AETC AIDS Education & Training Center Program Mountain West

HIV-Associated Neurocognitive Disorders (HAND)

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Last Updated: Dec 2025

Project ECHO

Disclosures

Dr. Patel's Research is funded by the National Institutes of Health and Agency for Healthcare Research and Quality.

Learning objectives

- 1) Understand the prevalence of and criteria for HIV-associated neurocognitive disorders (HAND)
- 2) Recognize risk factors for developing HIV-associated neurocognitive disorders
- 3) Understand the overlap between Alzheimer's disease and HAND
- 4) Learn tips on clinical screening tools to assess cognitive functioning in persons living with HIV (PLWH) during a primary care visit
- 5) Learn tips on supporting brain health in PLWH

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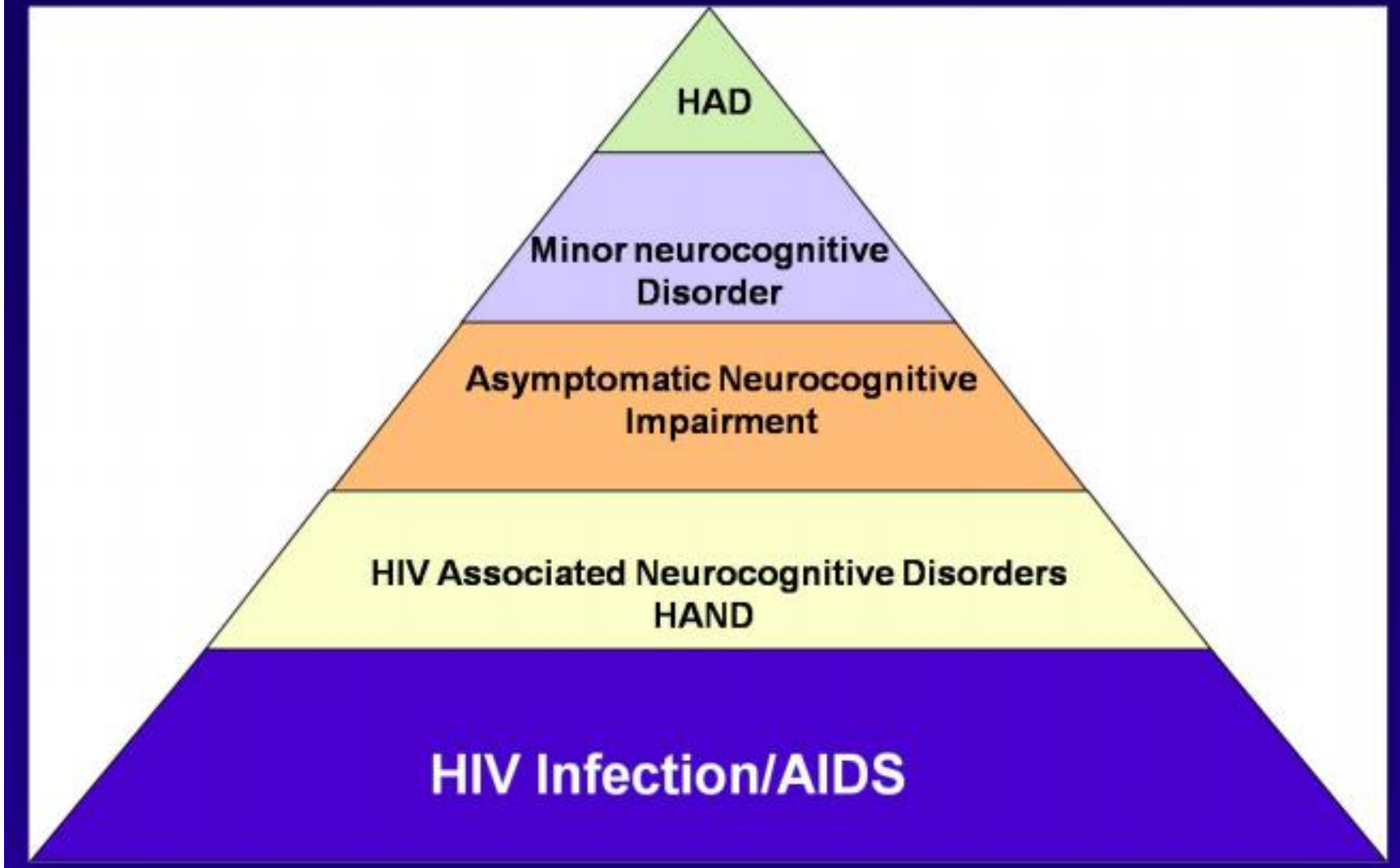
Hierarchy of HAND



