Characterizing Engagement in Care and STI Screening Among DC Cohort Participants with HIV and Mpox: A Nested Case-Control Study

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THE DC COHORT
Advancing HIV Care and Treatment in the District of Columbia

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Background

- Nationwide, 41% of mpox cases have been among people with HIV (PWH)[1] but the association between mpox and HIV remains unclear.
- The overrepresentation of PWH among mpox cases could be due to:
  - Increased encounters with the healthcare system leading to surveillance bias[2]
  - Relationship between STI's and mpox[2]

Objective: Evaluate whether engagement in care and STI screening is associated with having an mpox diagnosis among a cohort of PWH.

Data Source

The **DC Cohort** is a longitudinal cohort of PWH receiving care in Washington, DC.[3]

- Enrollment began in 2011 and there are currently over 12,000 PWH enrolled.
- Data on demographics, medications, diagnoses, labs, etc. are extracted from electronic health records from 11 of 14 different HIV care clinics.

Inclusion Criteria

(1) DC Cohort participant;
(2) Identify as male;
(3) At least 18 years or old;
(4) Evidence of at least one incidence of HIV care between 2015 and 2023 (Defined as at least one HIV-associated lab or HIV care visit)

Methods: Nested Case-Control Study

Cases (n=66)
Eligible participants diagnosed with mpox during 2022 (ICD10 code or provider identified)

Potential Controls (n=5888)
Eligible participants at risk for mpox at time of case's diagnosis

1 Case : 5 Controls

Incidence Density Sampling
Matches cases to controls using dynamic risk set at time of case occurrence
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Matching Criteria
Age (± 5 yrs.) *and* Site of HIV Care

Statistical Analysis

Independent Variable:

(1) Engagement in Care: having at least one HIV-associated lab or HIV-related encounter in the year prior to 10 days before the mpox diagnosis

(2) STI Screening: having at least one screen for either chlamydia, gonorrhea, or syphilis in the year prior to 10 days before the mpox diagnosis

Outcome Variable:

(1) Mpox Diagnosis: reported by provider or ICD code

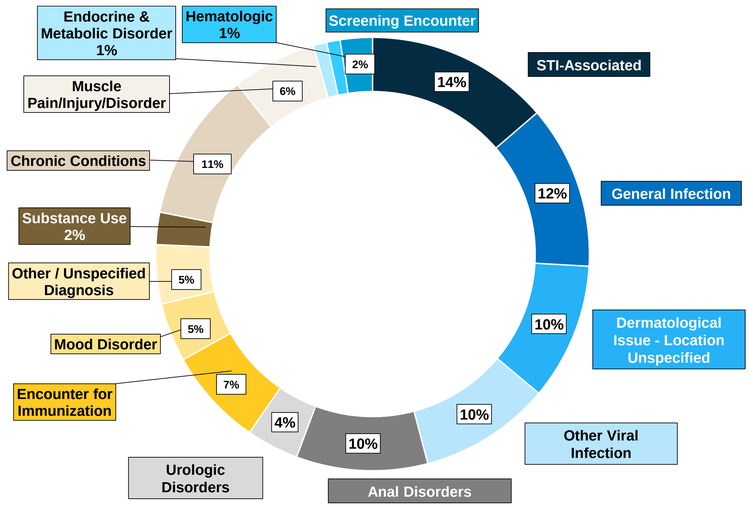
- Baseline differences were analyzed with **Chi-square tests** and **Wilcoxon Rank Sum tests**
- Unadjusted and adjusted **conditional logistic regression models** were used to calculate OR (95% CI)

Results

Table 1. Clinical and Demographic Characteristics of Case and Control Study Participants by Mpox Status, DC Cohort (N=358)

