describes characteristics, adherence, and persistence of individuals who switched to B/F/TAF or single-tablet DTG-based regimens and evaluates virologic outcomes among individuals with suboptimal adherence to these regimens.

Methods

Data source: Retrospective EMR and dispensing data from the Trio Health HIV network in the U.S. population between April 2019 and September 2024.

Inclusion Criteria:
- PWH age ≥ 18 years old
- Switched to B/F/TAF or a DTG-based STR (DTG/3TC, DTG/RPV, DTG/ABC/3TC)
- ≥ 2 dispenses and ≥3 months on index regimen
- Baseline viral load available ≤12 months before switch
- ≥ 1 year of follow-up since switch

Outcomes Assessed:
- Demographic and clinical characteristics.
- Adherence: proportion of days covered (PDC); SA as PDC <80%
- Persistence: duration on regimen
- Viral outcomes:
  - Viral suppression (VS): viral load (VL) < 200 copies/mL at least 3 mo from switch
  - Viral blips: VL 200-500 copies/mL while on regimen

Logistic regression models were used to test differences in key outcomes while adjusting for key baseline demographic and clinical characteristics. (Figure 3)

Propensity score matching on odds of treatment with B/F/TAF vs. DTG STRs was performed as an exploratory sensitivity analysis to assess key outcomes after aligning cohorts on age, gender, race, payer; baseline suppression status, BMI, CD4, eGFR, and key baseline comorbidities (cardiovascular disease, diabetes, hyperlipidemia, hypertension, neuropsychiatric diseases, renal disease, substance use). (Table 2)

Results

Cohort Overview (Table 1):

- Total N = 6,268 PWH met the inclusion criteria
  - 4,571 (73%) switched to B/F/TAF
  - 1,697 (27%) switched to a DTG STR
    - 1,108 (65%) to DTG/3TC, 349 (21%) DTG/RPV, and 240 (14%) to DTG/ABC/3TC.
- Statistically significant demographic and biologic differences were observed between populations. **B/F/TAF PWH were:**
  - **younger** than DTG/RPV and DTG/3TC groups.
  - reported **higher proportions of Black/African American** and lower White race than DTG/RPV and DTG/3TC
  - **Lower rates of viral suppression on** entry than DTG/ABC/3TC, DTG/RPV, and DTG/3TC
  - **higher proportion of individuals with of baseline CD4 <200 cells/mm3** than DTG/ABC/3TC, DTG/RPV, and DTG/3TC
  - **lower proportion baseline eGFR <60 mL/min/1.73m2** than DTG/ABC/3TC, DTG/RPV, and DTG/3TC
  - **lower prevalence of cardiovascular and renal** disease than DTG/ABC/3TC, DTG/RPV, and DTG/3TC

Results

Table 1: Baseline Characteristics by Treatment Regimen: Unmatched

n (%) unless specified		DTG/ABC/3TC n =240	DTG/RPV n =349	DTG/3TC n =1108	B/F/TAF n =4571
Age, median (IQR)		50 (38-60)	55 (45-63)*	49 (38-58)*	47 (36-57)
Female sex at birth		51 (21)	84 (24)	223 (20)	937 (20)
Race	**White**	94 (39)	186 (53)*	577 (52)*	1880 (41)
	Black/African American	94 (39)	116 (33)*	340 (31)*	2048 (45)
	Other[b]	52 (22)*	47 (13)	191 (17)*	643 (14)
Payer	**Commercial**	136 (57)	221 (63)*	800 (72)*	2292 (50)
	Medicare	26 (11)	80 (23)*	127 (11)	526 (12)
	Medicaid/Ryan White, patient assistance or self-pay	30 (13)	33 (9)*	128 (12)	872 (19)
	Unknown	48 (20)	15 (4)*	53 (5)*	881 (19)
Suppressed at baseline (<200 copies/mL)		228 (95)*	337 (97)*	1075 (97)*	4037 (88)
Baseline CD4 <200 cells/mm³		26 (11)*	35 (10)*	73 (7)*	765 (17)
Baseline eGFR <60 mL/min/1.73m²		46 (21)*	121 (38)*	126 (12)*	335 (8)
Cardiovascular disease		86 (36)*	130 (37)*	335 (30)*	1129 (25)
Diabetes		22 (9)	48 (14)*	78 (7)	338 (7)
Renal disease		19 (8)*	76 (22)*	88 (8)*	141 (3)
Substance use		19 (8)	7 (2)*	40 (4)*	378 (8)

