Healthcare Utilization and Costs Among Treatment-Experienced Medicaid Beneficiaries Utilizing Single-Tablet Versus Multi-Tablet Regimens for HIV

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Key Findings

- In this analysis, PWH taking a MTR were older, were more likely to be women and had more comorbidities than PWH taking a STR
- After multivariable adjustment, PWH in the STR cohort had significantly lower all-cause and HIV-related HCRU and costs for selected variables. These findings were consistent with the IPTW-adjusted results and other studies

Conclusions

- There was excess economic burden among Medicaid-enrolled PWH on MTRs versus STRs, with more comorbidities and more complex ART histories after balancing for observable differences between cohorts
- Although MTR utilization was low, this may represent a key population in which intervention might reduce economic burden

Introduction

- ART regimens for HIV are commonly administered as FDC of ≥ 2 antiviral drugs:
  - If a FDC constitutes an entire regimen and is provided as one tablet for use once daily, it is considered a STR
  - A separately formulated ART coadministered with ≥ 1 other ARTs is a MTR and can be taken ≥ 1 times per day
- Prior analyses of real-world data have demonstrated that PWH on STRs had improved adherence compared with those on MTRs[1,2]
- However, there is limited evidence comparing the economic burden of STRs versus MTRs in PWH
- Based on an initial study that showed better persistence and adherence in PWH on STRs versus those on MTRs, it is important to understand access issues related to STRs, including payer utilization management policies[3]

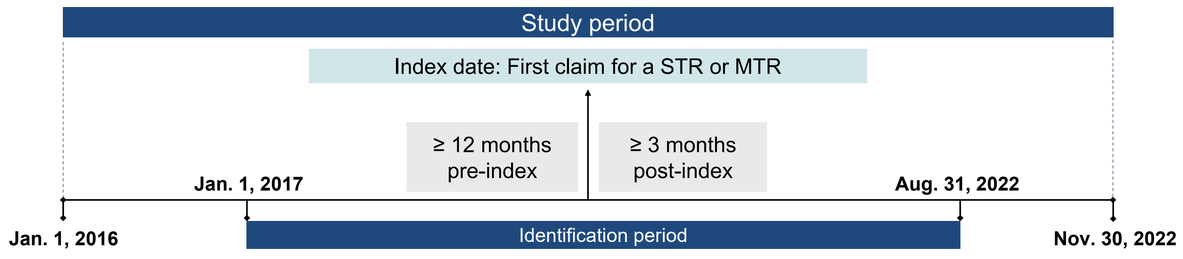
Objective

- To examine all-cause and HIV-specific HCRU and costs of STRs versus MTRs among treatment-experienced PWH
  - **STR cohort**: PWH prescribed a STR as their initial ART regimen. Participants were included in the STR cohort if their initial regimens were dosed as one tablet given once daily
  - **MTR cohort**: PWH prescribed a MTR as their initial ART regimen

Methods

Study Design

- Cross-sectional retrospective analysis of U.S. all-payer medical and pharmacy claims data (STATinMED Insights)
- Inclusion criteria: PWH were enrolled in Medicaid, aged ≥ 18 years at first ART claim, had ≥ 1 pharmacy claims for HIV regimens, had ≥ 1 non-diagnostic medical claim for HIV during the study period, and were continuously enrolled for ≥ 12 months pre-index date (baseline period) and ≥ 3 months following the first claim for HIV regimen (follow-up period)
- Exclusion criteria included multiple ART regimens on the index date; HIV-2 diagnosis during the study period; missing sex/gender data; invalid drug combination; and/or commercial, Medicare or other insurance



Outcomes (STRs vs. MTRs)

- All-cause and HIV-related HCRU PPPM
  - Computed for ≥ 1 inpatient stays, ≥ 1 outpatient visits (office, ER and other outpatient), ≥ 1 pharmacy visits, inpatient length of stay and number of inpatient admissions
- All-cause and HIV-related costs PPPM
  - Computed for inpatient visits, outpatient visits (office, ER and other outpatient), pharmacy costs and total (inpatient + outpatient + pharmacy) costs. These were adjusted to 2022 U.S. dollars using the medical care component of the Consumer Price Index
  - Medical claims were considered HIV related if they had an ICD-9/10–Clinical Modification diagnosis code for HIV in any position
  - Pharmacy claims were considered HIV related if they had an NDC for HIV-specific medications