Sacktor N, Skolasky RL, Seaberg E, Munro C, Becker JT, Martin E, Ragin A, Levine A, Miller E. Prevalence of HIV-associated neurocognitive disorders in the Multicenter AIDS Cohort S
Neurology. 2016 Jan 26;86(4):334-40.

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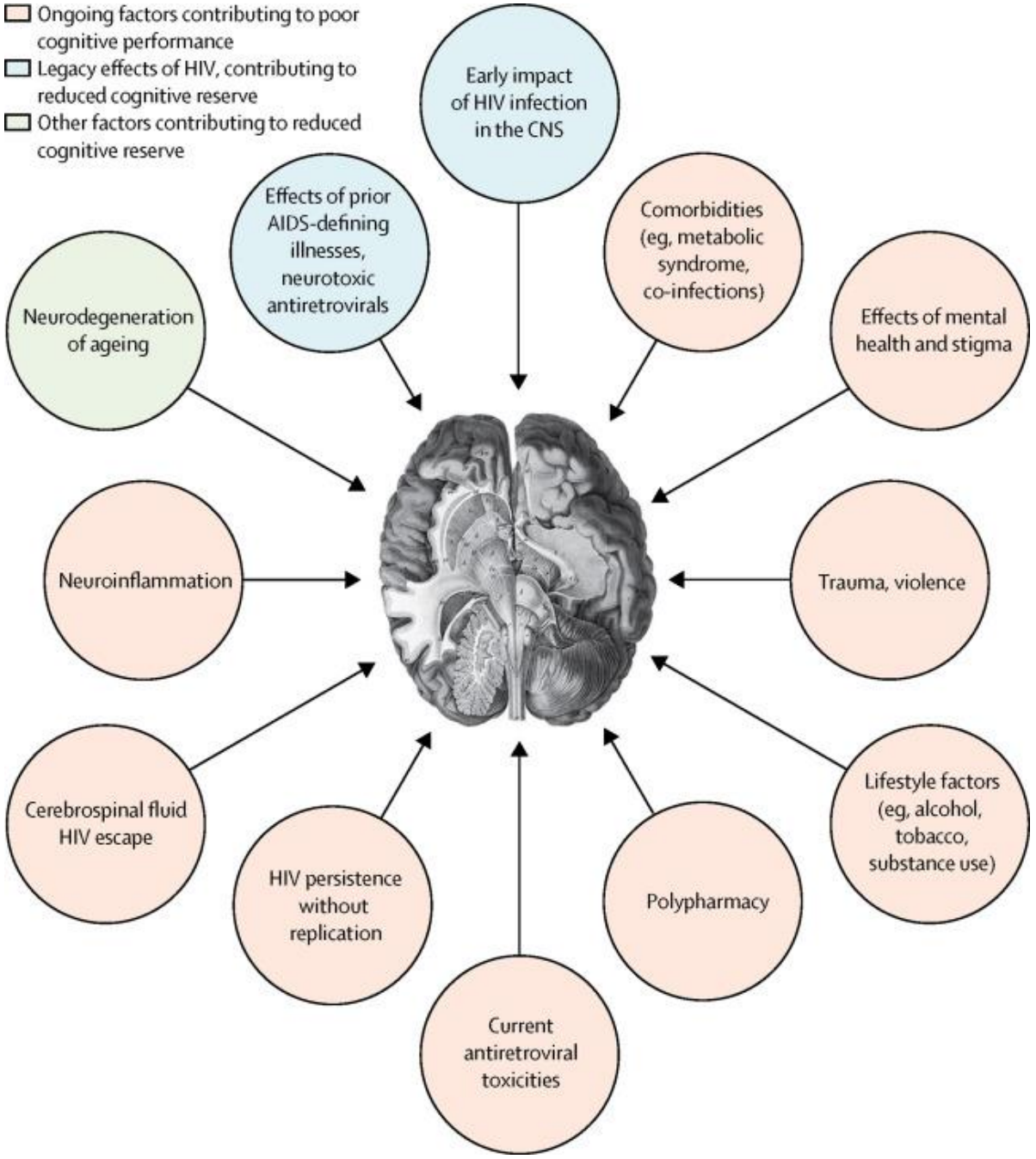