* statistically significant differences (p<.05) with B/F/TAF are shown with *

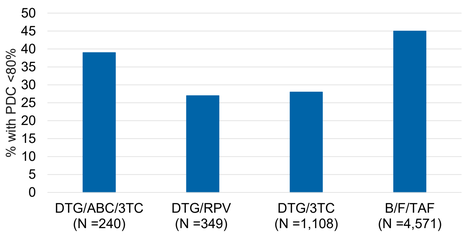
[b] Other race includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian.

Table 2: Outcomes by Regimen for Matched Sample (DTG STR 1:1 matched to B/F/TAF)

n (%) unless specified	DTG/ABC/3TC n =160	DTG/RPV n =166	DTG/3TC n =690	B/F/TAF n =1016
PDC <80%	66 (41)	50 (30)	193 (28)*	355 (35)
Persistence: median (IQR) duration on treatment (mo)	16.5 (8.1-30)*	22.3 (11.6-37.9)	18.5 (8.9-34.5)*	23.5 (11.2-41.5)
Suppressed at last observation on regimen (<200 copies/mL) among those with PDC <80% and post baseline viral loads	56/62 (90)	44/47 (94)	177/186 (95)	314/338 (93)
Viral blip (200-500 copies/mL) with subsequent suppression among those with PDC <80% and post baseline viral loads	5/62 (8)	0/47 (0)	10/186 (5)	20/338 (6)

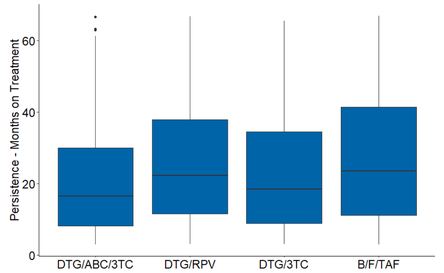
statistically significant differences (p<.05) with B/F/TAF

Figure 1: Adherence by Treatment Regimen for Total Cohort: Unmatched



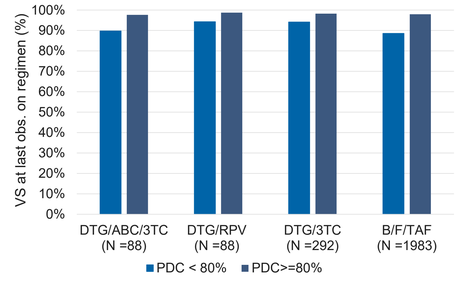
Adherence was lower for B/F/TAF compared to the other treatment regimens. B/F/TAF PDC <80% 45% vs. DTG STR PDC <80% 29% (χ^2 (1) = 130.7, p < 0.05). *35% vs 30% in matched sample (p= 0.03).*

Figure 2: Persistence by Treatment Regimen for Total Cohort: Unmatched



Despite overall lower adherence for B/F/TAF vs. DTG based regimens, PWH on B/F/TAF were more likely to stay on B/F/TAF vs. DTG based regimens (Mean (SD): 27.4 (18.4) months vs. 23.3 (16.4) months, p < 0.05). *28 (18.7) vs 24.0 (16.7) in matched sample (p<0.05).*

Figure 3: Viral Outcomes among PWH with Viral Loads for Total Cohort: Unmatched



Among those with <80% PDC VS was not statistically different between B/F/TAF and DTG STRs *(89% v. 93% in total cohort, 94% vs. 93% in matched sample (p=0.25))*

Viral blips were more frequent with B/F/TAF (10% v. 4%); however, these differences were not found to be statistically significant. *6% vs. 5% in matched sample (p=0.39).*

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