

# Behaviors Associated with Ongoing Transmission Risk among Recently Diagnosed and Chronically-Infected Persons Living with HIV in Washington, DC

Wilbourn BC<sup>1</sup>, Greenberg AE<sup>1</sup>, Kassaye S<sup>2</sup>, Parenti D<sup>3</sup>, Serlin M<sup>4</sup>, Goldstein D<sup>5</sup>, Hardy D<sup>5</sup>, Teferi G<sup>6</sup>, Hebou A<sup>7</sup>, Benator D<sup>8</sup>, Kumar P<sup>2</sup>, Fernandez, R<sup>9</sup>, Bordon J<sup>10</sup>, Castel AD<sup>1</sup> on behalf of the DC Cohort Executive Committee

<sup>1</sup>Department of Epidemiology and Biostatistics, George Washington University Milken Institute School of Public Health, Washington, DC, USA; <sup>2</sup>Georgetown University, Washington, DC, USA; <sup>3</sup>George Washington University Medical Faculty Associates, Washington, DC, USA; <sup>4</sup>Family and Medical Counseling Service, Washington, DC, USA; <sup>5</sup>Whitman-Walker Health, Washington, DC, USA; <sup>6</sup>Unity Health Care, Washington, DC, USA; <sup>7</sup>MetroHealth, Washington, DC, USA; <sup>8</sup>Veterans Affairs Medical Center, Washington, DC USA; <sup>9</sup>La Clínica Del Pueblo, Washington, DC USA; <sup>10</sup>Providence Hospital, Washington, DC USA

## Background

- Washington, D.C. has a generalized HIV epidemic with an HIV prevalence of 1.9% (12,964 people living with HIV, PLWH).
- In 2016, men who have sex with men (MSM) and heterosexual men and women (HETM&W) accounted for 45% and 28% of the 347 new diagnoses, respectively.
- 37% of PLWH in DC were not virally suppressed at the end of 2016, and may be at risk of transmitting infection to others.
- There is conflicting evidence as to whether PLWH curb their high-risk behaviors once diagnosed.
- Understanding behavioral factors that contribute to new infections could inform several initiatives aiming to end the epidemic in D.C.

## Objective

- To understand which risk behaviors may be contributing to ongoing transmission risk among a cohort of PLWH who were either newly diagnosed or chronically-infected and viremic.

## Methods

### DC Cohort Study

- A longitudinal observational cohort study of persons living with HIV receiving care at 15 clinical sites in DC.

### Molecular Epidemiology Sub-Study

- The objective of the sub-study is to characterize HIV transmission patterns in Washington, D.C.
- This analysis focused on data from a cross-sectional risk behavioral survey conducted as part of the sub-study.
- Recently diagnosed (past 12 months) and chronically-infected viremic (VL >1500 copies/ml) DC Cohort participants were eligible to participate.

### Statistical methods

- Male participants who identified as gay or bisexual were categorized as MSM; male and female participants who identified as heterosexual were categorized as HETM&W.
- Behaviors that may have led to HIV infection were assessed for recently diagnosed participants; behaviors that may contribute to secondary transmission were assessed for chronically-infected viremic participants.
- Calculated descriptive statistics and conducted univariate analyses using chi-square and Wilcoxon rank sum tests.

