Increase in New HIV Diagnoses Following Decrease in Use of Pre-exposure Prophylaxis (PrEP) During the COVID-19 Pandemic

Poster 1556

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Key Findings

- At the start of the coronavirus disease 2019 (COVID-19) pandemic, stay-at-home restrictions and peaks in COVID-19 infections coincided with decreased HIV diagnoses in people who could benefit from pre-exposure prophylaxis (PWBP)
- COVID-19-related events may have affected sexual behavior, HIV testing access, and HIV prevention-related medical care
- After March 2020, a subsequent decrease in pre-exposure prophylaxis (PrEP) use coinciding with an increase in HIV diagnoses highlights the importance of sustained access to PrEP and other HIV prevention services during public health emergencies
- Future PrEP access issues may be alleviated by longer-acting PrEP solutions

Conclusions

- Using a large, longitudinal, prescription claims database, this analysis provides real-world insight into temporal trends in new HIV diagnoses in PWBP and PrEP utilization in the United States before and during the COVID-19 pandemic
- This analysis highlights how the COVID-19 pandemic substantially impacted PrEP use and new HIV diagnoses:
- Decreased HIV diagnoses in PWBP early in the pandemic coincided with stay-at-home restrictions and peaks in COVID-19 hospitalizations
- While PrEP use has steadily increased since the beginning of the pandemic, the increase in new HIV diagnoses among PWBP highlights the ongoing need to support PrEP access and uptake
- Our findings underscore the critical need for sustained access to PrEP care and other sexual health services during public health emergencies

Background

- In March 2020, stay-at-home restrictions were placed across multiple jurisdictions in the US to help reduce the impact of COVID-19 (Figure 1).1 Restrictions disrupted healthcare delivery and access to HIV testing and other HIV prevention-related healthcare services^{2–7}
- In 2020, new HIV diagnoses in the US decreased by 17% compared with 2019 due to reduced HIV testing during the pandemic.⁸ Additionally, the COVID-19 pandemic coincided in decreased PrEP persistence⁹
- However, studies evaluating the impact of the COVID-19 pandemic on PrEP use and HIV diagnoses in the US have only reported on data from small cohorts, defined populations (e.g., men who have sex with men), described by the contraction of the contr or examined changes during the early stages of the pandemic, 10 which do not fully represent the total population of PWBP
- In this study, we use nationally-representative data that include PWBP to further understand the importance of sustained access to HIV-related healthcare and PrEP access, and the implications this has on HIV infections and PrEP use

Figure 1. COVID-19 timeline in the US¹¹ CDC confirms first Delta variant causes surge in COVID-19 case in US from the cases in the US state of Washington Second wave of Delta and Omicron COVID-19 infections variants cause new January wave of infections January 2022 March/April November December December WHO identifies Stay-at-home and travel restrictions Omicron as new placed across the US variant of concern First cases of COVID-19 FDA approves Weekly average of new COVID-19 infections in the US is six times emergency use of Pfizer emerge in China higher than it was in 2021 and Moderna vaccines CDC, Centers for Disease Control and Prevention; COVID-19, coronavirus disease 2019; FDA, Food and Drug Administration; WHO, World Health

Limitations

- Due to the use of a retail pharmacy claims database, assessing individual-level PrEP use patterns and adherence was not possible
- PWBP who were never prescribed PrEP were not included in this dataset
- Other factors such as delayed HIV testing may have contributed to the subsequent increase in new HIV diagnoses that we observed
- While we observed important temporal trends in PrEP use and new HIV diagnoses, these associations may not be causal

Objective

 Here, we describe and compare HIV diagnoses in PWBP, PrEP use, and new HIV diagnoses among people prescribed PrEP prior to and during the COVID-19 pandemic in the US

Methods

• PWBP prescribed emtricitabine/tenofovir disoproxil fumarate (F/TDF), emtricitabine/tenofovir alafenamide (F/TAF), or generic F/TDF for PrEP at least once after January 2012 (N=660,313) were identified from the IQVIA longitudinal prescription non-adjudicated medical claims (LRxDx) prescription-claims database

IQVIA LRxDx prescription-claims database

The IQVIA LRxDx prescription-claims database is an open-source longitudinal prescription dataset, based on retail-pharmacy data

