

# Cigarette smoking among HIV-infected adults with comorbid medical conditions in a large HIV cohort (2011 – 2017) in Washington, D.C.

Jessica L. Elf<sup>1</sup>, Kimberly Horn<sup>2</sup>, Lorien Abrams<sup>3</sup>, Cassandra Stanton<sup>4</sup>, Amy Cohn<sup>5</sup>, Freya Spielberg<sup>6</sup>, Tiffany Gray<sup>7</sup>, Emily Harvey<sup>8</sup>, Denise Sanchez, Charles Debnam<sup>9</sup>, Amanda D. Castel<sup>7</sup>, Alan Greenberg<sup>7</sup>, Anne Monroe<sup>7</sup>, and Raymond Niaura<sup>10</sup> on behalf of the DC Cohort Executive Committee

<sup>1</sup>Colorado State University, Fort Collins, CO; <sup>2</sup>Virginia Tech, Roanoke, VA; <sup>3</sup>George Washington University, Washington, D.C.; <sup>4</sup>Westat, Rockville, MD; <sup>5</sup>University of Oklahoma Health Sciences Center, Oklahoma City, OK; <sup>6</sup>University of Texas at Austin, Austin, TX; <sup>7</sup>George Washington University, Washington, D.C.; <sup>8</sup>The Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, MD; <sup>9</sup>Community Wellness Alliance, Washington, D.C.; <sup>10</sup>New York University, New York, NY

## Background

### HIV, Smoking, and Comorbidities

- People with HIV (PWH) have a high prevalence of smoking (40-70%)
- PWH have a high prevalence of comorbidities
  - o Comorbidities increase complexity of clinical care
  - o Clinician intervention for smoking cessation may be more challenging
- Continued smoking adversely affects disease prognosis of comorbidities
  - o Cessation strategies need to integrate into multi-disease treatment frameworks
- People who smoke who also have comorbidities have a more difficult time quitting
  - o Higher nicotine dependence, co-occurring mental health challenges, lower self-efficacy, limited treatment availability and diminished response

### PWH in Washington, D.C.

- n = 12,322 D.C. residents (1.8%) living with HIV
- ≥50% of PWH in Washington, D.C. are ≥ 50 years of age

**Purpose:** Assess prevalence of smoking among PWH with comorbidities and prevalence/correlates of having a comorbidity among PWH who smoke to inform cessation strategies.

## Methods

### The DC Cohort

- Prospective longitudinal cohort of PWH in the Washington, D.C. area
- Participants recruited from 15 HIV care centers in the Washington, D.C. metro area
- Electronic medical record (EMR) data extracted on a monthly basis
- Limited manual data collection at enrollment
- Present analysis includes data from 2011 – 2017
- Smoking status (current, former, never) abstracted from EMR at enrollment

### Comorbid Conditions

- Cardiovascular, cancer, pulmonary, mental health diagnoses identified and categorized using ICD-9 and ICD-10 codes
  - o Cardiovascular: acute myocardial infarction, unstable angina, angina pectoris (stable angina), peripheral arterial disease, transient ischemic attack, ischemic stroke, and congestive heart failure
  - o Cancer: any cancer diagnosis
  - o Pulmonary: COPD, asthma
  - o Mental Health: any mood disorder, anxiety or stress/trauma-related disorder, psychotic disorder, or severe mental health disorder

### Statistical Analysis

- **Primary Outcome:** prevalence of never, former, and current smoking at baseline and number of comorbidities among adults (≥ 18 years of age)
- **Secondary Outcome:** estimated risk of a) any comorbidity, b) a mental health comorbidity, and c) a cardiovascular, pulmonary, or cancer comorbidity among PWH who smoke
  - o Multiple imputation (30 imputations) including comorbidity outcome, sociodemographic, and HIV clinical variables
  - o Pooled Poisson regression with robust standard error estimates
  - o Adjusted for age, race/ethnicity, gender, state of residence (vs D.C.), socioeconomic condition, substance use, BMI, years since HIV diagnosis, AIDS diagnosis, CD4+ Nadir, CD4+ at baseline, and viral load at baseline

