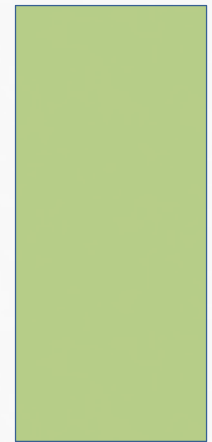


The Association Between Comorbidities and Neurocognitive Impairment in Aging Veterans with HIV

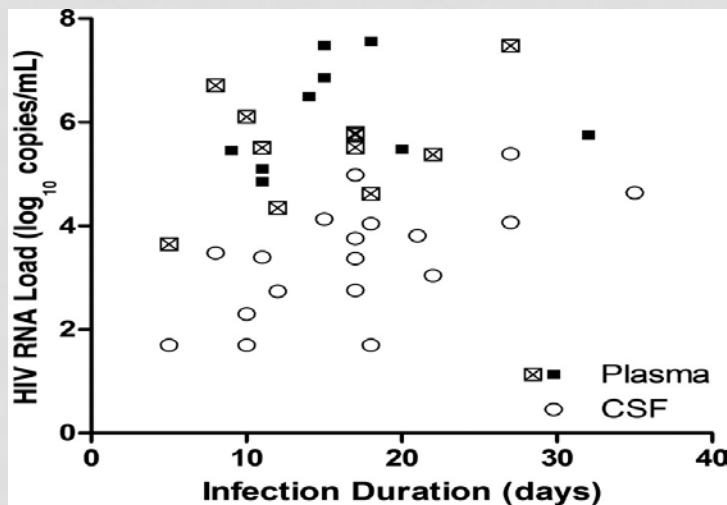
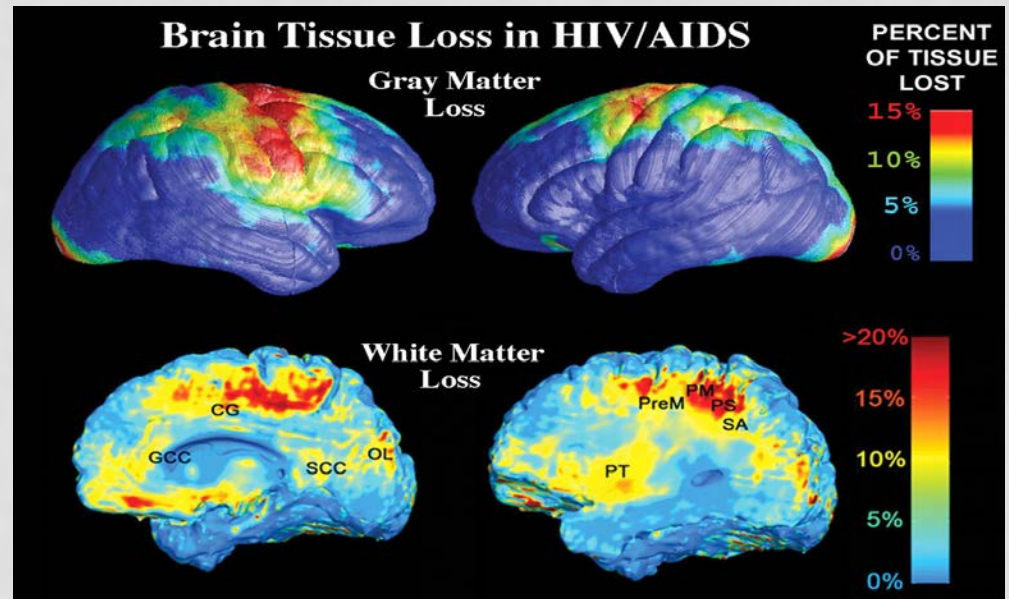
Arianna Perra, PsyD, Moira Dux, PhD
Terry Lee-Wilk, PhD



HIV and HCV in the VA

- VA is the largest provider of HIV/AIDS & HCV care in the U.S.
 - Over 24,000 Veterans receive care for HIV
 - VISN 5 treats approximately 1600 Veterans with HIV/AIDS
 - Approximately 150,000 Veterans in VHA care with chronic HCV
 - VISN 5 treats approximately 6,000 Veterans with HCV
- **30% of Veterans with HIV are co-infected with HCV**
 - With 50% co-infected in VISN 5

