

## Background

- HIV treatments have evolved to include HIV prevention therapies called pre-exposure prophylaxis (PReP).[1,2]
- The first FDA approved oral PReP therapy was tenofovir disoproxil fumarate/emtricitabine (TDF) in 2012.
- Tenofovir alafenamide/emtricitabine (TAF) was later approved for PReP previous meta-analyses have shown there is no difference in efficacy or safety outcomes. [3] Patients may swap between the PReP therapies.
- There is a lack of knowledge concerning the real-world healthcare resource utilization (HCRU) of PReP patients on therapy.

## Objectives

- To describe the demographic characteristics of oral PReP patients.
- To compare the healthcare resource utilization of patients on oral PReP

## Methods

**Figure 1.** Patient selection criteria

### Study Design:

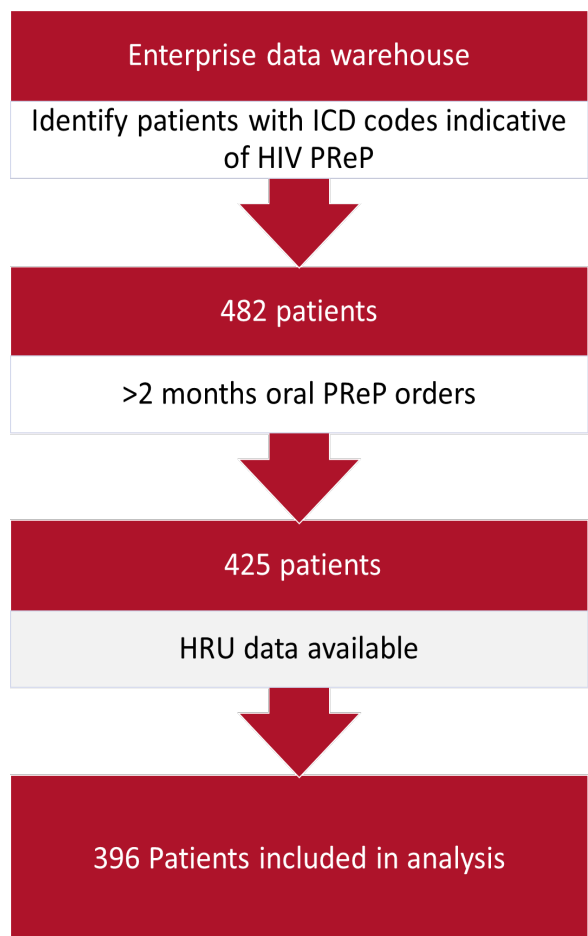
- Retrospective study describing high risk for contracting HIV patients treated with PReP at the University of Utah.
- PReP patients were identified from July 1,2012 – 05/30/2022 and followed until end date of last medication order, death, or end of study (05/30/2022).
- HCRU was presented using Per-patient per-year (PPPY)

### Date collection:

- HCRU observational data was collected from electronic medical records across the University of Utah healthcare system (Uhealth).

### Data analysis:

- One way ANOVA test was performed to calculate variable p-values relative to the 3 treatment groups



## Results

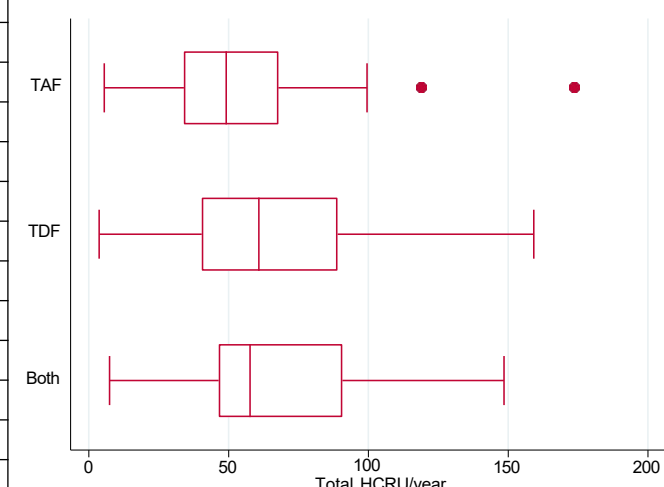
**Table 1.** Key Patient Characteristics

