

# Cognitive Impairment Does Not Predict Virological Outcomes Among Aging Thai People Living with HIV: A Cohort Study



**Authors:** Sarita Rojasavastara<sup>1\*</sup>, Akarin Hiransuthikul<sup>2,3</sup>, Tanakorn Apornpong<sup>3</sup>, Sasiwimol Ubolyam<sup>3</sup>, Kiat Ruxrungtham<sup>3,4</sup>, Anchalee Avihingsanon<sup>3,4</sup> and HIV-NAT 006 study team

\*Email: saritar@docchula.com

**Affiliations:**

<sup>1</sup>Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

<sup>2</sup>Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

<sup>3</sup>HIV-NAT, Thai Red Cross AIDS Research Centre, Bangkok, Thailand

<sup>4</sup>Tuberculosis Research Unit, Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

## INTRODUCTION:

- People living with HIV (PLWH) are at risk of developing cognitive impairment
- Cognitive impairment among PLWH can lead to suboptimal adherence and persistent risk behaviors, which are barriers for adequate HIV care.
- Although many tools are available for cognitive assessment, there is currently no single gold standard.
- The Montreal Cognitive Assessment (MoCA) is a widely-used and accessible tool that explore many cognitive domains which are beneficial of PLWH in identifying their ability to complete necessary daily tasks and adherence to medications.
- Objective:** To determine if cognitive impairment, determined using the MoCA, can predict virological detection and mortality of aging Thai PLWH who had viral suppression.

## RESULTS:

- Among **337** participants included in the analysis, 211 (62.6%) were male, median (IQR) age was 54.7 (51.9 – 59.7), median MoCA was 24 (21 – 26), and **202 (59.9%) had cognitive impairment**. Median (IQR) years with HIV-positive status was 18.8 (15.7 – 20.9) (**Figure 1**).
- Thirty-five individuals (10.4%)** experienced at least one episode of VL detection during 1447.7 person-years of follow-up, accounting for an **incidence of 24.2 (95%CI 17.4 – 33.7) per 1000 person-years**.
- There were no significant differences in the **incident VL detection** between those **with and without cognitive impairment** (25.2 vs 22.7 per 1000 person-years, p=0.78) and **cognitive impairment was not a risk factor** (HR 1.1: 95%CI 0.6 – 2.2, p=0.794).
- Among 12 reported mortalities, there were no significant differences in the **incident mortality** between the two groups (8.6 vs 6.5 per 1000 person-years, p=0.68) and **cognitive impairment was not a risk factor** (HR 1.2: 95%CI 0.4 – 4.0, p=0.770).

## CONCLUSIONS:

- Challenges persist for choosing the appropriate cognitive screening tool that can aid HIV care.
- Despite its great feasibility, the **MoCA did not predict the occurrence of poor HIV outcome among aging PLWH with cognitive impairment**.
- Studies on the performance of other alternatives to determine the effectiveness in aiding HIV care are warranted.

## METHODS:

- Data from PLWH in an on-going **HIV-NAT 006 cohort**, a longitudinal cohort established in 1996, who aged  $\geq 50$  years, had viral suppression ( $< 40$  copies/mL), completed the Thai-validated version of MoCA (cut-off point at 25) as part of the **HIV-NAT 207 'Aging' study** between 2015 and 2017, and did not have previously-diagnosed dementia, were included in the analysis.
- Primary outcomes were the **incidence of viral load (VL) detection** ( $> 40$  copies/mL) and **mortality**.
- Cox proportional hazard models** were used to determined whether cognitive impairment was associated with eventual VL detection or mortality.

	Normal MoCA ( $\geq 25$ ) (n = 135)	Abnormal MoCA ( $< 25$ ) (n = 202)
Sex		
Male	100 (74.07%)	111 (54.95%)
Female	35 (25.93%)	91 (45.05%)
Age (years)	54.06 (51.34 – 57.95)	55.06 (52.16 – 60.74)
Education		
None to secondary	38 (81.15%)	94 (46.53%)
High/Vocation	36 (26.67%)	67 (33.17%)
Bachelor and higher	61 (45.19%)	41 (20.3%)
CD4 counts (cells/mm <sup>3</sup> )	659 (491 – 815)	603 (489 – 792)
CDC stage at time of data collection		
A	47 (35.07%)	83 (41.29%)
B	66 (49.25%)	87 (43.28%)
C	21 (15.67%)	31 (15.42%)
Years with HIV positive serology (years)	18.30 (15.72 – 21.20)	16.03 (12.09 – 19.18)
Years on antiretroviral therapy (ARV) (years)	16.42 (13.91 - 18.91)	16.03 (12.10 – 19.18)
NRTI exposure	135 (100%)	200 (99.01%)
NNRTI exposure	117 (86.67%)	163 (80.69%)
PI exposure	101 (74.81%)	152 (75.25%)

Data are in median (IQR) or n (%). MoCA = Montreal Cognitive Assessment, CDC = Centers for Disease control and Prevention, NRTI = Nucleoside Reverse Transcriptase Inhibitor, NNRTI = Non-Nucleoside Reverse Transcriptase Inhibitor, PI = Protease Inhibitor

**Figure 1: Baseline characteristics of all participants categorized by MoCA results.**