HIV: CNS Infiltration & Impact on Brain



Neurocognitive Disorders

PRE-HAART

Diagnostic Classifications

HIV-Associated
Dementia (HAD)

Minor Cognitive
Motor Disorder



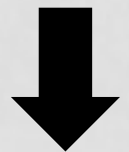
POST-HAART

HIV-Associated Neurocognitive
Disorder (HAND)

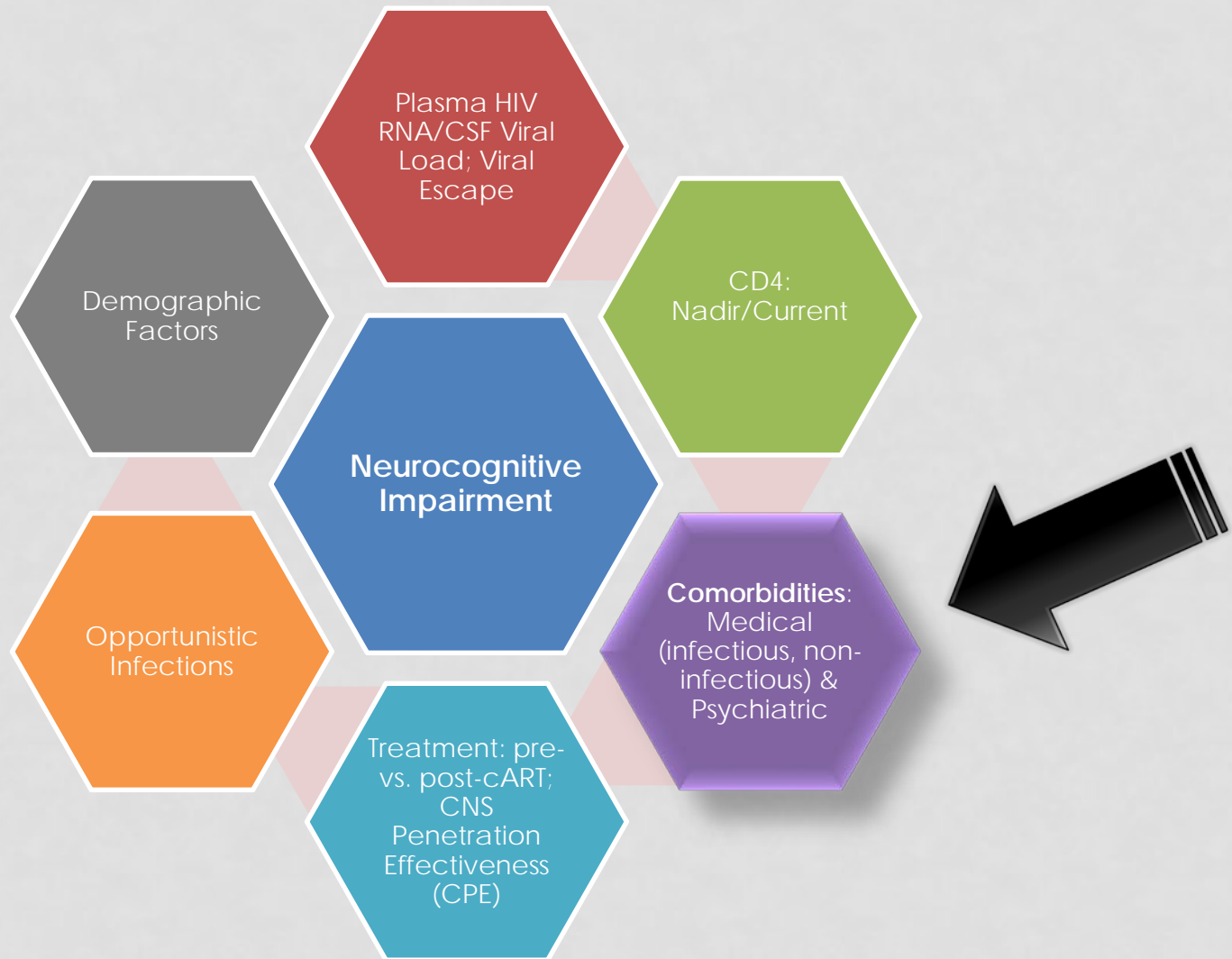
Asymptomatic
Neurocognitive
Impairment (ANI)