- For the period between July 2019 and December 2022 of the COVID-19 pandemic, new HIV diagnoses per 100 population by month was calculated for (1) all PWBP who were actively enrolled, and (2) for those with PrEP use that month (Figure 2). PrEP use was defined as having an active PrEP prescription or an adequate PrEP medication supply based on last PrEP prescription
- We analyzed changes in PrEP use and new HIV diagnoses among people prescribed PrEP using interrupted time-series analyses with segmented regression (Figure 3)
- A segmented regression model was used to estimate the pre- and post-COVID wave changes on HIV diagnoses and PrEP uptake (level) as well as the slope of the
- The statistical significance of PrEP level and slope were evaluated across time periods by regression models according to the formula:12

$$Y_t = \beta_0 + \beta_1 T + \beta_2 X_{1t} + \beta_3 T X_{1t} + \beta_4 X_{2t} + \beta_5 T X_{2t}$$

with the following parameters: T: the time in each period in the unit of months; X_t : a dummy variable indicating if the period is pre- (coded as 0) or post- (coded as 1) a specific time point; Y_t : the outcomes (PrEP uptake or HIV diagnoses) at time t; β_0 : intercept at study start (July 2019); β_1 : slope (of outcomes) before the first time point of stay-at-home restrictions; β_2 : intercept change after the first time point; 3₃: slope change during the period after the first time point of stay-at-home restrictions, but before the second wave of rise in hospitalizations; β_{Δ} : intercept change after the second time point; β_5 : slope change after the second time point

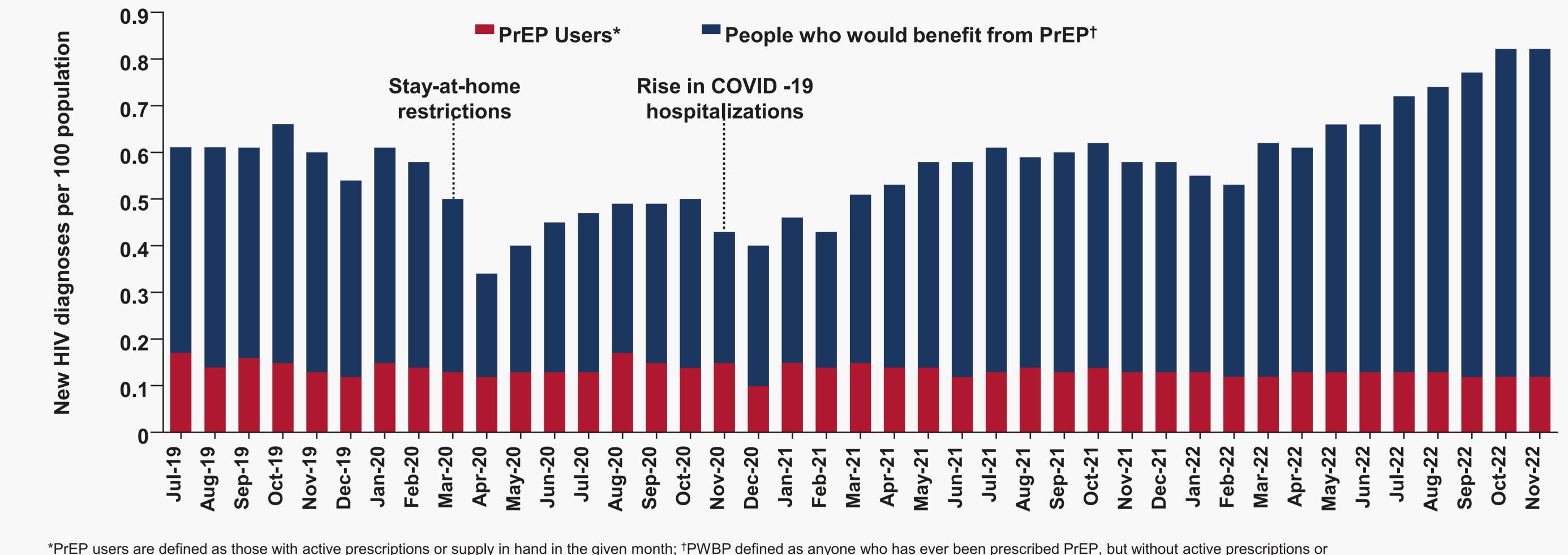
Results

New HIV diagnoses in PWBP (Figure 2)

- In PWBP, new HIV diagnoses decreased by 44% in April 2020 and 34% in December 2020 compared to January 2020 (pre-COVID-19 pandemic)
- From December 2020 onwards, an upward trend of new diagnoses was observed each month
- New HIV diagnoses returned to pre-pandemic levels by July 2021; there was a slight decrease between January–February 2022, remaining at a steady level through to May 2022
- An increase in new HIV diagnoses was observed beginning May 2022

Results (continued)

Figure 2. New HIV diagnoses among PWBP and among people with an active PrEP prescription in the US¹²



supply in hand in any given month. COVID-19, coronavirus disease 2019; PrEP, pre-exposure prophylaxis; PWBP, people who would benefit from PrEP.

