Implications of PrEP Prescribing Practices on Patient Retention and On-Time Prescriptions

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PrEP retention continues to be a challenge…

- Meta-analysis of research data estimates 6-month retention at 59% (Zhang et al., 2022)
- Studies of real-world practice populations find 6-month retention rates ranging from 36% - 42% (Goodman et al., 2022; Lankowski et al., 2019; Zucker et al., 2019
- Data indicate that many patients (~45%) reinitiate PrEP within a year, suggesting factors other than dissatisfaction or disinterest may be at play.
- The majority of analyses focus on patient-level determinants of retention, with an emphasis on non-modifiable demographic factors.
- There is increasing attention on structural factors (e.g., clinic hours, transportation difficulties, unmet SDoH needs)

Might prescription practices play a role in retention dynamics?

Prescription Patterns in Other Contexts

- Attending visits to receive a prescription refill can be inconvenient and frustrating for patients; obstacles are exacerbated when refills are required more frequently.
- Longer prescription lengths are associated with increased medication adherence at 12 months, and up to 5 years.
- Data suggest that provider biases can lead to fewer prescriptions or different prescriptions for the same condition.

Research Questions

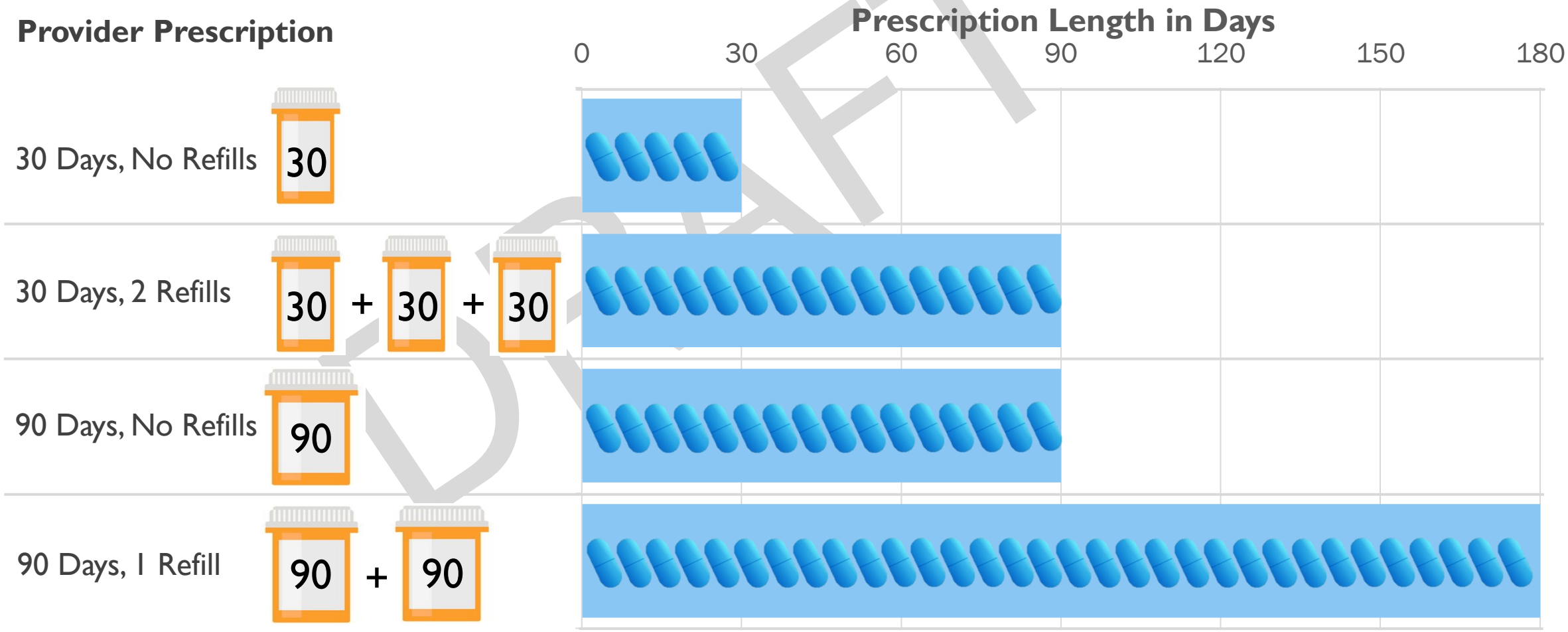
1. How do most providers prescribe PrEP (in terms of pill quantity and refills)? Are there common patterns for initial and subsequent prescriptions?
2. Is there any association between prescription patterns and PrEP retention or timeliness of follow-up prescriptions?
3. Is there any association between prescription patterns and p or patient characteristics? rovider