Winston A, Spudich S. Cognitive disorders in people living with HIV. Lancet HIV. 2020 Jul;7(7):e504-e513.

Alzheimer's and HIV overlap

- Evidence of accelerated aging in PLWH using epigenetic markers on post-mortem brain tissue
- 5% risk of developing AD in PLWH (by 80 years of age)*
- History of AIDS-related encephalopathy is a clear risk factor for AD
- Lack of a specific biomarker for HAND
  - NFL – non-specific but sensitive marker for neuronal injury in PLWH

Brown MJ, Murtala NM, Amoatika D, Kaur A, Addo PNO, Osinubi MO, Miller M, Ingram LA. Clinical and sociodemographic characteristics of Alzheimer's disease and related dementias among people with HIV. AIDS. 2025 Jun 1;39(7):869-874. doi: 10.1097/QAD.0000000000004137. Epub 2025 Jan 30. PMID: 39888861; PMCID: PMC12064361.

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Mild Cognitive Impairment versus Minor Neurocognitive Dis

- Similar clinical presentation – MCI associated with episodic memory loss, MND does not distinguish cognitive domains
- Similar $A\mathcal{B}_{42}$ plaque deposition
- Differences
  - MCI – "hippocampal": short-term memory loss
  - MND – "subcortical": processing speed, executive function, memory retrieval (impaired recall, intact recognition)

Rubin LH, Sundermann EE, Moore DJ. The current understanding of overlap between characteristics of HIV-associated neurocognitive disorders and Alzheimer's disease. J Neurovirol. 2019 Oct;25(5):661-672. doi: 10.1007/s13365-018-0702-9. Epub 2019 Jan 22. PMID: 30671777; PMCID: PMC6646104.

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Clinical history tip: Focus on cognitive symptoms

- Subjective
- Cultural biases against reporting
- Limited insight
  - Patient is the primary historian, but observer account is important
  - Activities of Daily Living
- Stressors and changes in medical history/medications

Cognitive screening tools in PLWH

- BRACE, CogState, and IHDS all had relatively high sensitivities of over 80% (84%, 81%, 91%, respectively)
- MoCA (69%)* and MMSE (46%) had lower sensitivities
- BRACE had the highest specificity with 94%
- CogState (70%), MoCA (58%), MMSE (55%), had lower specificities
- IHDS had the lowest specificity of 17%.

Reference re: BRACE: Rubin LH, et al. Tablet-Based Cognitive Impairment Screening for Adults With HIV Seeking Clinical Care: Observational Study. JMIR Ment Health. 2021 Sep 9;8(9):e25660.

Dantuluri ML, Rubin LH, Manabe YC, Moore RD, Althoff KN. Selection of cognitive impairment screening tools for longitudinal implementation in an HIV clinical care setting. AIDS Care. 2023 Oct;35(10):1619-1627.