## Results

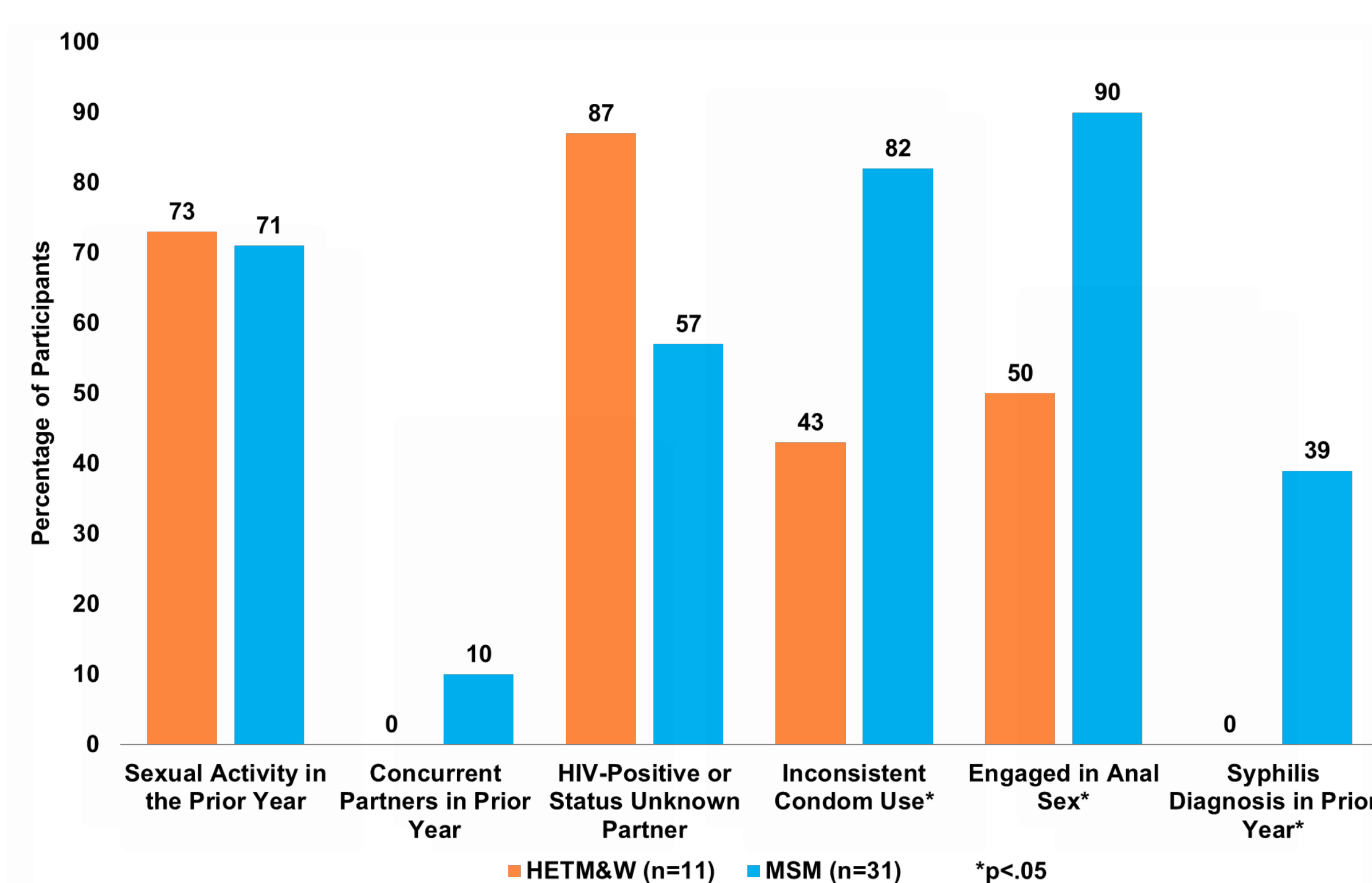
Table 1. Comparison of Demographics and Clinical Outcomes by Recency of Infection (N=160)

