Longitudinal Neuropsychological Assessment in an Urban Cohort of Adults Living with Well-Managed HIV

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Background and Objective

- As people living with HIV (PWH) age, **longitudinal neuropsychological assessment** is imperative to understand the etiology, nature, and prognosis of HIV-associated neurocognitive disorders (HAND).
- The **Clinical and Translational Research Support Core (CTRSC)** of the **Temple/Drexel Comprehensive NeuroHIV Center (CNHC)** follows an urban cohort of adult PWH whose HIV is well-managed on antiretroviral therapy (ART).
- Annual visits include comprehensive neuropsychological assessments (CNPAs), medical evaluations, and specimen collection.
- **OBJECTIVE: Characterize cognition longitudinally in the CTRSC cohort.**

Participants

- 338 PWH have completed at least one CNPA.
- 162 have completed >1 CNPA and were included in the current analyses.

	M (SD), range; or %
# Visits	2.7 (0.9), 2 - 5
Years of follow-up	5.4 (2.7), 0.5 - 9.4
Gender	59% men | 41% women
Race/Ethnicity	92% Black Non-Hispanic | 4% White Non-Hispanic | 3% Hispanic/Latino of any race | 1% Other
Education (yrs)	11.7 (2.3), 5 - 22
Age (baseline; yrs)	52 (8), 25 - 71
Age (last visit; yrs)	57 (8), 26 - 77
On ART (baseline)	98%
On ART (last visit)	100%
HIV RNA <200 (baseline)	91%
HIV RNA <200 (last visit)	93%

Methods

Comprehensive Neuropsychological Assessments (CNPAs)

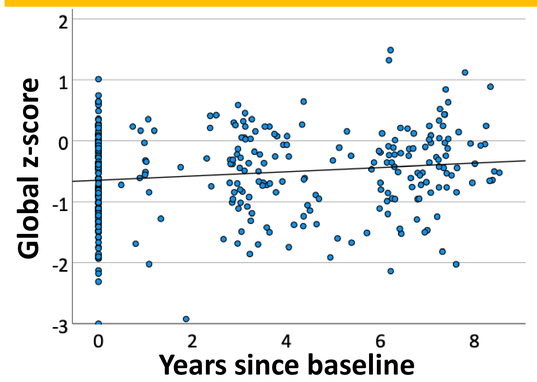
Motor, Speed, Executive	Verbal Fluency	Episodic Memory
• Grooved Pegboard • Trail Making Test A & B	• Phonemic Fluency • Semantic Fluency	• BVMT-R Immediate Recall, Delayed Recall, Recognition

Key Neuropsychological Outcomes

- Global and test z-scores, adjusted for age, sex, race/ethnicity, and education using published norms
- Clinically significant change: global z-score change > |.5|, test z-score change > |1|
- HAND classification per Frascati criteria
  - Asymptomatic Neurocognitive Impairment (ANI): mild cognitive impairment
  - Mild Neurocognitive Disorder (MND): mild cognitive and functional impairment
  - HIV-Associated Dementia (HAD): marked cognitive and functional impairment

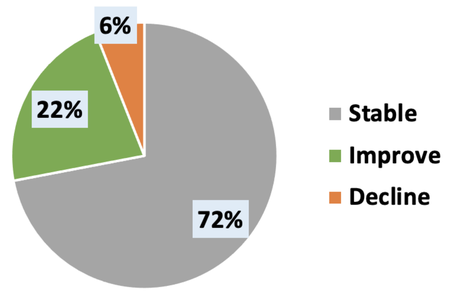
Results

Global Neuropsychological Functioning



- Baseline z-score: M = -0.64 (SD = 0.73)
- Last visit z-score: M = -0.49 (SD = 0.67)
- +0.03 SD per year (p<.001). Statistically significant but not clinically significant.
- Most participants had stable cognition. A sizeable minority had clinically significant improvement. Clinically significant decline was uncommon.

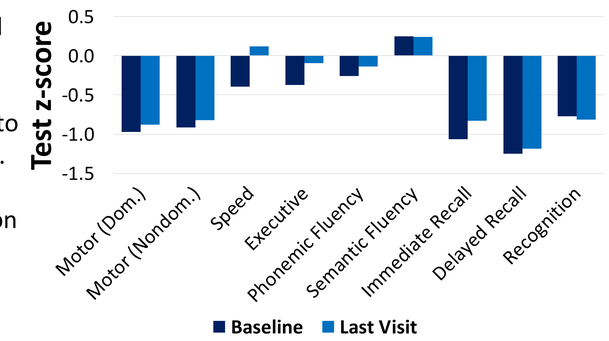
Clinically Significant Change



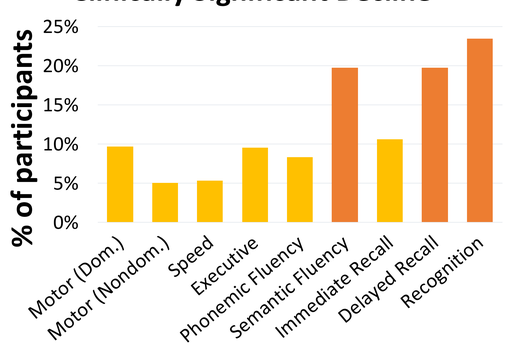
Neuropsychological Functioning by Domain

- Weaknesses were most evident in fine motor speed and episodic memory.
- Most domains were stable to slightly improved over time.
- Declines were most common in semantic fluency and episodic memory (delayed recall and recognition).

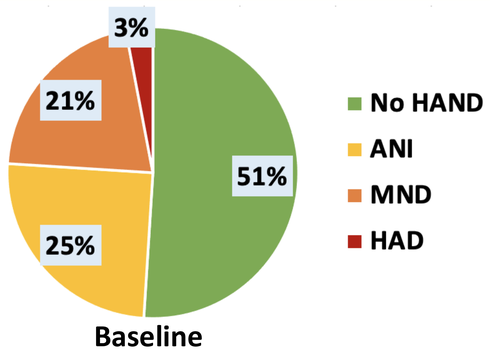
Mean Scores at Baseline & Last Visit



Clinically Significant Decline



HAND Classifications



- Overall HAND prevalence decreased considerably, from 49% to 36%.
- This change was largely driven by a decrease in the prevalence of ANI, from 25% to 11%.
- Rates of MND and HAD were effectively stable.

Conclusions

- In this longitudinal cohort of primarily Black PWH with well-managed HIV, cognition is largely **stable,** with more **improvement** than decline, and a **decreasing rate of ANI** over time.
- In a subset of participants, emerging **amnestic and semantic** deficits suggest potential early neurodegenerative processes.

Future Directions

- Explore **risk and protective factors underlying** improvements and declines, including interactions of HIV with aging and neurodegenerative disease.
- Expand recruitment to better characterize neurocognitive trajectories in Hispanic/Latino PWH.

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