Methods | Sample

- PrEP Rx data were extracted from the EMR of a large ** system (** clinics) from **January 2015 – April 2022**.
- Our sample included **11,072 PrEP Rxs made to 1,968 patients** (mean Rx/patient = 5.6, range 1-34)
- Core **sample characteristics**:
  - 35% Black; 46% Hispanic
  - 76% male sex in EMR
  - 33% ages 18-29;
  - 48% Medicaid, 6% uninsured, 32% employer-based private insurance

Methods | Operationalization of Variables

- **Prescription Length** (defined as quantity x refills)

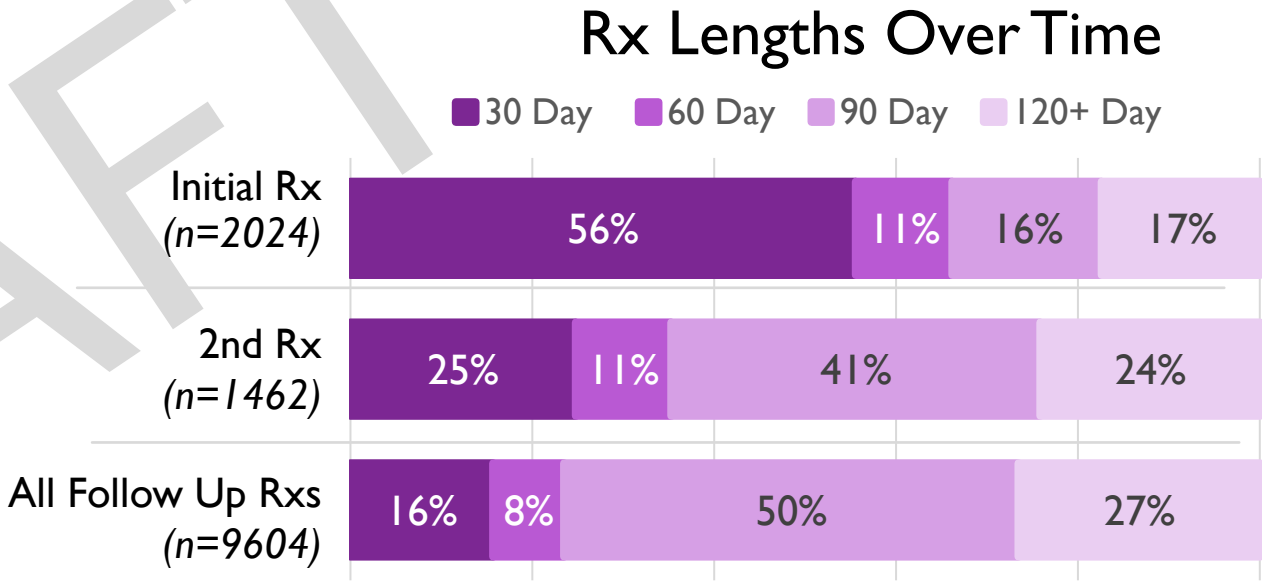


Methods | Operationalization of Variables

- **Prescription Length** (defined as quantity x refills)
- **Retention** (count of total Rxs per patient)
- **Continuity** (was next Rx received *before* the patient would have run out of PrEP pills, assuming daily PrEP use)

RQ#1: **PrEP Prescription Patterns**

- There was **wide variation** in initial and follow-up Rx length
  - Range: 30-360 days
  - Most (56%) started with a 30-day Rx
  - 50% of follow up Rxs were for 90 days
  - Only 25% of patients received consistent Rx lengths across all follow ups.