	PReP Patients (N=396)	TAF (N=92)	TDF (N=118)	Both (N=186)	Pvalue
<b>Age, Median (IQR)</b>	31 (27 - 38)	31 (26 - 37)	31 (26 - 38)	32 (28 - 38)	0.584
<b>Gender, N (%)</b>					
Female	16 (4)	1 (1)	10 (8)	5 (3)	<b>0.011</b>
Male	380 (96)	91 (99)	108 (92)	181 (97)	
<b>Race, N(%)</b>					
American Indian and Alaska Native	2 (1)	1 (1)	0	1 (1)	0.122
Asian	20 (5)	8 (9)	4 (3)	8 (4)	
Black or African American	13 (3)	4 (4)	5 (4)	4 (2)	
Choose not to disclose	16 (4)	2 (2)	4 (3)	10 (5)	
Native Hawaiian and Other Pacific Isl..	1 (0)	1 (1)	0	0	
Other	107 (27)	30 (33)	25 (21)	52 (28)	
Unreported/Refused to Report	10 (3)	2 (2)	6 (5)	2 (1)	
White or Caucasian	227 (57)	44 (48)	74 (62)	109 (59)	
<b>Ethnicity N(%)</b>					
Hispanic/Latino	122 (31)	39 (43)	33 (28)	50 (27)	0.072
Not Hispanic/Latino	248 (63)	49 (53)	78 (66)	121 (65)	
Choose not to disclose	19 (5)	2 (2)	4 (3)	13 (7)	
Unknown/Information Not Available	7 (2)	2 (2)	3 (3)	2 (1)	
<b>Follow-up Time, Median (IQR)</b>					
Years	1.00 (0.49 - 2.13)	0.78 (0.61 - 1.05)	0.66 (0.48 - 0.76)	1.75 (1.49 - 2.17)	<b>0.0001</b>

**Table 2.** Healthcare resource utilization

	TAF	TDF	Both	Pvalue
<b>Yearly total HCRU PPPY, Median (IQR)</b>				
Telephone	2.51 (1.29 - 4.11)	3.82 (2.17 - 6.21)	2.25 (1.37 - 4.36)	<b>0.0061</b>
Med History	3.29 (2.16 - 4.18)	5.31 (3.50 - 8.13)	4.34 (2.87 - 6.69)	<b>0.0001</b>
Nurse visit	1.74 (0.89 - 3.23)	1.91 (1.06 - 3.13)	1.18 (0.66 - 2.07)	0.46
Office visit	2.46 (1.47 - 3.82)	4.86 (3.00 - 7.26)	3.51 ( 2.32 - 5.60)	<b>0.0001</b>
Appointment	3.04 (1.56 - 5.11)	3.83 (2.27 - 6.37)	2.86 (1.86 - 4.38)	0.19
Hospital encounter	0.88 (0.61 - 2.06)	1.46 (0.59 - 3.63)	1.15 (0.58 - 2.17)	0.62
Procedure	1.38 (0.52 - 2.25)	0.26 (.22 - 0.67)	0.32 (0.22 - 1.25)	0.63
Lab work	3.67 (2.14 - 4.26)	2.97 (1.91 - 4.26)	2.21 (1.13 - 3.69)	<b>0.0006</b>
Prescription pick up	9.11 (3.77 - 27.33)	13.90 (4.78 - 30.84)	14.80 (4.24 - 29.02)	0.74
Therapy visit	0	3.64 (1.37 - 7.30)	0.67 (0.25 - 2.18)	<b>0.038</b>
Telemedicine	1.90 (1.03 - 2.31)	1.87 (1.15 - 2.81)	1.24 (0.67 - 2.13)	<b>0.0055</b>
Case Management	14.08 (10.93 - 18.54)	12.73 (6.97 - 17.50)	11.30 (5.03 - 15.47)	<b>0.0009</b>
<b>Total</b>	<b>49.13 (34.01 - 67.84)</b>	<b>60.83 (40.41 - 88.98)</b>	<b>57.68 (46.45 - 90.70)</b>	<b>0.0001</b>

**Figure 2.** Total PPPY HCRU by PReP Regimen



## Results

- Oral TDF patients have a higher median total PPPY HCRU than TAF or patients who have medication orders for both PReP regimens.
- TAF patients have a higher median case management and Lab order PPPY HCRU than TDF or patients who have orders both PReP regimens.
- Patients who had orders for both PReP regimens have a higher median PPPY HCRU for total prescription medication orders than TDF or TAF patients.
- There was no difference in the HCRU of hospital encounters between the groups

## Discussion

- This analysis shows that there is a difference in HCRU among oral PReP users. TDF patients were more often associated with having the higher median PPPY HCRU than TAF or both.
- Differences in gender between the 3 groups can be associated with TAF not having an indication for those who were female at birth.[4]
- An increase in HCRU does not indicate an increase in clinical outcomes or healthcare costs, different HCRU parameters have differences in costs associated with each event.

### Limitations:

- Low generalizability outside of the Uhealth system.
- Use of medication orders only, could not determine costs or medication adherence using prescription fill data.
- Could not assess complete patient HCRU if patients utilized healthcare resources outside of the University of Utah.
- Future studies are needed to incorporate HIV clinical outcomes and healthcare costs associated with the differences in HCRU.

## Conclusion

Oral PReP patients have differences in HCRU depending on their PReP medication regimen.

## References

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- Pilkington, V., et al., *Tenofovir alafenamide vs. tenofovir disoproxil fumarate: an updated meta-analysis of 14 894 patients across 14 trials*. Aids, 2020. 34(15): p. 2259-2268.
- CDC. *About PReP*. 2022; Available from: <https://www.cdc.gov/hiv/basics/prep/about-prep.html>.