Incidence and Risk Factors for Neurocognitive Disorders Among Persons with HIV in Washington, DC

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Shannon K. Barth[1], Yun S. Ji[1], Ellen Yeung[2], Morgan Byrne[1], Michael Horberg[3], Anne Monroe[1], Amanda D. Castel[1], on behalf of the DC Cohort Executive Committee

[1]Milken Institute School of Public Health, The George Washington University, Washington, DC; [2]Department of Psychological and Brain Sciences, Columbian College of Art & Sciences, The George Washington University, Washington, DC; [3]Kaiser Permanente Mid-Atlantic Permanente Research Institute, Washington, DC

BACKGROUND

- Development of neurocognitive disorders remains a concern among persons with HIV (PWH) despite advances in antiretroviral therapy (ART)
- Worldwide estimates range from 7-85% for neurocognitive disorders among PWH
- Studies have indicated increased risk for neurocognitive disorders among PWH with comorbidities such as obesity, cardiovascular disease (CVD), Hepatitis C, toxoplasmosis
- There is an established correlation between low nadir CD4/history of AIDS and neurocognitive disorders
- **Objective:** To determine the incidence, trends, and comorbidities associated with electronic health record (EHR)-based documented neurocognitive disorders among a longitudinal cohort of PWH in Washington, DC

METHODS

- *Data source*: EHR data from the DC Cohort longitudinal HIV study (1/1/2011-12/31/2024)
- *Measures*: Identified PWH with neurocognitive disorders using ICD-9 and 10 codes, classified as **mild (e.g., mild cognitive impairment)** or **advanced (e.g., dementia, neurodegenerative disorder)**
  - Medical comorbidities (ICD codes) occurring 12 months prior or at least 1 week post neurocognitive diagnosis
  - HIV-related measures (Viral load in copies/mL, CD4 in cells/mm^3, years since HIV diagnosis, HIV risk)
  - Demographic and socioeconomic characteristics
- Statistical analyses:
  - Bivariable analyses comparing those with and without neurocognitive disorders
  - Temporal trends for advanced and mild neurocognitive disorders
  - Logistic regression analyses to examine associations between neurocognitive disorders and comorbidities, adjusting for demographic, socioeconomic, and HIV factors
  - Categorization of ART utilization prior to neurocognitive disorder diagnoses

RESULTS

- Of 13,022 DC Cohort participants, we identified 819 unique cases (6.12%) of incident neurocognitive disorders (134 mild, 767 advanced, 82 with both)
- Of those with ART use prior to neurocognitive disorder diagnosis, INSTI-based regimens were most prevalent (34%), followed by Dual Class regimens (23%)

➡Incidence of advanced neurocognitive disorders is increasing among PWH
➡High prevalence of comorbid conditions among PWH diagnosed prior to neurocognitive disorders
➡Anxiety and MDD were highly prevalent post-neurocognitive disorder diagnoses

RESULTS, CONTINUED

- Differences were found among demographic and HIV characteristics comparing neurocognitive disorder diagnoses to those without: age (median 57 vs 46 p<.0001); race/ethnicity (non-Hispanic whites 16% vs 13%, p<.001); insurance (public 16% vs 50%, p<.0001); employment (employed 21% vs 25%, p<.0001); housing (permanent 80% vs 70%, p<.0001); VL (suppressed 82% vs 79%, p<.05)

Fig 1: Percent of Incident Mild and Advanced Neurocognitive Disorder Diagnoses by Year Among Active DC Cohort Participants, N=819