Mild Neurocognitive
Disorder (MND)

HIV-Associated
Dementia (HAD)

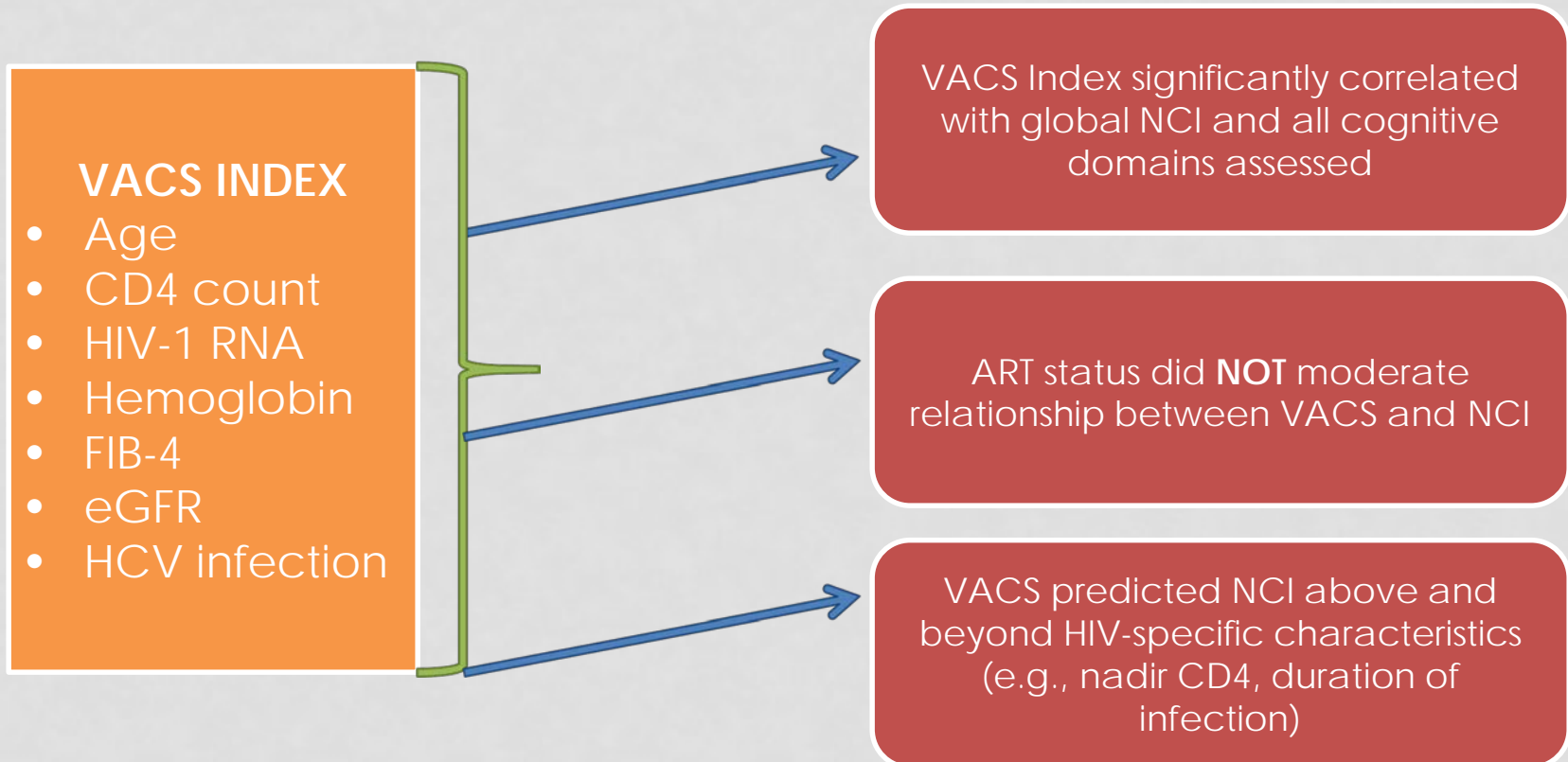


Neurocognitive Impairment & HIV: Multifaceted Etiology?