Statistical Analyses

- For continuous variables, mean, median and SD were generated. For categorical variables, counts and percentages were reported. For continuous baseline characteristics, *t*-tests were used to evaluate *P*-values and, if there was a deviation from asymptotical assumptions, a nonparametric test (e.g., Mann–Whitney U) was applied, and a chi-square test was used to compare dichotomous variables
- Differences between cohorts were quantified using STD
  - STD > 10% was considered unbalanced
  - IPTW was then generated from propensity scores to control for differences in baseline patient demographics and clinical characteristics in the analysis of all outcome variables
- Multivariable analysis, specifically GLM, was used for all components of HCRU and cost analyses
  - GLMs were formulated so that the response variable related to a linear combination of explanatory variables via a link function
    - A GLM with gamma distribution and log link function was applied for cost variables
    - A GLM with binomial distribution and logit link function was applied for binary outcome variables (e.g., proportion of patients with ≥ 1 hospitalizations)
    - A GLM with negative binomial distribution and log link function was applied for continuous outcome variables (e.g., number of hospitalizations)

Results

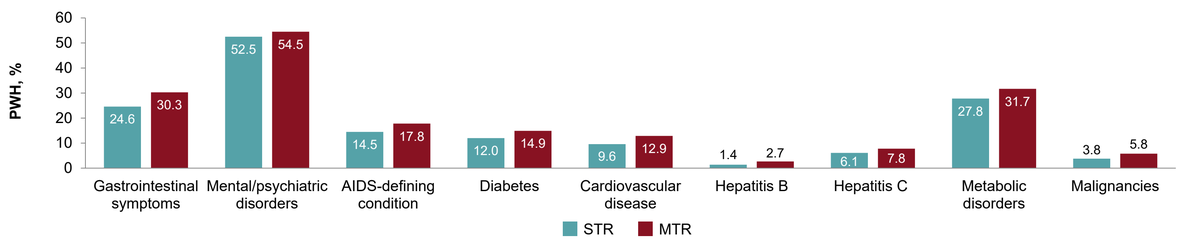
Baseline Demographics and Clinical Characteristics (Unweighted)

Characteristic	STR (n = 43,120)	MTR (n = 979)
Age, years, mean	45	46
Sex, n (%)		
Male	28,999 (67.3)	575 (58.7)
Female	14,121 (32.7)	404 (41.3)
Type of Medicaid insurance, n (%)		
Medicaid/Fee-For-Service	24,952 (57.9)	505 (51.6)
Medicaid/Managed	12,892 (29.9)	370 (37.8)
Medicaid/Unspecified	5,276 (12.2)	104 (10.6)
U.S. geographic region, n (%)		
Northeast	14,960 (34.7)	316 (32.3)
North Central	7,011 (16.3)	133 (13.6)
South	14,207 (32.9)	336 (34.3)
West	6,859 (15.9)	194 (19.8)
Other	83 (0.2)	0
Pre-index medication use, n (%)	20,537 (47.6)	544 (55.6)
Number of unique medications on index date,* mean (SD)	1.0 (1.5)	1.3 (1.6)
Charleson Comorbidity Index score, mean (SD)	5.8 (3.6)	6.0 (3.7)

*Excludes ART. Based on unique Generic Product Identifier 10 on the index date.

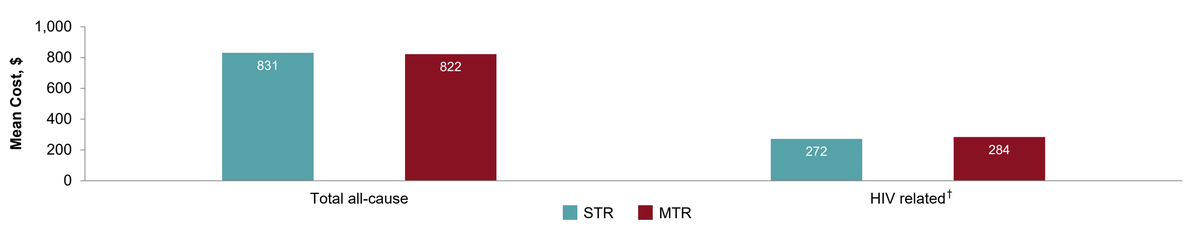
- In terms of the prevalence of specific treatments, for STRs: n = 15,630 for B/F/TAF, n = 670 for DTG/3TC, n = 7,583 for DTG/ABC/3TC; and for MTRs: n = 437 for F/TAF + DTG and n = 141 for F/TDF + DTG