Demographic	Overall (N=160) <sup>1</sup>	Recent 45 (28%) <sup>1</sup>	Chronic Viremic 115 (72%) <sup>1</sup>	p-value <sup>2</sup>
Median Age (IQR)	46 (34, 54)	34 (28, 45)	50 (37, 56)	<.0001
Gender, n (%)				
Male	105 (66)	35 (78)	70 (61)	
Female	51 (32)	8 (18)	43 (37)	.0437
Transgender <sup>3</sup>	4 (2)	2 (4)	2 (2)	
Sexual Orientation, n (%)				
Heterosexual	80 (50)	11 (24)	69 (60)	
Gay or Bisexual	76 (48)	33 (73)	43 (37)	.0002
Other	4 (2)	1 (2)	3 (3)	
Race/Ethnicity, n (%)				
NH Black	128 (80)	29 (64)	99 (86)	
NH White	14 (9)	8 (18)	6 (5)	.0176
Hispanic	7 (4)	3 (7)	4 (3)	
Mixed Race/Other	11 (7)	5 (11)	6 (5)	
Mode of Transmission, n (%) <sup>4</sup>	N=153	n=39	n=114	
MSM	52 (34)	21 (54)	31 (27)	
HRH	48 (31)	6 (15)	42 (37)	
IDU	10 (6)	1 (3)	9 (8)	.0151
Blood	2 (1)	0 (0)	2 (2)	
Other/Unknown	41 (27)	11 (28)	30 (26)	
ARV Exposure, n (%) <sup>4</sup>	N=154	n=40	n=114	
Experienced	1424 (92)	32 (80)	110 (96)	.0031
Months Since Diagnosis (median, IQR)	120 (12, 223)	4 (2, 9)	174 (93, 256)	<.0001
CD4 at Enrollment, (cells/mm3) (median, IQR) <sup>4</sup>	297 (138, 443)	303 (243, 538)	291 (114, 434)	.2382
VL at Enrollment, (copies/mL) (median, IQR) <sup>4</sup>	7,855 (80, 92700)	30 (1, 1678)	16,040 (690, 139790)	<.0001

Abbreviations: IQR: interquartile range; NH: non-Hispanic; IDU: intravenous drug user; MSM: men who have sex with men; ARV: antiretroviral; <sup>1</sup>Totals may not sum to N due to missing data; <sup>2</sup>Chi-square or Wilcoxon test; significant p-values <.05 bolded; <sup>3</sup>Includes transgender men and women; <sup>4</sup>Among those for whom DC Cohort clinical data are available.

- Among 160 participants, 45 (28%) were recently diagnosed. The 115 (72%) chronically-infected viremic participants were diagnosed for a median of 14 years, and 96% were on ART with a median VL of 16,040 copies/ml.
- Compared to those recently diagnosed, chronically-infected viremic participants were statistically significantly more likely to be:
  - Older (50 vs. 34 years)
  - Heterosexual (60% vs. 24%)
  - Black (86% vs. 64%)

Figure 1. Risk Behaviors among Recently Diagnosed Participants by Sexual Orientation

