

# Pre-exposure Prophylaxis (PrEP) Prescribing Increased in New York City Ambulatory Care Practices, 2012-2014

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Abstract P5

## Background

- Pre-exposure prophylaxis (PrEP) is a new HIV prevention option for those at highest risk of HIV, including men who have sex with men (MSM), transgender women, injection drug users, and HIV-negative partners in serodiscordant partnerships<sup>1</sup>
- In New York City (NYC), awareness of and support for PrEP has increased since FDA approval of oral PrEP (tenofovir/emtricitabine; TDF/FTC) in 2012<sup>2</sup>
- We examined time trends and associations with PrEP prescribing in NYC using electronic health record (EHR) data

## Objectives

Among NYC ambulatory care practices:

- Examine quarterly trends in PrEP prescription rates
- Identify associations between PrEP prescribing and practice-level factors

## Methods

**Study design:** Retrospective cohort of ambulatory practices using EHR

**Data source:**

- The Hub Population Health System<sup>3</sup> ("the Hub") of NYC's DOHMH Primary Care Information Project (PCIP), which connects to over 700 practices using the eClinicalWorks EHR vendor
- 18% of New Yorkers visited PCIP practices in 2013, including ≥5% of residents in each of 34 United Hospital Fund (UHF) neighborhoods

**Practice eligibility criteria:**

- Located in NYC
- Documented visits for ≥50 patients aged 13-100 years in 2012
- ≥80% and ≥20% EHR data completeness for diagnoses and prescriptions, respectively
- Reported data for all quarters, Q3 2012 – Q4 2014

**Data collection:**

- EHRs were queried for quarterly PrEP prescription rates
- PrEP prescription was defined as current TDF/FTC prescription in patients aged 13-100, in the absence of:
  - Diagnoses of HIV, hepatitis B, and/or HIV-related opportunistic infections (ICD-9 codes)
  - Prescription for any HIV medication other than TDF/FTC
- Additional practice-level data used:
  - Location (Manhattan vs. other)
  - Practice type [independent, hospital outpatient, community health center (CHC)]
  - Proportions of patients seen at each practice in 2013 were dichotomized and compared at the sample median (> vs. ≤ median) for each of the following characteristics:
    - Male
    - Assigned to infectious diseases (ID) specialist
    - Black/Hispanic
    - Living in high-poverty neighborhoods

**Data analysis:**

- PrEP prescription rate calculated per 100,000 patients seen
- Associations and trends over time assessed using negative binomial-distributed generalized estimating equations
- Factors included in multivariable model if significant (p<0.05) in an unadjusted model or when adjusted for a time interaction

## Results

**Practice Characteristics** (Table 1)

- 538 practices were eligible for this analysis; 19.5% (105/538) of practices had ever prescribed PrEP, Q3 2012 – Q4 2014

**Time Trend in NYC**

- Overall PrEP prescription rates increased from 10.1 per 100,000 in Q3 2012 to 155.4 per 100,000 in Q4 2014 (p<.0001) (Figure 1, "All NYC")
- Time (by quarter, continuous) was significantly associated with PrEP prescribing throughout NYC, although the magnitude of effect was greater in Manhattan compared to other boroughs (interaction p=.001) (Figure 1, Table 2)
- By Q4 2014, highest PrEP prescribing rates were concentrated in Lower Manhattan (e.g. Chelsea-Village) (Figure 2)

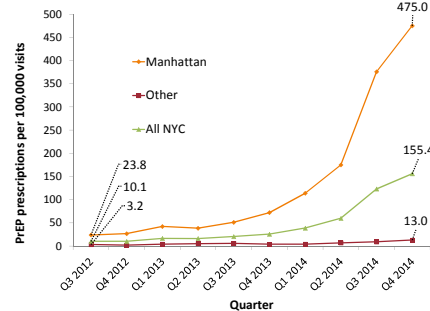
**Prescription by Practice-Level Factors** (Table 2)

