

## ABSTRACT

**Purpose:** Unique individuals starting HIV pre-exposure prophylaxis (PrEP) in the US since 2012 is estimated to be 140,000. This study describes the magnitude and distribution of active PrEP prescriptions, defined as  $\geq 1$  day of prescribed tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) for PrEP in a time period for unique individuals.

**Methods:** An algorithm to identify TDF/FTC for PrEP was applied to a national prescription database. PrEP prevalence, active prescriptions per population, was assessed. HIV diagnoses from 2016 were used as an epidemiological proxy for PrEP need. The ratio of PrEP prescriptions per new HIV diagnosis (PrEP-to-need ratio) was used to describe the distribution of prescriptions relative to epidemic need.

**Results:** A total of 61,298 unique individuals had active PrEP prescriptions in Q2 2017: 58,603 male and 2,695 female. Nationally, PrEP prevalence was 23/100,000 and the PrEP-to-need ratio was 1.5. Males had over ten times higher prevalence than females, and more than four times the PrEP-to-need ratio. Persons aged  $\leq 24$  had lower prevalence and PrEP-to-need ratios than other age groups. The Northeast region had the highest prevalence and the Midwest the lowest. The Northeast had the highest PrEP-to-need ratio, and the South the lowest. States with Medicaid expansion had higher prevalence than states without expansion and more than double the PrEP-to-need ratio.

**Conclusions:** Females, persons  $\leq 24$ , residents of the South, and residents of non-Medicaid expansion states received lower levels of prescription in comparison to epidemic need. The PrEP-to-need ratio may be useful for future assessments of health disparities. PrEP should continue to be brought to scale, and observed disparities addressed.

## METHODS

- Cross-sectional analysis describes the distribution of active PrEP prescriptions and PrEP-to-need ratios in the United States
- State-level data regarding PrEP prescriptions were obtained from a national health data company
- Active PrEP prescriptions were defined as  $\geq 1$  day of PrEP for unique persons in a quarter (April 1 - June 30<sup>th</sup>, 2017)
- Each prescription of TDF/FTC for PrEP based on a validated algorithm
- 2016 US Census data were used to obtain population estimates by state, age, and gender, poverty, percent uninsured, and concentrations of African-American and Hispanic populations
- PrEP clinic data were obtained from PrEP Locator
- HIV case surveillance data for 2016 were obtained from the CDC's Atlas Plus system
- PrEP-to-need ratio: the number of PrEP prescriptions divided by the number of new HIV diagnoses

## RESULTS

### By region

- 61,298 unique individuals had active PrEP prescriptions in the second quarter of 2017
- Nationally, PrEP prevalence was 23.2/100,000 and the PrEP-to-need ratio was 1.5
- The South had the lowest PrEP-to-need ratio and the Northeast had the highest

**Table 1. Distribution of PrEP prescriptions and PrEP need in the United States by geographic region, Q2 2017**

	Active PrEP prescriptions		New HIV Diagnoses		Ratio of new Prescriptions to New HIV Diagnoses, 2015
	N (%)	per 100,000 population	N (%)	Per 100,000 population	
Total	61332 (100)	23.0	39902 (100)	15.0	1.5
Midwest	10,518 (17.2)	18.7	5,136 (13.0)	9.0	2.1
Northeast	18,266 (29.8)	38.5	6,496 (16.5)	13.3	2.9
South	<b>18,503 (30.2)</b>	<b>18.8</b>	<b>20,348 (51.7)</b>	<b>20.9</b>	<b>0.9</b>
West	14,011 (22.9)	22.8	7,413 (18.8)	12.7	1.8

### By state-level demographic characteristics

- PrEP-to-need ratio was higher among states that had adopted Medicaid expansion than states without expansion
- States in the highest quartile of proportion of residents living in poverty had lower active prescription prevalence and PrEP-to-need ratio than states in the lowest quartile
- States in the highest quartile of proportion of residents uninsured had lower active prescription prevalence and PrEP-to-need ratio than states in the lowest quartile
- States with the highest quartiles of African American resident concentration had higher active prescription prevalence but lower PrEP-to-need ratios than states in the lowest quartile