	Overall (N = 358) N (%)	Mpox Diagnosis (n = 66) N (%)	No Mpox Diagnosis (n = 292) N (%)	p-Value
Age in Years, Median (IQR)	42 (37, 50)	41 (36, 48)	42 (37,50)	0.38
Years since HIV Diagnosis, Median (IQR)	14 (9, 18)	14 (10, 17)	14 (9, 18)	0.79
Cohort Enrollment Years, Median (IQR)	6 (3, 9)	6 (4, 9)	6 (3, 8)	0.49
Ethnicity and race				0.39
Non-Hispanic White	47 (13.3)	6 (9.1)	41 (14.0)	
Non-Hispanic Black	251 (70.1)	45 (68.2)	206 (70.6)	
Hispanic	37 (10.3)	10 (15.2)	27 (9.3)	
Other/Unknown	23 (6.4)	5 (7.6)	18 (6.2)	
Insurance Status				0.51
Public	130 (36.3))	28 (42.4)	102 (34.9)	
Private	183 (51.1)	31 (47.0)	152 (52.1)	
Other/Unknown	45 (12.6)	7 (10.6)	38 (13.0)	
Site Type				0.77
Hospital	103 (28.8)	18 (27.3)	85 (29.1)	
Community	255 (71.2)	48 (72.7)	207 (70.9)	
Mode of HIV Transmission				0.13
Sexual	291 (81.3)	58 (87.9)	233 (79.8)	
Non-Sexual	67 (18.7)	8 (12.1)	59 (20.2)	
Alcohol Use Disorder	51 (14.3)	6 (9.1)	45 (15.4)	0.18
Substance Use Disorder	126 (35.2)	25 (37.9)	101 (34.6)	0.61
Low Viral Load [≤ 200 copies/mL]	211 (89.0)	42 (84.0)	169 (90.4)	0.20
Low CD4 [< 500 cells/uL]	76 (21.2)	21 (31.8)	55 (18.8)	0.02
STI Screening	179 (50.0)	39 (59.1)	140 (48.0)	0.10
History of STI Diagnosis	165 (46.1)	44 (66.7)	121 (41.4)	0.0002
Engagement in HIV-Associated Care	118 (33.0)	26 (39.4)	92 (31.5)	0.22

Figure 1. Unique ICD10 (n = 208) Codes for Participant Cases Recorded 6 Weeks Prior to Mpox Diagnosis, by Diagnosis Category, N=208



Results

Table 2. Conditional Logistic Regression Models of Mpox Diagnosis

	Unadjusted OR (95% CI)	Model #1 aOR (95% CI)[a]	Model #2 aOR (95% CI)[b]
HIV RNA ≤ 200 copies/mL	0.60 (0.23, 1.57)	-	-
CD4 < 500 copies/μL	2.09 (1.15, 3.80)	2.59 (1.30, 5.14)	2.60 (1.33, 5.09)
History of STI Diagnosis	3.09 (1.71, 5.58)	3.60 (1.80, 7.23)	-
STI Screening	1.85 (0.96, 3.53)	-	1.56 (0.72, 3.37)
Engagement in Care	1.50 (0.82, 2.72)	1.31 (0.67, 2.58)	1.29 (0.64, 2.61)

a: Adjusted for Engagement in care in the past 12 months, history of STI diagnosis, CD4 ≥ 500 copies/mL, HIV transmission risk factor, race/ethnicity, years since DC Cohort enrollment, years since HIV diagnosis.
b: Adjusted for Engagement in care in the past 12 months, STI screening in past 12 months, CD4 ≥ 500 copies/mL, HIV transmission risk factor, race/ethnicity, years since DC Cohort enrollment, years since HIV diagnosis.

Conclusion

- Engagement in Care and STI screening are not associated with having an mpox diagnosis.
- Symptoms related to mpox may appear as STI-associated, general infection, or unspecified dermatological issues in the medical record.
- The odds of having a prior STI diagnosis among mpox cases was 3.60 times the odds among controls.
- The odds of having a low CD4 count among mpox cases is 2.6 times the odds among controls.

- **Our results dispute the speculation that the high prevalence of mpox among PWH is due to surveillance bias and support theory that low CD4 increases the risk for mpox among PWH.**

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References

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[2]Girometti N et. al. *J Int AIDS Soc.* **2022**
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