Selected Baseline Comorbidities and Symptoms



- PWH in the STR cohort had a lower percentage of baseline comorbidities and symptoms than PWH in the MTR cohort

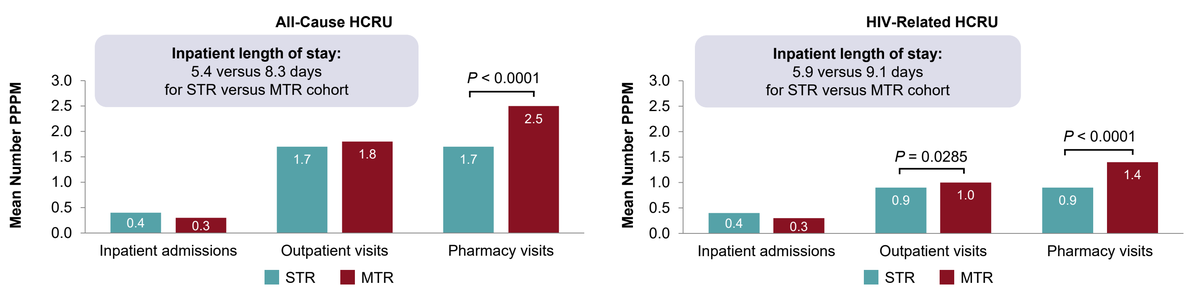
Baseline Costs*



*Costs accrued over the pre-index period; †Medical claims were considered HIV related if they had an ICD-9/10–Clinical Modification diagnosis code for HIV in any position; pharmacy claims were considered HIV related if they had an NDC for HIV-specific medications.

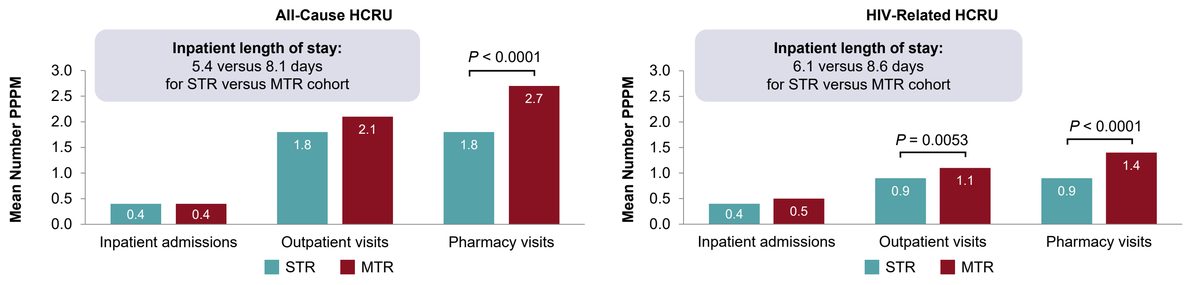
- Baseline costs were similar in the two cohorts

GLM All-Cause and HIV-Related HCRU (STRs vs. MTRs)



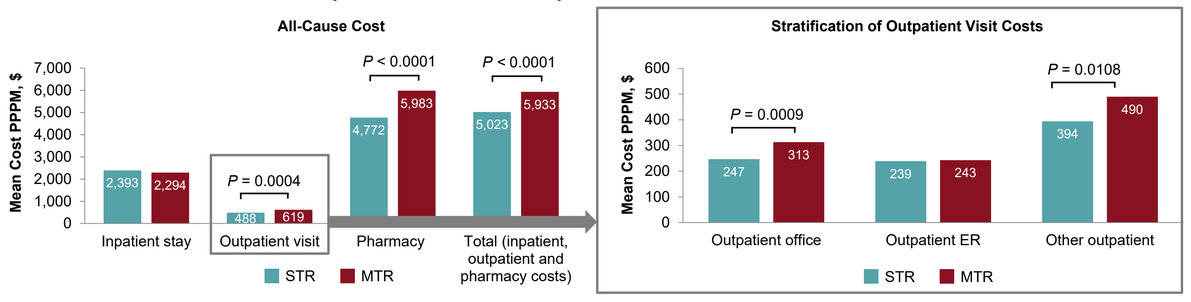
- For all-cause HCRU, PWH in the STR cohort had a significantly lower mean number of pharmacy visits than PWH in the MTR cohort
- For HIV-related HCRU, PWH in the STR cohort had a significantly lower mean number of outpatient visits and pharmacy visits than PWH in the MTR cohort