Figure 3. Interrupted time series analysis with segmented regression on PrEP use and new HIV diagnoses among PrEP users in the US¹³

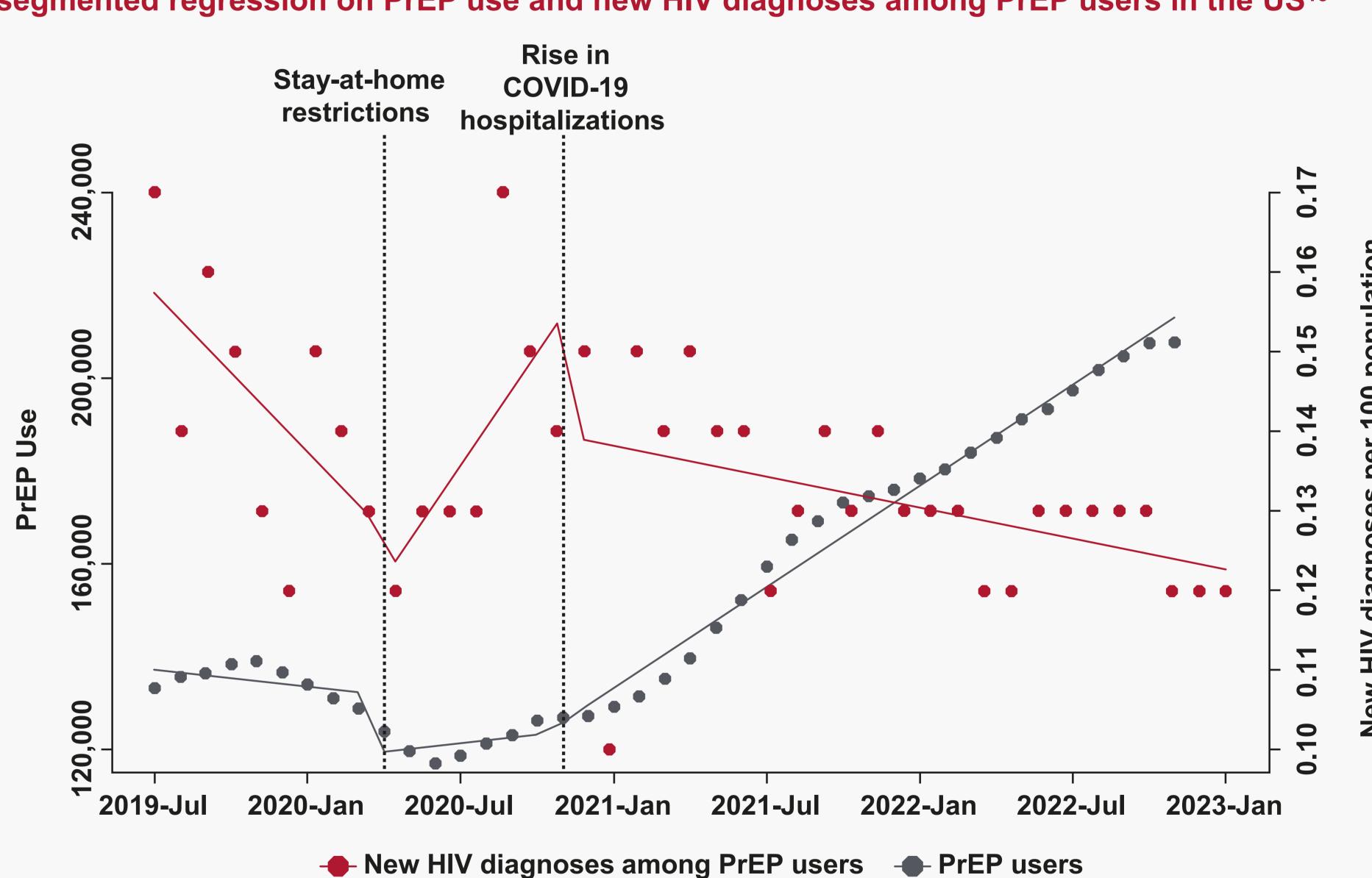
was 0.13 per 100 ppm

Changes in PrEP use (Figure 3)

- We observed a decrease in PrEP use at the start of the pandemic
- PrEP use increased steadily since November 2020, corresponding to a monthly increase of approximately 3600 persons (p<0.01)
- PrEP use has since continued to increase steadily

New HIV diagnoses among people prescribed PrEP (Figure 3)

- PrEP use declined at the start of the pandemic. Following this, a slow increase in new HIV diagnoses was observed around July 2020 (average monthly increase of 1257 persons, p>0.05). After November 2020, a steady increase in new HIV diagnoses was observed, corresponded to a monthly increase of approximately 3600 persons (p<0.01)
- Following the first COVID-19-infection wave, monthly new HIV diagnoses rates among people who were prescribed or had PrEP supplied increased by 5 infections per 100,000 persons per month (ppm); (period of slope change p<0.01). Following the introduction of stay-at-home restrictions, the magnitude of increase in new HIV diagnoses slowed (corresponding to an increase of 0.7 per 100,000 ppm; period of slope change p<0.01)



COVID-19, coronavirus disease 2019; PrEP, pre-exposure prophylaxis In the post-COVID-19 period (November 2020 onwards), new HIV diagnoses among these individuals

• After November 2020, new diagnoses in all PWBP were 0.60 per 100 ppm (data not shown in ITS analyses; shown descriptively in Figure 2)

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