

# HIV Incidence, Oral, and LAI PrEP use Among Young Adults with Serious Mental Illness in the U.S.

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## Background

- Serious mental illnesses (SMI) like bipolar disorder and schizophrenia are associated with elevated HIV incidence<sup>1</sup> due to healthcare access disparities,<sup>2</sup> and HIV contributes to early mortality in SMI<sup>3</sup>
- A majority (>50%) of new HIV diagnoses in the U.S. are made among adolescents and young adults (AYA), those between ages 14-34 years old<sup>4</sup>
- The median age of onset for bipolar disorder is 33 (22-49) and 25 (20-34) years for schizophrenia,<sup>5</sup> coinciding with population trends in new HIV diagnoses
- AYA experiencing a first-episode (early) of psychosis are 3.6-7.5x more likely to acquire HIV, increasing to 11x if diagnosed with a comorbid substance use disorder,<sup>6</sup> and those with early bipolar disorder are 3.9x more likely to acquire HIV compared to healthy peers<sup>7</sup>
- AYA with early SMI are less likely to use HIV prevention measures (e.g. condoms)<sup>8,9</sup>
- The symptoms of SMI can elevate HIV risk, compounding with the developmentally characteristic sexual exploration and experimentation with substances of young adulthood
- Antiretroviral HIV pre-exposure prophylaxis (PrEP) is up to 99% effective<sup>10</sup> with oral and long-acting injectable (LAI) regimens, but PrEP use among AYA is poorly understood
- Between 2013-2018, < 1% of people with bipolar disorder and schizophrenia were prescribed PrEP<sup>11</sup>
- Very little research in the U.S. has focused HIV diagnosis and PrEP use among young adults with early psychosis, a critical group for expansion of HIV prevention interventions

## Methods

- Retrospective study using the MarketScan® commercial claims database of fully-adjudicated medical and pharmacy claims for commercially insured adults & dependents (children up to age 26)
- Data years 2012-2023, cohort entry allowed at any year
- **Inclusion Criteria:**
  - Two outpatient claims on different dates or one inpatient claim for schizophrenia or schizoaffective disorder diagnosis code (bipolar/depressed type) or bipolar disorder. **Index date:** date of second claim
  - Age 14-35 at cohort entry
  - At least 6-months of continuous medical and prescription drug coverage prior to index date
- **Exclusion Criteria:**
  - Two outpatient claims or one inpatient claim for an HIV diagnosis code prior to index date
  - >28 days of HIV treatment regimen; single 28-day prescription assumed post-exposure prophylaxis (PEP) prior to index date and was not exclusionary
  - Hepatitis B diagnosis as oral PrEP regimens also approved for HBV treatment, a confounding effect
- **Primary Outcomes:**
  - **New HIV diagnosis:** Two outpatient claims or one inpatient claim with HIV diagnosis code and/or two >30 days of antiretrovirals for HIV treatment within 60-days of each other (excluded PEP)
  - **PrEP Prescription (≥3mo):** At least 90 days of oral PrEP or at least 2 LAI PrEP injections (cabotegravir) without concurrent prescription of a third antiretroviral
- **Covariates:** **Demographic:** Marital status, sex, age, relation to primary policy holder; **Clinical:** STI encounters, follow-up outpatient care (psychiatry, primary care [OB/GYN included with primary care for females]), psychiatric hospitalizations, use of LAI antipsychotics/anti-cravings, substance use disorders

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## Results

- 181,587 AYA; 157,353 with BD and 24,234 with schizophrenia (Table 1)
- Mean age of 23.9 years old, mean cohort follow-up duration of 3.02 years

**Table 1. Sample demographics (N = 181,587).**

Diagnosis	Sample N (%)	HIV (n=227) N (%)	PrEP 3mo. (n=782) N (%)
Bipolar Disorder	157,353 (86.7)	187 (82.4)	706 (90.3)
Schizophrenia	24,234 (13.4)	40 (17.6)	76 (9.7)
<b>Sex</b>			
Female	109,375 (60.2)	45 (19.8)	713 (91.2)
Male	72,212 (39.8)	182 (80.2)	69 (8.8)
<b>Age (at cohort entry)</b>			
14	6,297 (3.5)	3 (1.3)	15 (1.9)
15-19	44,910 (24.7)	54 (23.8)	139 (17.8)
20-24	51,683 (28.5)	81 (35.7)	227 (29.0)
25-29	36,893 (20.3)	36 (15.9)	212 (27.1)
30-35	41,804 (23.0)	53 (23.3)	189 (24.2)
<b>Relation to Policyholder</b>			
Self (employee)	64,841 (35.7)	89 (39.2)	430 (55.0)
Spouse	19,458 (10.7)	11 (4.8)	34 (4.3)
Child/Other Dependent	97,288 (53.6)	127 (55.9)	318 (40.7)
<b>High Risk Sex Behav. Claim</b>			
No	178,823 (98.5)	210 (92.5)	666 (85.2)
Yes	2,764 (1.5)	17 (7.5)	116 (14.8)
<b>STI Encounters/Yr</b>			
0	171,867 (94.7)	175 (77.1)	546 (69.8)
1	4,621 (2.5)	22 (9.7)	79 (10.1)
2	3,646 (2.0)	18 (7.9)	104 (13.3)
3	1,453 (0.8)	12 (5.3)	53 (6.8)
<b>Psychiatry Outpt. Visits/Yr</b>			
0	79,236 (43.6)	100 (44.1)	266 (34.0)
<2	39,978 (22.0)	76 (33.5)	240 (30.7)
2-4	22,935 (12.6)	25 (11.0)	108 (13.8)
>4	39,438 (21.7)	26 (11.5)	168 (21.5)
<b>Primary Care Outpt. Visits/Yr</b>			
0	44,148 (24.3)	53 (23.3)	86 (11.0)
<2	61,280 (33.8)	115 (50.7)	262 (33.5)
2-4	37,210 (20.5)	37 (16.3)	214 (27.4)
>4	38,949 (21.5)	22 (9.7)	220 (28.1)
<b>Psych. Hospitalizations/Yr</b>			
0	137,614 (75.8)	147 (64.8)	612 (78.3)
1	11,963 (6.6)	41 (18.1)	76 (9.7)
2	8,447 (4.6)	13 (5.7)	41 (5.2)
3	23,563 (13.0)	26 (11.5)	53 (6.8)
<b>Stimulant Use Disorder</b>			
No	170,912 (94.1)	190 (83.7)	695 (88.9)
Yes	10,675 (5.9)	37 (16.3)	87 (11.1)
<b>Opioid Use Disorder</b>			
No	172,124 (94.8)	208 (91.6)	742 (94.9)
Yes	9,463 (5.2)	19 (8.4)	40 (5.1)
<b>Cannabis Use Disorder</b>			
No	148,644 (81.9)	154 (67.8)	625 (79.9)
Yes	32,943 (18.1)	73 (32.2)	157 (20.1)
<b>Alcohol Use Disorder</b>			
No	157,409 (86.7)	171 (75.3)	607 (77.6)
Yes	24,178 (13.3)	56 (24.7)	175 (22.4)