Role of Comorbidities: *The Veterans Aging Cohort Study Index*

- Objective: examine association between VACS Index & neurocognitive impairment (NCI)



Current Study

- Examined relative association of infectious disease (ID)-related factors and non-ID comorbidities on neurocognitive impairment (NCI).
- Predicted that non-ID comorbidities would account for significant variance in NCI, above and beyond ID-related markers.

Methods

- All participants were referred for neuropsychological assessment in the context of cognitive concerns.
- Data from medical records were extracted to compute infectious disease and non-infectious disease composite scores for each participant.



Neurocognitive Variables

Executive Function

- Trails B; Stroop Interference; Phonemic Fluency (FAS)

Processing Speed

- Trails A; WAIS-III: Digit Symbol Coding & Symbol Search

Attention/ Working Memory

- WAIS-III: Digit Span; WMS-III: Letter-Number Sequencing & Spatial Span

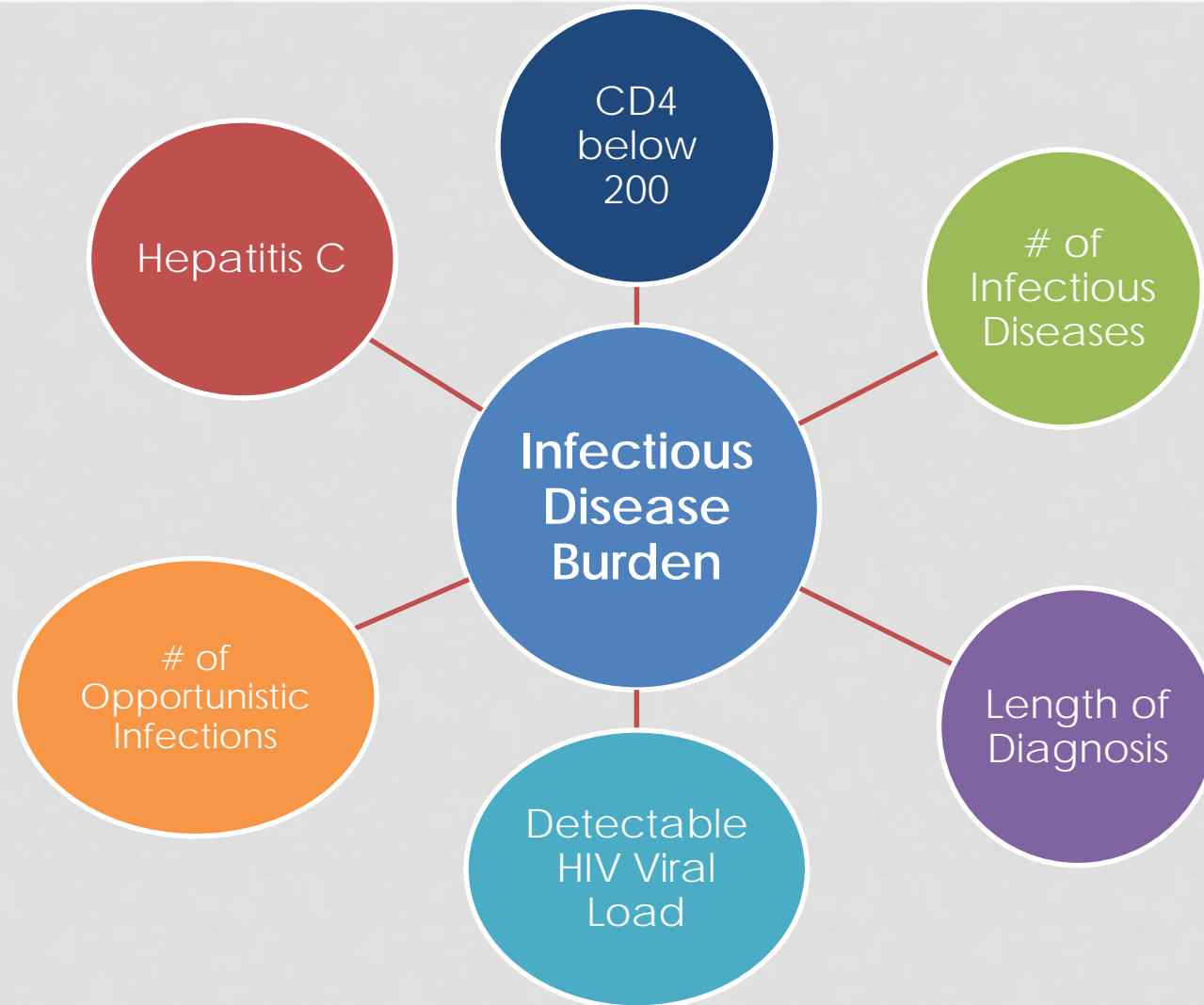
Motor Function

- Grooved Pegboard: Dominant Hand & Non-Dominant Hand

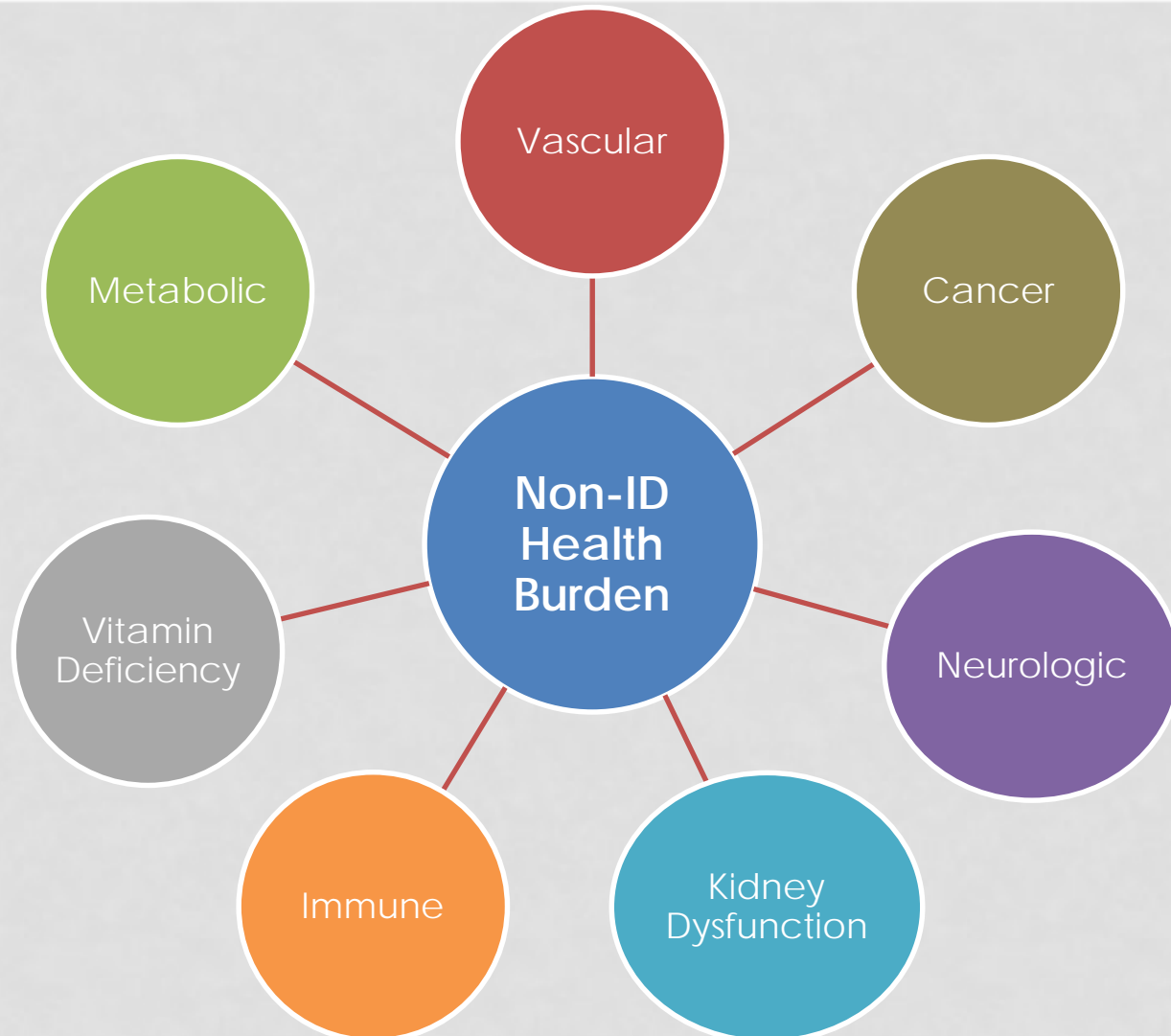
Learning & Memory

- Brief Visuospatial Memory Test (BVMT-R) & Hopkins Verbal Learning Test (HVLT-R): Total Immediate & Delayed Recall