## RESULTS

**Table 2. Distribution of PrEP prescriptions and PrEP need in the United States by state-level demographic characteristics, Q2 2017**

	Active PrEP prescriptions		New HIV Diagnoses		Ratio of new Prescriptions to New HIV Diagnoses, 2015
	N (%)	per 100,000 population	N (%)	per 100,000 population	
<b>Status of State Medicaid expansion</b>					
Adopted	44,389 (72.4)	27.0	21,567 (54.7)	13.1	2.1
Not adopted	<b>16,909 (27.6)</b>	<b>17.1</b>	<b>17,826 (45.3)</b>	<b>18.0</b>	<b>1.0</b>
<b>Poverty (by state)</b>					
Less than 12.2%	8,709 (14.2)	20	4,969 (12.5)	11.3	1.8
12.2% - <15.3%	11,128 (18.1)	20	4,310 (10.8)	7.5	2.6
15.3% - <17.5%	34,218 (55.8)	22	22,305 (55.9)	14.2	1.5
17.5% or more	<b>7,277 (11.9)</b>	<b>13</b>	<b>8,318 (20.8)</b>	<b>15.3</b>	<b>0.9</b>
<b>Percent Uninsured (by state)</b>					
Less than 9.2%	10,334 (16.8)	21	5,179 (13.0)	10.3	2.0
9.2% - <11.5%	21,733 (35.4)	27	8,366 (21.0)	10.2	2.6
11.5% - <14.6%	8,305 (13.5)	13	6,556 (16.4)	10.3	1.3
14.6% or more	<b>20,960 (34.2)</b>	<b>18</b>	<b>19,801 (49.6)</b>	<b>16.6</b>	<b>1.1</b>
<b>African American Concentration (by state)</b>					
Less than 3.2%	2,237 (3.6)	12	1,281 (3.2)	7.0	1.7
3.2% - <7.6%	17,070 (27.8)	24	7,887 (19.8)	10.9	2.2
7.6% - <15.6%	28,135 (45.9)	26	15,591 (39.1)	14.5	1.8
15.6% or more	<b>13,890 (22.6)</b>	<b>20</b>	<b>15,143 (38.0)</b>	<b>22.1</b>	<b>0.9</b>

