A blip or a trend? Interpreting fluctuations in cognition over time in older adults with HIV

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Marie-Josée Brouillette[1], Marianne Harris[2], Graham Smith[3], Fiona Smaill[4], Réjean Thomas[5], Shariq Haider[4], Scott L. Letendre[6], Susan Scott[1], Lesley K Fellows[1], Nancy E. Mayo,[1]

[1]McGill University, Montreal, Canada; [2] British Columbia Centre for Excellence in HIV/AIDS, Vancouver, Canada, [3] Maple Leaf Medical Clinic, Toronto, Canada; [4] McMaster University, Hamilton, Canada; [5] Clinique Médicale l'Actuel, Montreal, Canada; [6] University of California San Diego, San Diego, CA, USA

THE AIM

Characterize visit-to-visit and overall evolution of cognition over up to 10 years in older adults living with HIV.

METHODS

Who did we assess?

268 individuals of the multisite Canadian + Brain Health Now study **followed for ≥ 5 years**

How did we measure cognition?

- Performance based: Global cognitive ability measured with the B-CAM, every 9-12 months

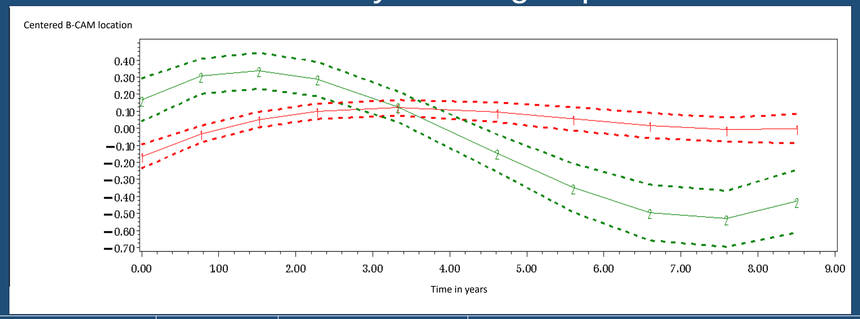
B-CAM, a computerized measure of cognition

- Tasks: Fluency, Tower of London, Mini trail, Shape 2 back, Digit Symbol coding, Memory/recall, Corsi (forward and backwards), Facial recognition
- Items combined using Rasch analysis to produce a **calibrated** total score

Who was in the analysis?

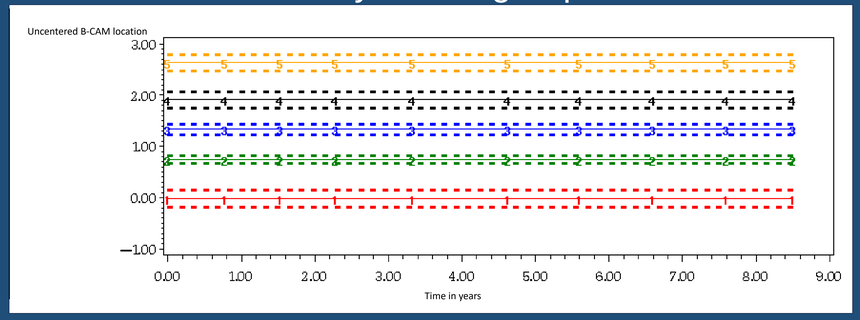
Included in the analysis	n=268
Age (mean, SD)	53.7 (8.2)
Age, range	35.1 – 81.2
Sex (M), %	86%
Education (University), %	39.3%
Ethnicity (European descent), %	78%
Duration of HIV years (mean, SD)	17.3 (8.0)
Current CD4 cell count (mean, SD)	636 (258)
Nadir CD4 cell count (mean, SD)	206 (157)
Aviremic (< 50 copies/mL), %	94.7%
Number of visits (mean, SD)	6.4 (1.5)
Duration of follow-up (mean, SD)	7.9 (1.1)
B-CAM (mean, SD) (range: -2.57 to 4.03)	1.10 (0.8)

CENTERED TRAJECTORIES OF COGNITION over 10 years: 2 groups



Trajectory	Intercept	Assigned proportions	≥ 1 episode of meaningful decline between visits
1.Stable	-0.16	74.7%	50%
2.Declining	0.17	25.3%	100%

UNCENTERED TRAJECTORIES OF COGNITION over 10 years: 5 groups



Trajectory	Intercept	Assigned proportions
1.Low	0.0	5.3%
2.Medium-low	0.7	34.2%
3.Intermediate	1.3	41.4%
4.Medium-high	1.9	14.2%
5.High	2.6	4.9%

Less likely to follow a declining trajectory

Among those with at least 1 episode of decline, older age was associated with a greater likelihood of being assigned to a declining trajectory (relative risk /decade, adjusted for sex (95%CI): 1.8 (1.5 to 2.3)).
Sex, education and race did not show an association).

STATISTICAL ANALYSES

1. Group-Based Trajectory Analysis of B-CAM scores to identify groups with similar evolution
   - Centered (more sensitive to change)
   - Uncentered (sensitive to initial value)
   - Dual trajectory model of the centered and uncentered
2. For each pair of visits of a given participant, we assessed meaningful decline (≥ 0.5 SD difference)
   - compared proportions of episodes of such decline in the stable and declining trajectories,
3. When there was ≥ 1 episode of decline between visits, Poisson regression was used to compare those on a declining versus stable trajectory on age, sex, education and race.

CONCLUSIONS

Over 10 years, more than half of OAWH had at least one meaningful decline in cognitive performance which did not reliably predict long-term worsening as only a quarter had sustained cognitive decline.

Older individuals and those with worse overall performance were at higher risk.

These findings suggest that shorter-term cognitive worsening should not automatically be interpreted as progressive declinealthough it may be more worrisome in older people.

marie-josee.brouillette@mcgill.ca

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