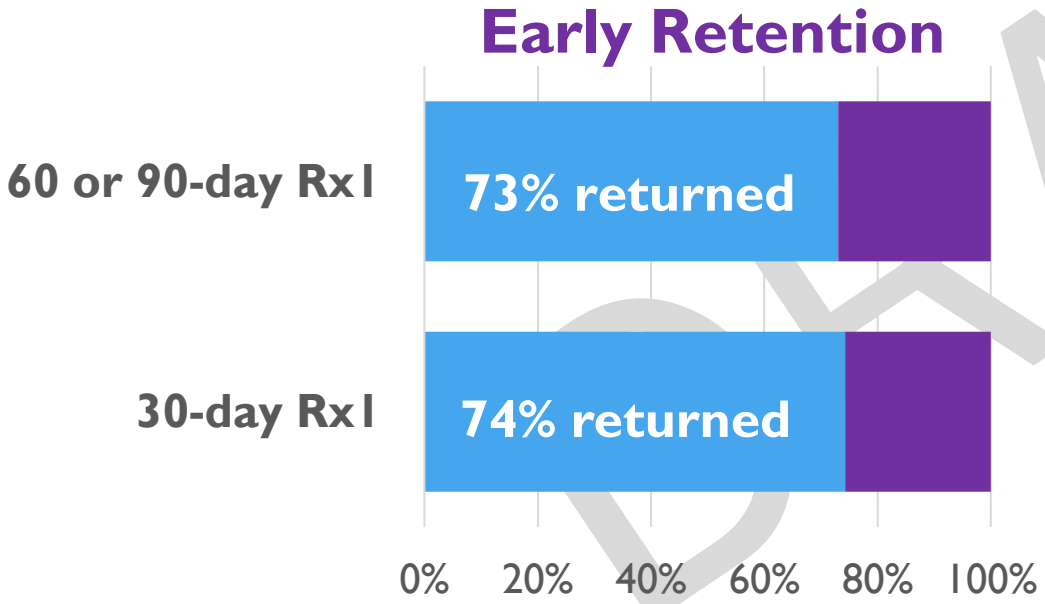
- Rx lengths **varied by provider type**; infectious disease physicians favored 30-day starts and other providers favored 60+ day starts.

RQ#2: Association between Rx patterns & outcomes

Construct	Question	Results
Early **Retention**	Did Rx1 length predict **patient return** for Rx2?	
Early **Continuity**	Did Rx1 length predict **Rx2 timeliness**?	
Overall **Continuity**	Did Rx lengths predict **timeliness of subsequent Rxs**?	
Overall **Retention**	Did Rx2 lengths predict a **higher total number** of Rxs?	