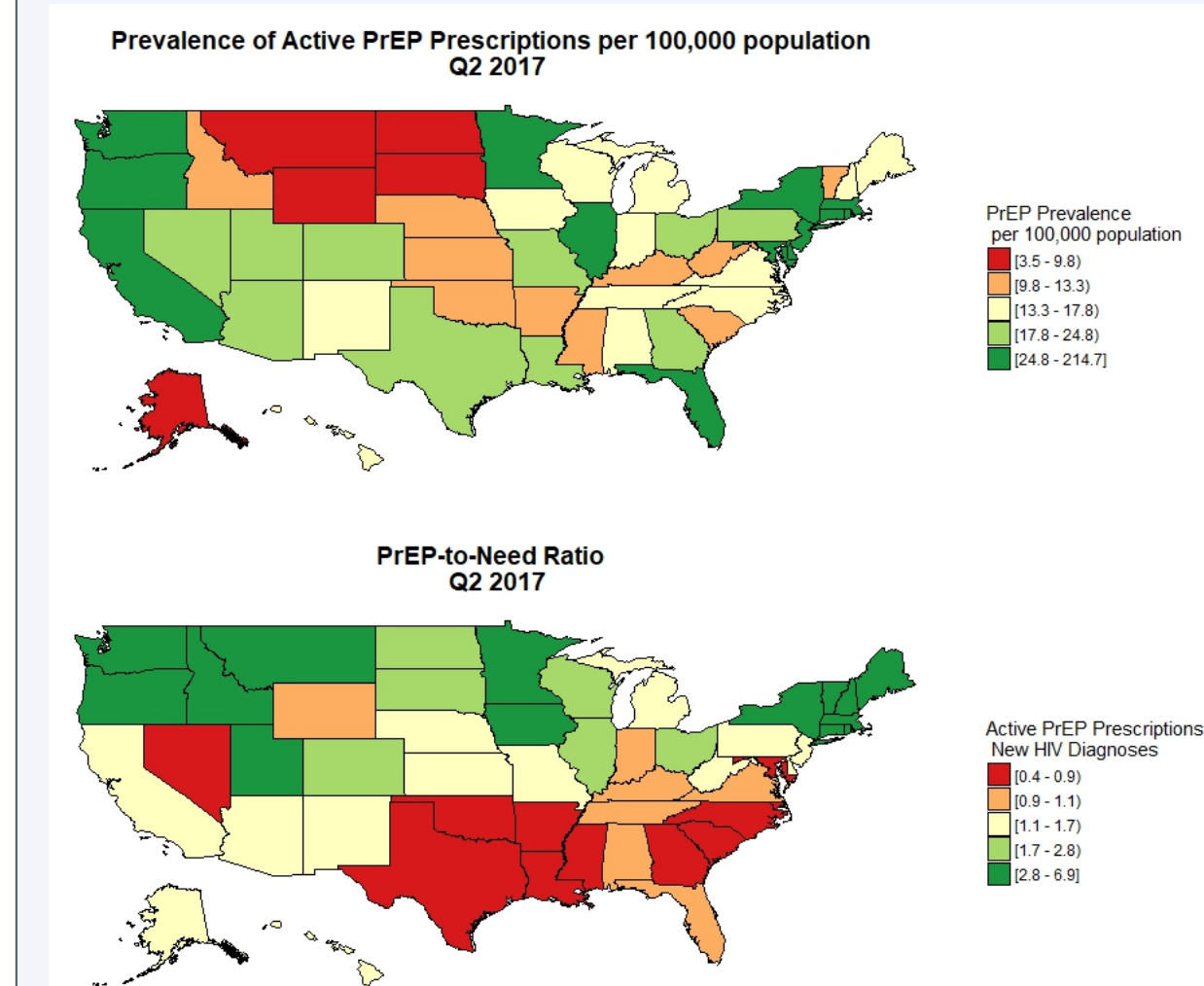
## RESULTS

### By gender, age, and state

- Females had lower levels of prescription prevalence and PrEP-to-need ratios than males across all regions and age groups
- Active prescription prevalence and PrEP-to-need ratios were lower among persons aged  $\leq 24$  and  $\geq 55$
- Active prescription prevalence ranged from 3.5/100,000 to 64/100,000, and PrEP-to-need ratios ranged from 0.4 to 6.9
- The lowest levels of active prescription prevalence were in the center of the country
- Lowest levels of PrEP-to-need ratio were in Southern states

**Table 3. Distribution of PrEP prescriptions and PrEP need in the United States by gender, Q2 2017**

	Active PrEP prescriptions		New HIV Diagnoses		Ratio of new Prescriptions to New HIV Diagnoses, 2015
	N (%)	per 100,000 population	N (%)	Per 100,000 population	
Females	<b>2,695 (100)</b>	<b>2.0</b>	<b>7,494 (100)</b>	<b>5.5</b>	<b>0.4</b>
Males	58,637 (100)	45.0	32,408 (100)	24.9	1.8



**Figure 1. Prevalence of active PrEP prescriptions per 100,000 population and PrEP-to-need ratio, by state, Q2 2017**

## CONCLUSIONS

- This study is the first to present the number of persons actively engaged in PrEP care in a quarter
- The national quarterly estimate of active PrEP prescriptions was 61,000 in the second quarter of 2017, a figure lower than the previous estimate of 120,000 cumulative PrEP starts
- The differences in active PrEP prescriptions presented here versus cumulative PrEP starts is expected, as individuals may discontinue PrEP care
- The prevalence of PrEP prescriptions was nearly an order of magnitude lower for women than for men.
- The PrEP-to-need ratio for the South that is half of the next lowest region
- PrEP-to-need ratio lower among youth
- States in highest quartile of the percent of the population living in poverty, percent uninsured, and percent of residents being African American had lower PrEP-to-need ratios
- This study estimates that only 5% of the 1.2 million persons indicated for PrEP are potentially receiving PrEP protection, demonstrating a need to scale-up PrEP among all groups and in all regions

## REFERENCES

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