ID Burden

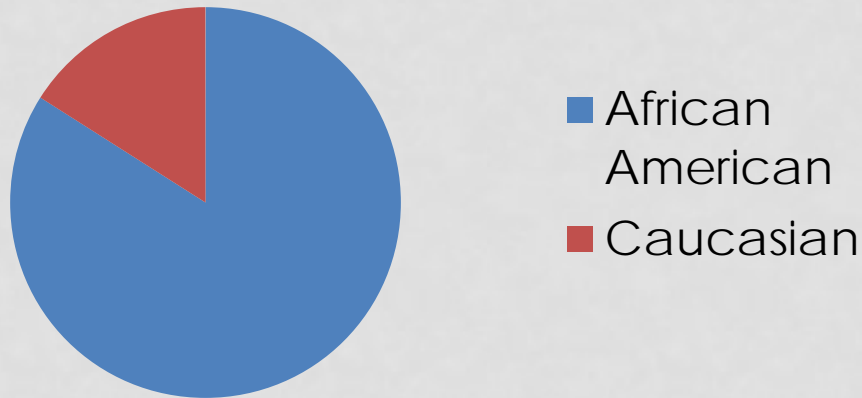


Non-ID Health Burden

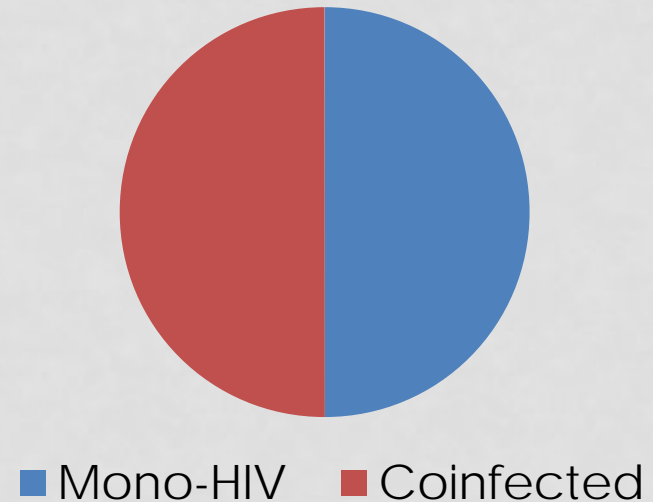


Participants

Ethnicity



HCV Coinfection

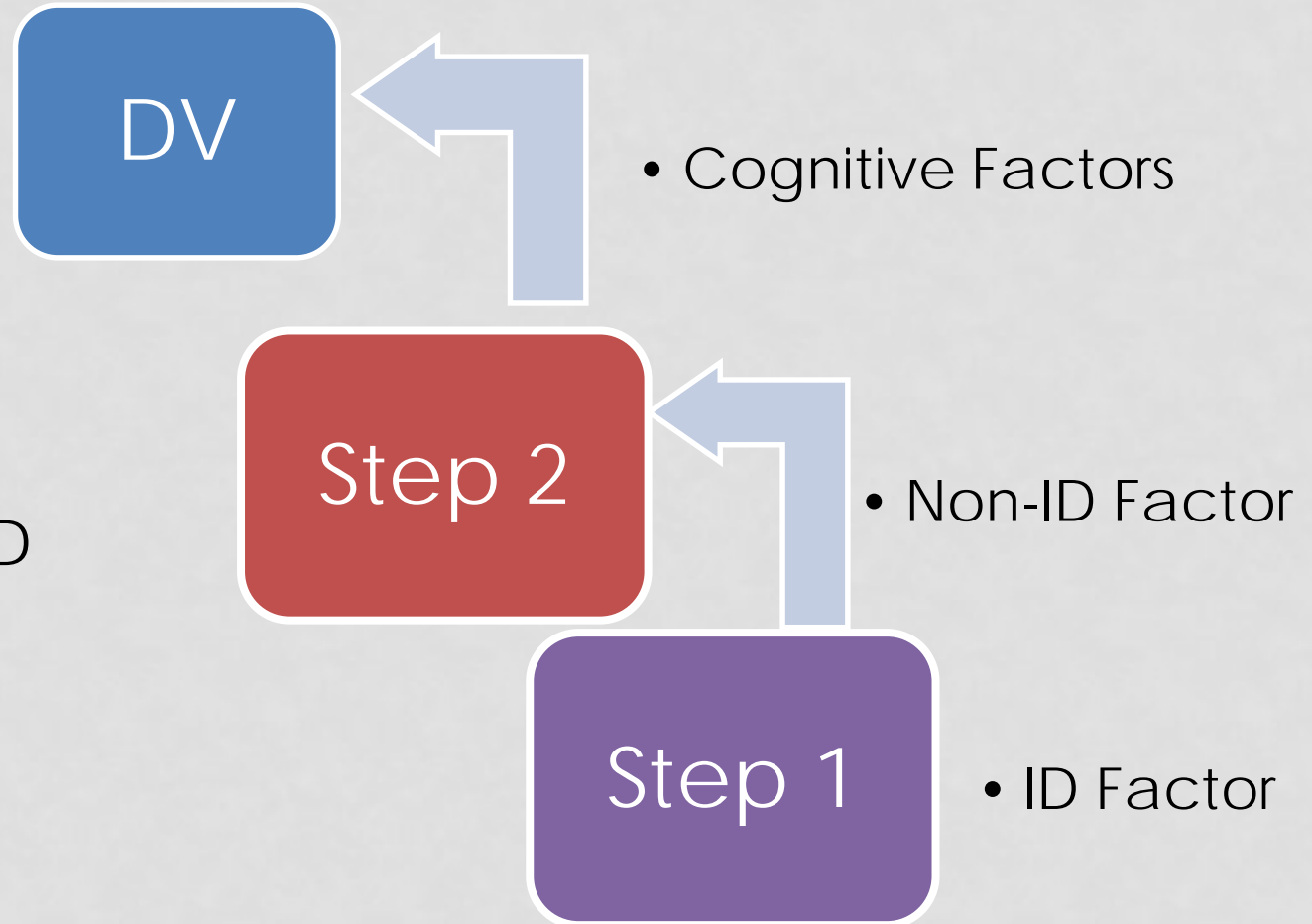


Age: 55.9 +/- 9.8 years

Education: 12.1 +/- 2.2 years

Analyses

**Hierarchical multiple regression analyses were conducted to assess relative contribution of ID and non-ID markers to NCI



Results

Domain	
Learning/Memory	$R^2\Delta=0.17, p < 0.05$
Attention/Working Memory	$R^2\Delta=0.22, p < 0.05$
Processing Speed	$R^2\Delta=0.21, p < 0.05$

The reverse relationship was not supported – ID factors did NOT account for significant variance

Role of Metabolic Function

- Exploratory zero-order correlations were conducted between neurocognitive scores and markers of metabolic function
- Elevated dispersion in A1c values was associated with worse performance on measures of learning/memory ($r = -0.34, p < 0.05$), and attention/working memory ($r = -0.38, p < 0.05$)

Conclusions

- Our data suggest that non-ID comorbidities are a driving force behind neurocognitive impairment in patients with HIV
 - HgbA1c was associated with worse performance on memory and attention measures
- Take home points
 - NCI is not *exclusively* attributable to HIV-related factors, and is more strongly associated with other comorbidities
 - The factors influencing NCI in patients with HIV are potentially modifiable
 - Communication with providers and patients regarding potential causes of NCI and available interventions is critical

Future Directions

- Continue to explore the association between comorbidities and NCI in patients with HIV
 - Refine ID and non-ID factor scores
 - Evaluate the role of mental health comorbidities
 - Examine the influence of specific demographic factors
- Exercise study
 - Compare the impact of a 16-week aerobic exercise intervention on markers of physical and neurocognitive function among 3 groups of older (50+), African American Veterans: HIV+/ART+ vs. HIV+/ART- vs. HIV-



Questions?

Thank you!

- Emails:
 - Arianna.Perra@va.gov
 - Moira.Dux@va.gov
 - Terry.Lee-Wilk@va.gov