† Schizophrenia includes schizoaffective disorder (both types)

- 227 new HIV diagnoses:
  - 187 among AYA with bipolar disorder and 40 among AYA with schizophrenia
- Six AYA were prescribed LAI PrEP (cabotegravir), all were diagnosed with bipolar disorder
  - Median of 4 injections (max: 8)
- 35 AYA acquired HIV after stopping PrEP, representing 26 with bipolar disorder, 9 with schizophrenia

**Table 2. Multivariable logistic regression results.**

Diagnosis (Bipolar)	HIV Diagnosis aOR (95%CI)	p	PrEP Prescription (3mo.) aOR (95%CI)	p
Schizophrenia	0.80 (0.55,1.15)	.23	0.47 (0.36,0.61)	<.001
<b>Sex (Female)</b>				
Male	6.13 (4.37,8.58)	<.001	24.0 (18.7,31.0)	<.001
<b>Age (14)</b>				
15-19	2.44 (0.76,7.86)	.13	1.00 (0.58,1.71)	.99
20-24	4.05 (1.25,13.1)	.02	1.26 (0.73,2.17)	.41
25-29	2.68 (0.75,9.64)	.13	0.91 (0.50,1.65)	.76
30-35	3.34 (0.93,12.0)	.06	0.62 (0.34,1.14)	.12
<b>Relation to Policyholder (Self)</b>				
Spouse	0.61 (0.32,1.16)	.13	0.57 (0.39,0.81)	.002
Child/Other Dependent	0.77 (0.47,1.27)	.31	0.46 (0.35,0.61)	<.001
<b>High Risk Sex Behav. Claim (No)</b>				
STI Encounters/Yr (0)	4.17 (2.49,7.00)	<.001	9.95 (7.87,12.6)	<.001
1	3.72 (2.33,5.93)	<.001	3.97 (3.05,5.16)	<.001
2	4.22 (2.55,6.99)	<.001	7.59 (5.98,9.62)	<.001
3	9.61 (5.22,17.7)	<.001	10.4 (7.47,14.4)	<.001
<b>Psychiatry Outpt. Visits/Yr (0)</b>				
<2	0.93 (0.67,1.29)	.68	1.53 (1.26,1.86)	<.001
2-4	0.66 (0.42,1.04)	.07	1.52 (1.20,1.92)	.001
>4	0.50 (0.32,0.78)	.002	1.69 (1.38,2.08)	<.001
<b>Primary Care Outpt. Visits/Yr (0)</b>				
<2	0.92 (0.64,1.32)	.66	1.32 (1.01,1.71)	.04
2-4	0.53 (0.34,0.83)	.006	1.99 (1.53,2.60)	<.001
>4	0.36 (0.22,0.61)	<.001	2.49 (1.91,3.24)	<.001
<b>Psych. Hospitalizations/Yr (0)</b>				
1	2.02 (1.37,2.98)	<.001	1.06 (0.81,1.38)	.69
2	0.99 (0.55,1.81)	.99	0.94 (0.67,1.32)	.71
3	1.02 (0.64,1.64)	.92	0.60 (0.44,0.82)	.002
<b>Stimulant Use Disorder (no)</b>				
Opioid Use Disorder (no)	1.80 (1.18,2.75)	.007	1.60 (1.21,2.12)	.001
Cannabis Use Disorder (no)	0.79 (0.46,1.33)	.37	0.56 (0.39,0.80)	.001
Alcohol Use Disorder (no)	1.16 (0.83,1.63)	.38	0.66 (0.54,0.82)	<.001
Alcohol Use Disorder (no)	1.11 (0.79,1.57)	.56	1.19 (0.97,1.45)	.09

Reference categories in parentheses. Analyses control for duration of time in cohort and year of cohort entry.

## Conclusions & Future Directions

- Early psychosis is associated with increased incidence of HIV among AYA but PrEP use has not been examined
- Using a conservative approach, we identified very low PrEP prescription
- Stimulant use disorder is a particularly important diagnosis to prioritize for intervention, previous work with similar data finding < 1% using PrEP<sup>12</sup>
- These data serve as a foundation for larger implementation studies to integrate HIV prevention with PrEP within early psychosis care
- Further research is needed to understand gaps in PrEP care for AYA with early psychosis including in a larger sample with all insurers

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