IPTW All-Cause and HIV-Related HCRU (STRs vs. MTRs)



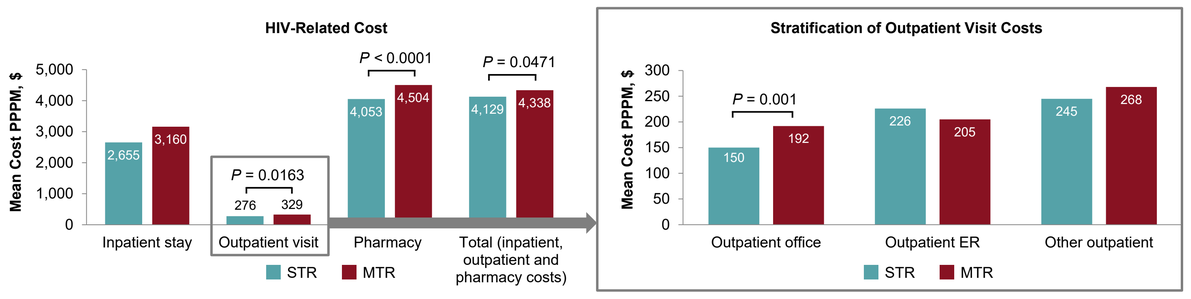
- For all-cause HCRU, PWH in the STR cohort had a significantly lower mean number of pharmacy visits than PWH in the MTR cohort
- For HIV-related HCRU, PWH in the STR cohort had a significantly lower mean number of pharmacy visits than PWH in the MTR cohort

GLM All-Cause Costs (STRs vs. MTRs)



- PWH in the STR cohort had significantly lower all-cause outpatient visit costs, pharmacy costs and total costs than PWH in the MTR cohort

GLM HIV-Related Costs (STRs vs. MTRs)



- PWH in the STR cohort had significantly lower all-cause outpatient visit costs, pharmacy costs and total costs than PWH in the MTR cohort

Limitations

- The study was restricted to U.S. data; therefore, the results may not be applicable to other countries
- The number of PWH on MTRs was low, limiting the conclusions that can be drawn from this analysis
- Claims data use is associated with certain limitations:
  - The presence of a diagnosis code for HIV was used as a proxy for the presence of HIV. However, the diagnostic code may have been incorrectly assigned or included as rule-out criteria
  - The presence of a claim for a filled prescription does not indicate whether the medication was taken as prescribed
  - Non-prescription medications are not observed in claims data
  - Certain information, such as clinical and disease-specific parameters, is not readily available in claims data, which could influence study outcomes
  - Although IPTW was used to control for differences in baseline demographics and clinical characteristics, patients on MTRs could have previously experienced STR failure or have more complex medical histories than those on STRs; this may not be addressed via IPTW and could potentially account for the higher HCRU observed in this cohort

References: **1.** Priest J, et al. J Med Econ 2021;24:1204-1211. **2.** Kangethe A, et al. J Manag Care Spec Pharm 2019;25:88-93. **3.** Mezzio D, et al. EACS 2021, Poster PE7/28.

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Disclosures: **MC** and **WZ**: employed by Gilead. **MA**, **GA** and **IC**: employed by STATinMED.

Abbreviations: 3TC, lamivudine; ABC, abacavir; ART, antiretroviral therapy; B, bictegravir; DTG, dolutegravir; ER, emergency room; F, emtricitabine; FDC, fixed-dose combination; GLM, generalized linear modeling; HCRU, healthcare resource utilization, ICD-9/10, International Classification of Diseases-9th/10th Revision; IPTW, inverse probability treatment weighting; MTR, multi-tablet regimen; NDC, National Drug Code; PPPM, per patient per month; PWH, people with HIV; SD, standard deviation; STD, standardized differences; STR, single tablet regimen; TAF, tenofovir alafenamide; TDF, tenofovir disoproxil fumarate.

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