## Results

n = 7,160 of 8,234 participants included

- Exclusions: n = 1,006 with no smoking variable and n = 68 < 18 years of age

### Ever Smoking Status

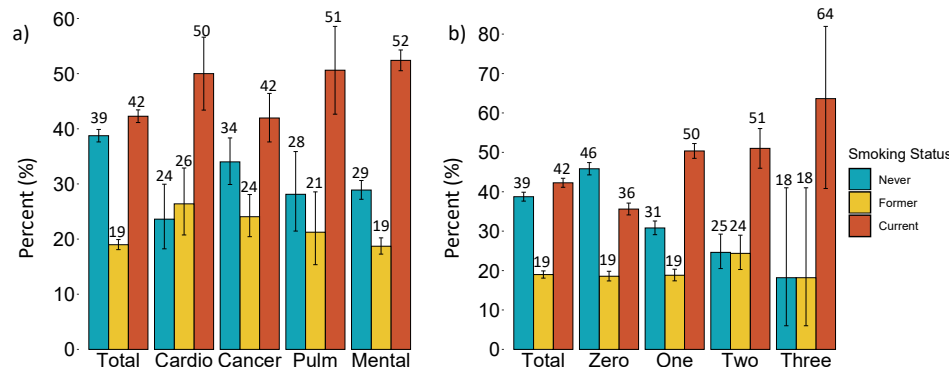
Never: n = 2,774 (39%)  
Former: n = 1,359 (19%)  
Current: n = 3,027 (42%)

### Dichotomous Smoking Status

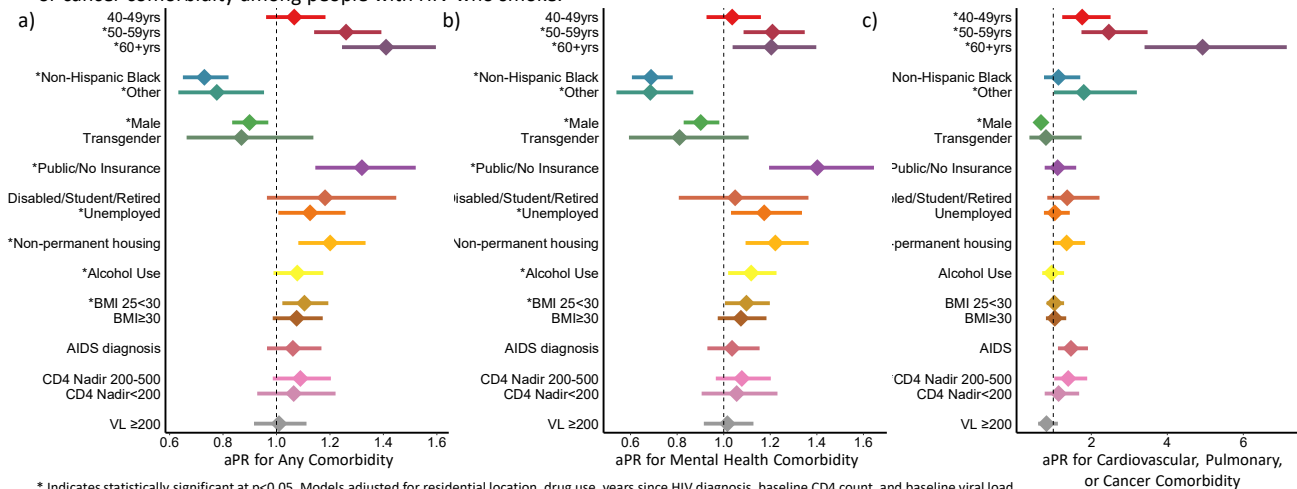
Non-smoker: n = 4,133 (58%)  
Current Smoker: n = 3,027 (42%)

n = 1,1617 (53%) of current smokers have at least one comorbidity

**Figure 1.** Percent of participants who are current smokers by a) comorbidity type and b) number of comorbidities



**Figure 2.** Adjusted prevalence ratios for an outcome of a) any comorbidity, b) mental health comorbidity, and c) cardiovascular, pulmonary, or cancer comorbidity among people with HIV who smoke.



## Conclusions

- PWH with a concurrent comorbidity have a higher prevalence of smoking than those without; nearly half of all PWH who smoked had a comorbidity
- As the number of comorbidities increased, so did the prevalence of smoking
- Risk of comorbidity varied by gender, race, socioeconomic status, substance use, and HIV clinical characteristics; these also differed by mental health or cardiovascular/pulmonary/cancer comorbidity
- Consideration of sociodemographic, alcohol use, and clinical factors, and how they are integrated within multi-disease treatment strategies, is likely important when developing smoking cessation interventions for PWH with concurrent comorbidities who smoke

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