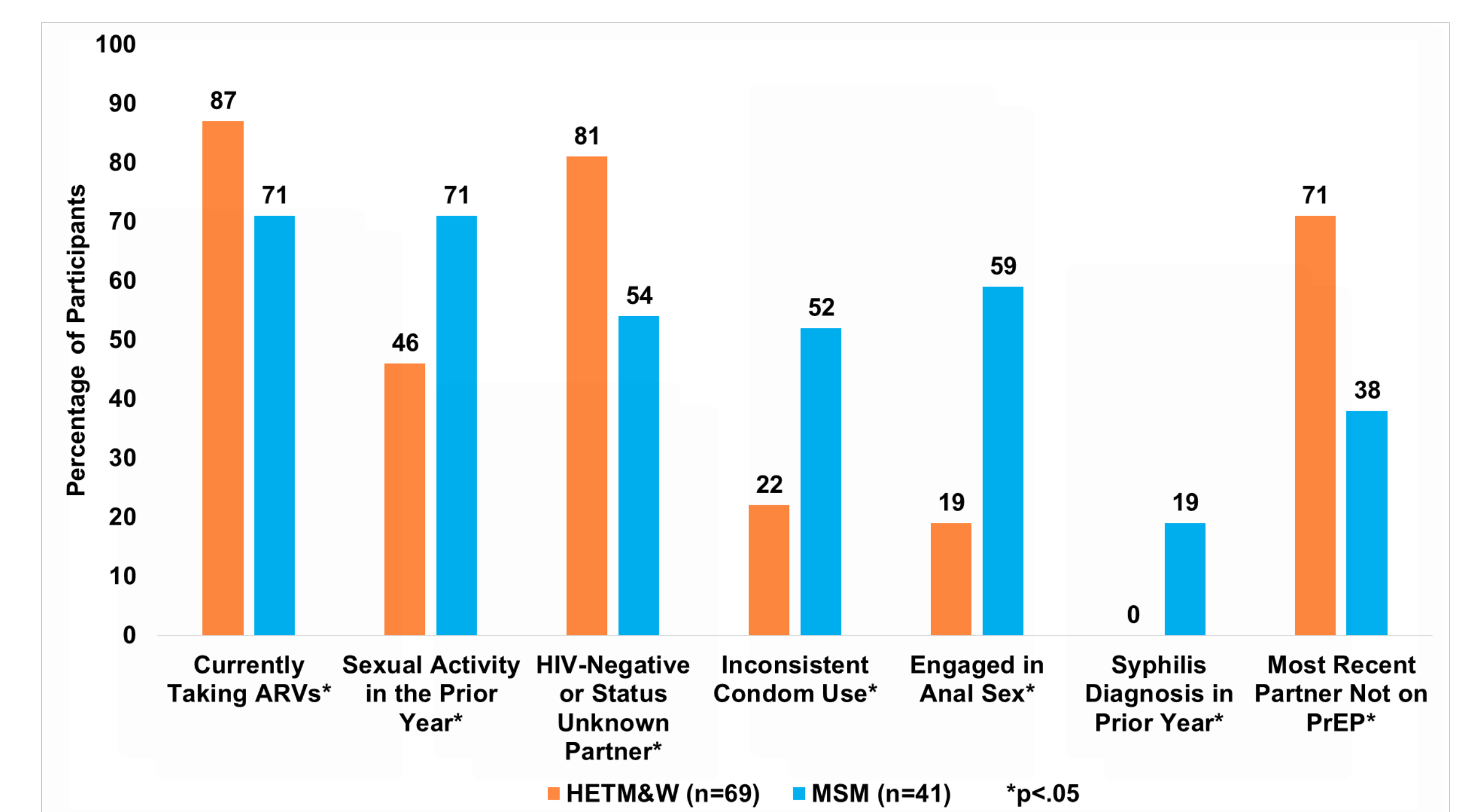


<sup>1</sup>Sexual Activity defined as oral, vaginal, or anal sex in the prior year; <sup>2</sup>Concurrent Partners defined as two sexual partners during the same time period in the prior year; <sup>3</sup>HIV-Positive or Status Unknown Partner based on the status of the most recent partner; <sup>4</sup>Inconsistent Condom Use defined as not always using condoms during any sexual act; <sup>5</sup>Engaged in Anal Sex defined as receptive or insertive anal sex with male or female partner.

## Results

- Compared to recently diagnosed heterosexuals, MSM reported statistically significantly more:
  - Sex partners (mean: 12 vs. 2)
  - Inconsistent condom use (82% vs. 43%)
  - Engagement in anal sex (90% vs. 50%)
  - Syphilis diagnoses in the prior year (39% vs. 0%)

Figure 2. Risk Behaviors among Chronically-Infected Viremic Participants by Sexual Orientation



<sup>1</sup>Sexual Activity defined as oral, vaginal, or anal sex in the prior year; <sup>2</sup>Concurrent Partners defined as two sexual partners during the same time period in the prior year; <sup>3</sup>HIV-Negative or Status Unknown Partner based on the status of the most recent partner; <sup>4</sup>Inconsistent Condom Use defined as not always using condoms during any sexual act; <sup>5</sup>Engaged in Anal Sex defined as receptive or insertive anal sex with male or female partner.

- Compared to chronically-infected viremic heterosexuals, MSM reported statistically significantly more:
  - Sexual activity (71% vs. 46%)
  - Inconsistent condom use (52% vs. 22%)
  - Engagement in anal sex (59% vs. 19%)
  - Syphilis diagnoses in the prior year (19% vs. 0%)

## Conclusions

- Despite being aware of their diagnoses and engaged in care, findings suggest PLWH, particularly MSM, continue to engage in high-risk behaviors that may lead to onward transmission.
- Findings indicate the need for further engagement of high-risk persons in primary prevention services and reinforcement of secondary prevention and treatment among PLWH to reduce the risk of further transmission.

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