Comparing Behavioral and Socio-Structural Exposures for Women's HIV Prevention in the Urban South

941

Abigail LeCates[1], Mingya Yang[2], Chad Robichaux[3], Mariam Assi[4], **Meredith Lora**[5,6], Megan Schwinne[3]

[1]Department of Medicine, School of Medicine, Emory University, Atlanta, GA, U.S., [2]Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, GA, U.S., [3]Department of Biomedical Informatics, School of Medicine, Emory University, Atlanta, GA, U.S., [4]Division of Infectious Diseases, Department of Medicine, School of Medicine, Emory University, Atlanta, GA , U.S., [5] Ponce de Leon Center, Grady Health System, Atlanta, GA, U.S., [6]Division of General Internal Medicine, Department of Medicine, School of Medicine, Emory University, Atlanta, GA

BACKGROUND

- **Cisgender women** account for a **growing proportion** of **new HIV diagnoses**
- Many women **lack identifiable behavioral risk factors** before diagnosis, affecting PrEP risk assessment and uptake.

STUDY OBJECTIVE

To quantify the impact of behavioral and socio-structural risk factors on HIV risk among women at Grady Health System (GHS) in Atlanta, Georgia.

METHODS

- **Setting:** Grady Health System
- **Data Sources:** EHR data (2012-2022)
- **Study Population:** Cisgender women >= 18 years **Outcome:** New HIV diagnosis during study period
- **Analysis**: Multivariable logistic regression
- **Population impact:** PAFs estimated from adjusted model with 500 bootstrap replications

Key exposures measured and definitions
Sexually Transmitted Infections (STIs)
Mental Health Comorbidities: Defined by ICD-10 code
Substance Use Disorders: by ICD-10 code
Social/ Structural Risk: SDoH Diagnoses by ICD-10 codes, Above median Social Vulnerability Index (SV)
Healthcare Engagement: Completed encounters in EHR
Network Factors: Residence above median HIV Incidence Zip (Atlanta EMA)

RESULTS

- **Cohort Characteristics:** Of 333,263 women, 617(0.19%) were newly diagnosed with HIV. People with HIV (PWH) were predominately Black (89%) with mean age 41 years.
- Several exposures strongly associated with HIV, including **living in a high incidence zip code** (aOR 4.5), **schizophrenia** (aOR 4.1), substance use disorder (aOR 3.8), bipolar disorder (aOR 3.4), and **syphilis** (aOR 8.7, rare exposure).

In a large cohort of women in Atlanta, we compared behavioral and socio-structural risk factors for HIV. STIs were strongly associated with individual HIV risk but were uncommon; socio-structural factors were prevalent and accounted for greater estimated population-level impact.

Figure 1. Adjusted Odds Ratios of Individual-Level Risk Factors

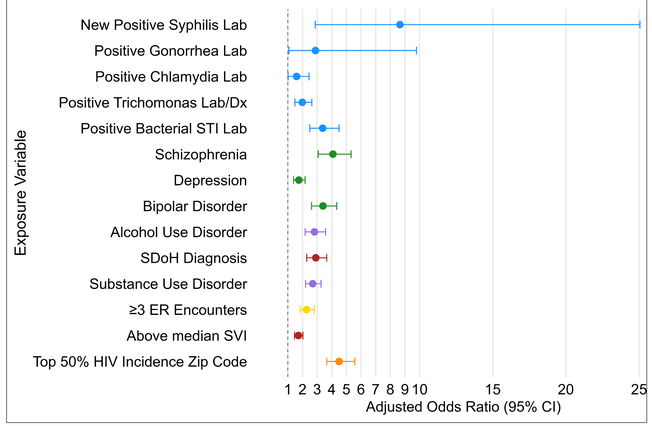


Figure 2. Population Attributable Fractions for Exposure Variables

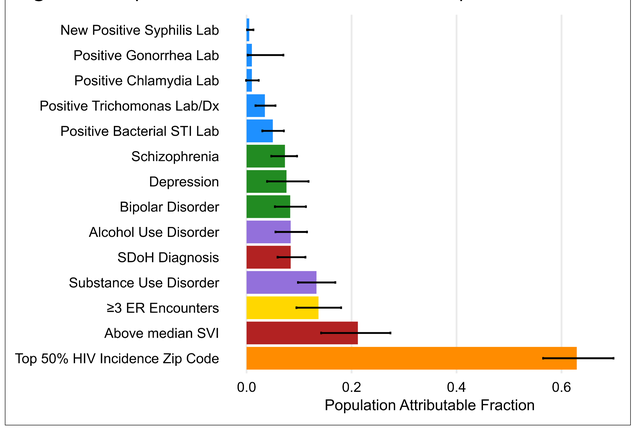


Table 1. Prevalence, Individual, and Population Impact of Key Exposures Among PWH v. PWoH