- In addition to practice location, PrEP prescribing was also associated with the following characteristics:
  - CHCs vs. independent practices (p=0.02)
  - Practices that saw a higher proportion of patients who were male (p=0.006) or assigned to an infectious disease specialist (p<.0001)
  - Practices that saw a lower proportion of patients who were living in high-poverty neighborhoods (p<.001) and, marginally, who were Black/Hispanic (p=0.07)
  - The strengths of these associations did not change significantly over time (interaction p>0.05)

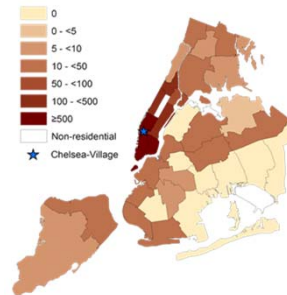
**Table 1.** Select characteristics of ambulatory care practice sample, overall and by ever prescribing PrEP, NYC, Q3 2012-Q4 2014

Characteristic	Total	Any PrEP prescription	
		n	% (row)
<b>Total number of practices</b>	538	105	19.5
<b>Practice type</b>			
Community health center	24	20	83.3
Hospital outpatient	4	3	75.0
Independent	510	82	16.1
<b>Practice neighborhood</b>			
Bronx	61	13	21.3
Brooklyn	165	19	11.5
Manhattan	128	56	43.8
Queens	178	13	7.3
Staten Island	12	4	33.3

**Figure 1.** PrEP prescriptions per 100,000 patients seen at 538 ambulatory care practices, by Borough, NYC, Q3 2012 - Q4 2014



**Figure 2.** PrEP prescriptions per 100,000 patients seen at 538 practices, by 34 UHF Neighborhoods, NYC, Q4 2014



**Table 2.** Multivariate associations with PrEP prescribing, NYC, Q3 2012-Q4 2014

Characteristic	Adjusted rate ratio (aRR)	95% CI
<b>Practice Type</b>		
CHC	2.7	1.1 – 6.3
Hospital	1.6	0.2 – 10.2
Independent	Referent	
<b>Higher % patients who are (&gt; vs. ≤ median):</b>		
Male	2.8	1.3 – 6.0
Assigned to ID specialist	11.8	4.8 – 29.1
Black/Hispanic	0.6	0.4 – 1.1
From high-poverty neighborhoods	0.2	0.1 – 0.5
<b>Location*</b>		
<b>Q3 2012</b>		
Manhattan	6.3	2.6 – 15.4
Other	Referent	
<b>Q4 2014</b>		
Manhattan	27.9	10.9 – 71.1
Other	Referent	
<b>Time (quarter)*</b>		
Manhattan	1.4	1.3 – 1.5
Other	1.1	1.0 – 1.2

\*Interaction term between location and quarter were statistically significant (p=.001). Adjusted ORs represent differences in effect across strata. CHC=community health center; ID=infectious diseases; Q=quarter

## Limitations

- PrEP prescriptions identified based on EHR data elements, which could be incomplete or inaccurate
- Data were practice-level and cross-sectional
  - Provider- and patient-level data not available for analysis (e.g., provider specialty, patient demographics)
  - Practices covered by the Hub may not represent all ambulatory care practices in NYC
- Time trends and patterns may not be generalizable to all NYC practices, or to practices outside of NYC

## Discussion

- Increase in PrEP prescribing may indicate early success of awareness and education campaigns for patients and providers
- Higher PrEP prescribing rates in CHCs and practices assigning patients to ID specialists suggest outreach may still be needed for general practitioners and those at independent practices
- Disparities seen by patient population and location highlight need to address access issues
- NYC DOHMH plans to continue using the Hub to monitor PrEP prescribing in NYC, adding patient demographics to analyses
- Efforts are being made to leverage existing data sources and develop new ones to track PrEP-related trends citywide
- NYC DOHMH continues to support several PrEP-related initiatives for patients and providers to help address presumed disparities in PrEP access (Figure 3)

**Figure 3.** Examples of recent NYC DOHMH materials for potential PrEP prescribers (left) and PrEP users (right)



## References

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