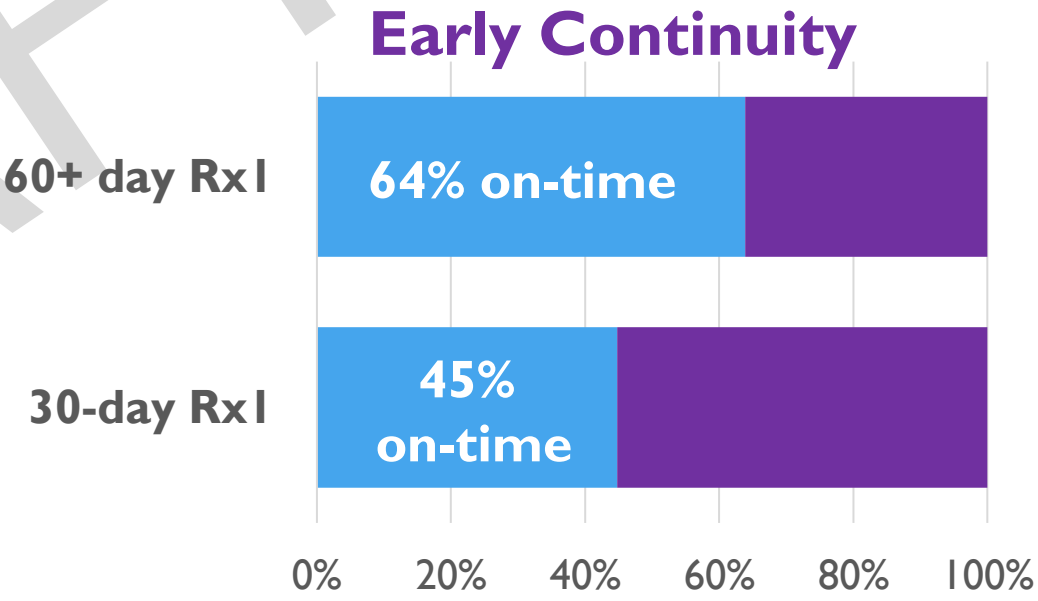
First Rx Length → Early Retention & Continuity

Did Rx1 length predict **patient return** for Rx2?



X p = .60

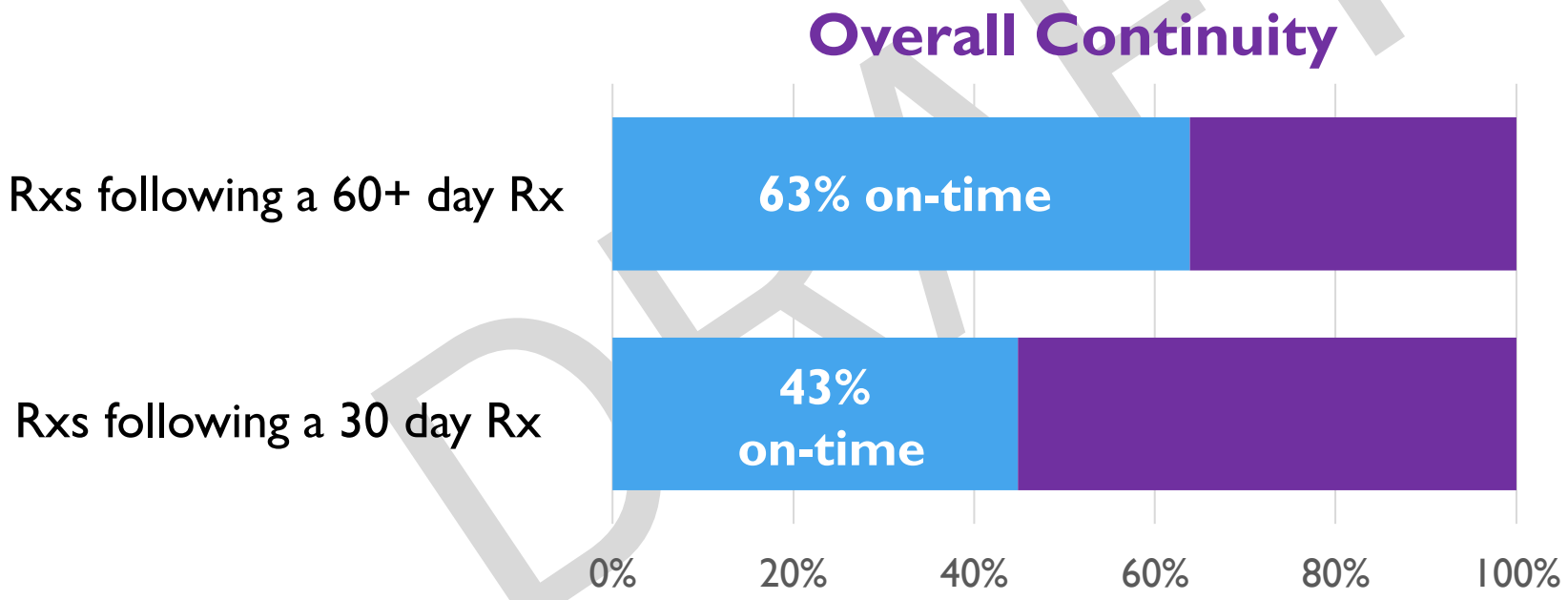
Did Rx1 length predict **Rx2 timeliness?**



✓ p < .001

Rx Length → Overall Continuity

Did Rx length predict **timeliness of <u>subsequent</u> Rxs**?