	PWH (n (%))	PWoH (n (%))	Adj OR (95% CI)	PAF (95% CI)
New Positive Syphilis Lab	8 (1.3%)	201 (0.06%)	8.7 (2.9, 25.1)	0.5% (0.1-1.3)
Positive Gonorrhea Lab	24 (3.9%)	1,804 (0.54%)	3.2 (1.9, 5.1)	1.0% (0.2–7.0)
Positive Chlamydia Lab	32 (5.2%)	5,301 (1.6%)	1.6 (1.0, 2.5)	1.0% (-0.1-2.3)
Positive Trichomonas Lab/Dx	67 (11%)	12,128 (3.7%)	2.0 (1.5, 2.6)	3.5% (1.7-5.5)
Positive Bacterial STI Lab	58 (9.4%)	7,296 (2.2%)	3.1 (2.2, 4.4)	5.0% (3.0–7.1)
Schizophrenia	61 (9.9%)	8,419 (2.5%)	4.1 (3.2, 5.3)	7.3% (4.7–9.6)
Depression	105 (17%)	36,669 (11%)	1.8 (1.4, 2.1)	7.6% (3.9-11.8)
Bipolar Disorder	74 (12%)	12,450 (3.7%)	3.4 (2.6, 4.3)	8.3% (5.4–11.3)
Substance Use Disorder	173 (28%)	30,060 (9.0%)	3.8 (3.1, 4.6)	13.3% (9.8–16.9)
Alcohol Use Disorder	79 (13%)	16,834 (5.1%)	2.8 (2.2, 3.6)	8.4% (5.5–11.5)
SDoH Diagnosis	82 (13%)	15,956 (4.8%)	2.9 (2.3, 3.7)	8.4% (5.9–11.2)
>=3 ER Encounters	188 (30%)	41,189 (12%)	2.3 (1.9, 2.8)	13.7% (9.5–18.0)
Top 50% SVI	288 (47%)	118,076 (36%)	1.7 (1.5, 2.0)	21.2% (14.2–27.4)
Top 50% HIV Incidence Zip Code	510 (83%)	160,984 (48%)	4.5 (3.7, 5.6)	62.9% (56.5–69.9)

ACKNOWLEDGEMENTS

- Supported by the National Center for Advancing Translation Sciences of the National Institutes of Health under Award Number UL1TR002378. Additionally, supported by Emory Medical Care Foundation under Award Number 10-0002. `
- Grady Health System

Category: Healthcare Engagement; Lab confirmed STI; Mental Health; Network Factor; Socio-Structural Risk; Substance Use

RESULTS, CONTINUED:

- **Laboratory-confirmed STIs** and **frequent ER visits** were also associated with increased HIV risk.
- **STIs** were **uncommon.**
- **Socio-structural factors were prevalent**; 83% of PWH lived in high-incidence zip codes, and 47% had above median SVIs.
- **Population attributable fractions demonstrated that living in a high-incidence zip code accounted for 63% of HIV risk** and elevated SVI for 21%, compared to 13% for substance use disorder and 5% for bacterial STI.

LIMITATIONS AND INTERPRETATION

- PAFs assume causality and may overestimate preventable impact.
- ZIP-code incidence and SVI reflect contextual risk, not direct causation.

CONCLUSIONS

- In this large Atlanta-based cohort, individual behavioral risk factors were rarely linked to HIV diagnoses, while common socio-structural factors significantly influenced population risk.
- Incorporating the socio-structural context into individual PrEP decision-making may enhance the identification of women who could benefit from prevention, especially in high-incidence settings.

Plain language summary:
Among women diagnosed with HIV in Atlanta, factors like the neighborhoods they lived in were more common and contributed more to overall risk than individual behaviors.