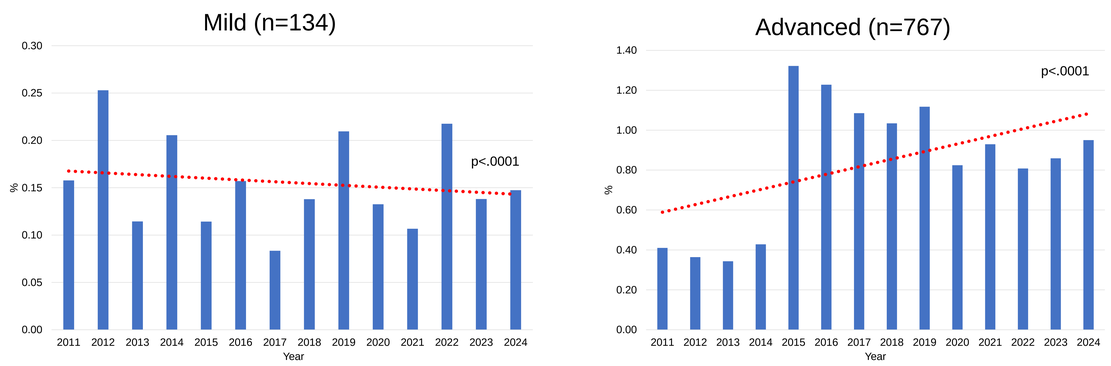
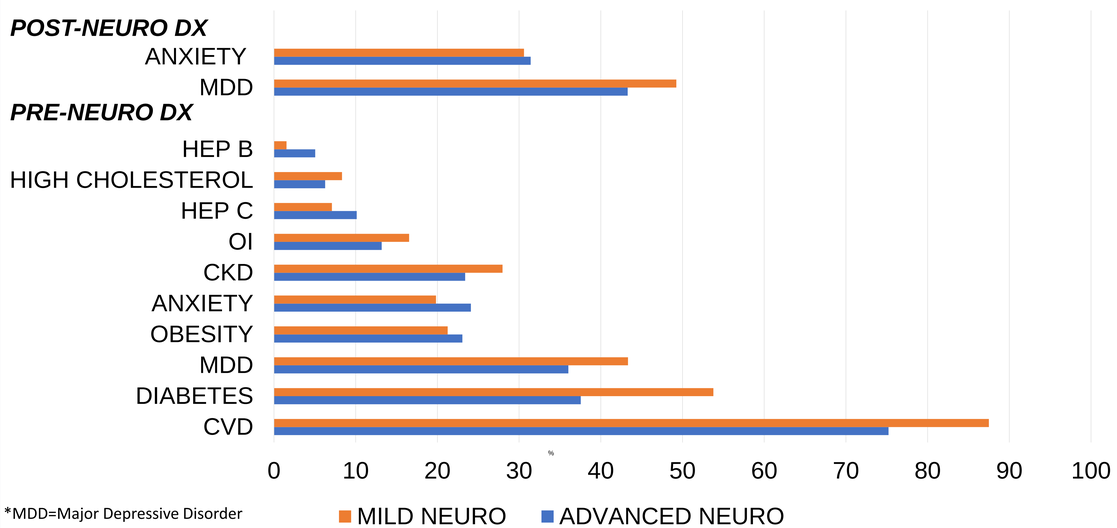


Fig 2: Percent of Comorbidities Diagnosed Pre- and Post-Neurocognitive Disorder Diagnosis by Neurocognitive Disorder Severity



*MDD=Major Depressive Disorder

Table 1: Unadjusted and adjusted odds ratios (OR) and 95% confidence intervals (95% CI) comparing those with and without any neurocognitive disorder diagnosis

Comorbidity	*Unadjusted OR (95% CI)*	*Adjusted OR[1] (95% CI)*
MDD[2]	**2.70 (2.33, 3.11)**	**2.64 (2.25, 3.08)**
Diabetes Mellitus	**2.10 (1.82, 2.42)**	**1.39 (1.19, 1.31)**
Hepatitis B	**1.80 (1.34, 2.38)**	**1.52 (1.13, 2.06)**
Hepatitis C	**1.85 (1.49, 2.31)**	1.04 (0.82, 1.33)
CKD	**2.93 (2.51, 3.42)**	**1.88 (1.58, 2.23)**
CVD	**3.46 (2.91, 4.12)**	**2.00 (1.64, 2.44)**
Obesity	0.92 (0.79, 1.08)	1.00 (0.84, 1.20)
Toxoplasmosis	**4.00 (1.32, 12.04)**	**4.19 (1.15, 12.19)**
High Cholesterol	**1.46 (1.13, 1.89)**	1.24 (0.94, 1.62)
OI	**2.03 (1.65, 2.49)**	**1.55 (1.25, 1.91)**
Anxiety	**2.31 (1.98, 2.69)**	**2.67 (2.26, 3.16)**

[1]Adjusted models control for age, race/ethnicity, gender, insurance status, HIV risk category, and viral load suppression status; [2]Major depressive disorder

CONCLUSIONS

- Incidence of advanced neurocognitive disorders is increasing which may reflect the aging PWH population
- PWH with neurocognitive disorders were more likely to have several comorbidities, indicating increased burden of disease
- Limitations include lack of EHR information regarding neurocognitive testing and imaging, as well as potential underreporting and therefore underdiagnoses of mild neurocognitive disorders
- Further analyses of the relationship between ART regimens and neurocognitive disorders are planned
- Identification of the incidence of pre-neurocognitive disorders may help elucidate neurocognitive disorder development among aging PWH

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