Rx Length → Overall Retention

Did follow-up Rx length predict a **higher total number** of Rxs?

Patients with 30-day Rx1 and either all 30 or all 90 day FU Rxs (n = 244)

2nd and future Rxs = **30 days**
(n = 108)

↓

M = **2.6** (SD = **)

30 x 1.6 return Rx =
48 days of additional PrEP coverage

On average, how many total PrEP Rx did they receive?

2nd and future Rxs = **90 days**
(n = 136)

↓

M = **4.4** (SD = **)

90 x 3.4 return Rx =
306 days of additional PrEP coverage

RQ#2: Association between Rx patterns & outcomes

Construct	Question	Results
Early **Retention**	Did Rx1 length predict **patient return** for Rx2?	**No** -- A similar proportion of patients returned for a second Rx regardless of whether Rx1 was 30-day vs 60 or 90 days (74% vs 73%, p=.6)
Early **Continuity**	Did Rx1 length predict **Rx2 timeliness**?	**Yes** -- 64% of Rx2 following a longer Rx1 (60+ days) were on time, compared to 45% of Rx2 following a 30-day Rx1 (p<.0001)
Overall **Continuity**	Did Rx lengths predict **timeliness of subsequent Rxs**?	**Yes** -- Among Rxs of 60+ days, 63% of subsequent Rxs were on time, compared to 43% of Rxs following a 30-day Rx.
Overall **Retention**	Did Rx2 lengths predict a **higher total number** of Rxs?	**Yes** -- Among pts with a 30-day 1st Rx, pts who received exclusively 90-day follow up Rxs had a higher total # Rxs than pts who received exclusively 30-day follow up Rxs (n=242, M=4.4 vs 2.5, p<.0001).

RQ#3: Rx Patterns by Patient Race/Ethnicity

- First Rx length did not differ by race/ethnicity (p = .67)
- Average ***follow up*** **Rx length significantly differed by race/ethnicity**, with Black and Hispanic patients receiving shorter Rxs at follow-ups, on average [$F_{3,1323} = 3.89$, p = .0088]

Race / Ethnicity	First Rx Length	Follow Up Rx Length
Black	74.5 (n=625)	94.9[a] (n=440)
Hispanic	75.7 (n=907)	94.9[a] (n=655)
White	79.0 (n=153)	111.7[b] (n=118)
All Others	83.3 (n=159)	107.5[a,b] (n=114)

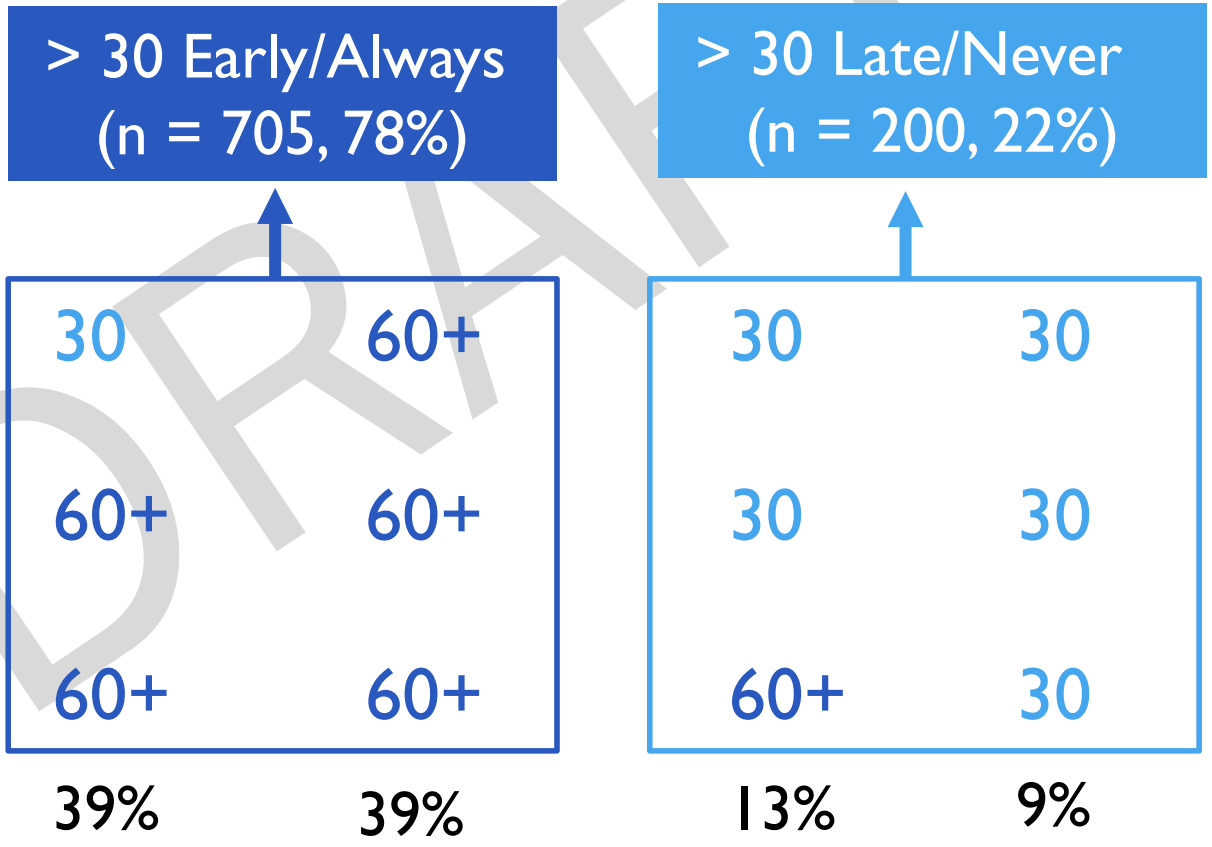
Note: Means with a different superscripts differ from each other at the p<.05 level.

RQ#3: Rx Patterns by Patient Race/Ethnicity

- The **<u>wait</u> for longer Rx length** differed by race/ethnicity.

Four Common Rx Patterns
(86% of 3+ Rx; n = 905)

Rx1
↓
Rx2
↓
Rx3



RQ#3: Rx Patterns by Patient Race/Ethnicity

- The **wait for longer Rx length** differed by race/ethnicity.

Race / Ethnicity	> 30 Early/Always (n = 705, 78%)	> 30 Late/Never (n = 200, 22%)	**Relative Risk**	***p***
Black (n = 309)	228 (74%)	81 (26%)	2.7	.0042
Hispanic (n = 437)	347 (79%)	90 (21%)	2.1	.0296
All Others (n = 76)	55 (72%)	21 (28%)	2.9	.0061
White (ref) (n = 83)	75 (90%)	8 (10%)	-	-

Only 10% of White patients had to wait until their 3rd Rx for a >30 day Rx; compared to 21-28% of patients of other race/ethnicities

Discussion/Implications

- PrEP prescribing practices are highly variable and inconsistent.
- Despite guidelines, the majority of patients receive 30 day initial PrEP Rx*; but there was no difference in return for 2nd Rx by initial Rx length.
- Longer follow-up Rx length was associated with greater patient retention (more Rxs) and on-time subsequent Rxs (fewer gaps in coverage)
- Longer follow-up Rxs were less likely to be given to Black and Hispanic patients.

More research is needed into the impact of Rx length on patient experience, logistical burden, retention, pill gaps, and PrEP efficacy.

* *Data are from 2015-2022.*