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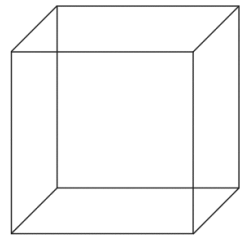
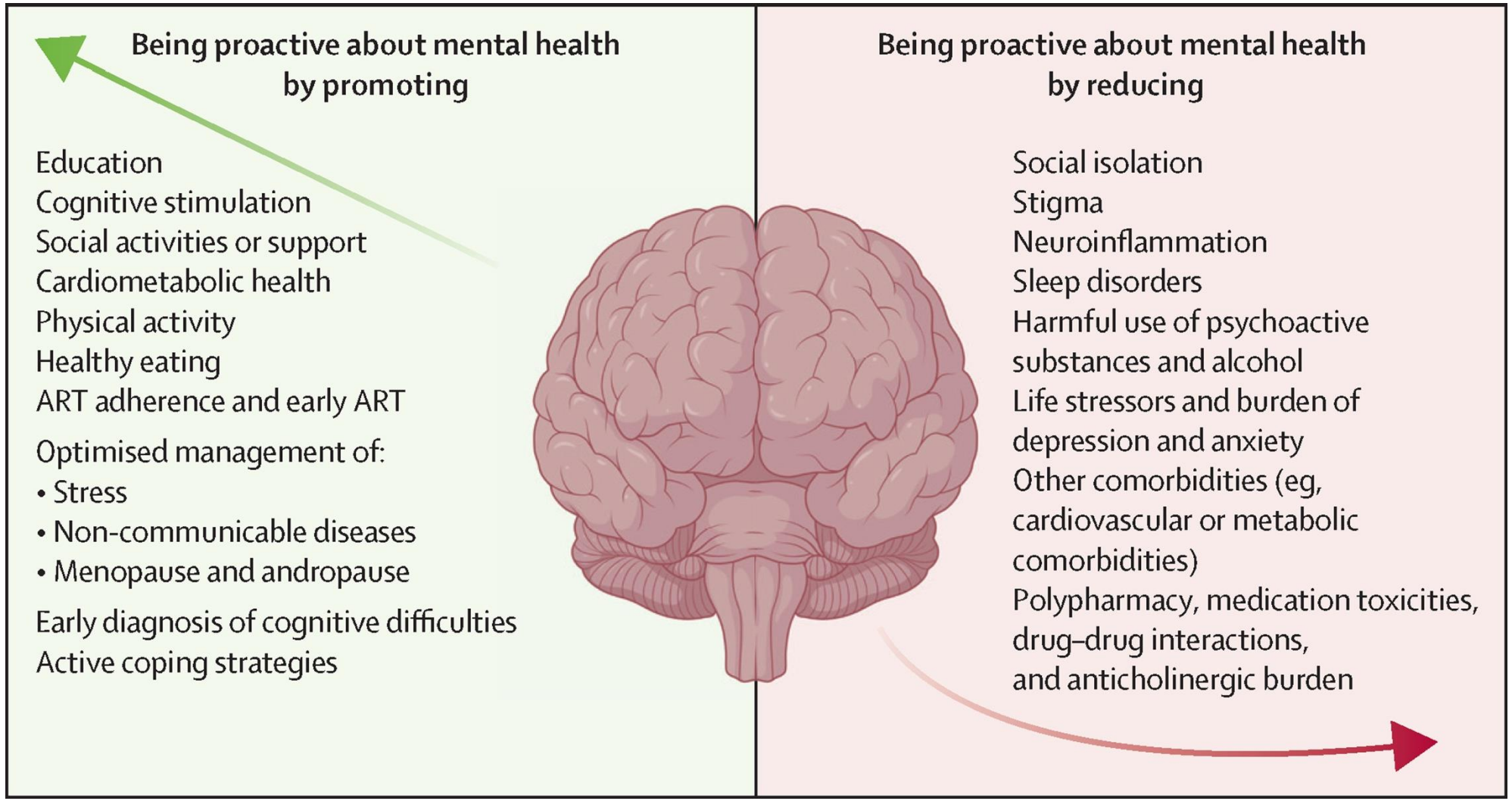
Maximum score	*Score*	*Subtests*
—	—	**Memory: registration** Give the patient four words to recall (dog, hat, green, peach)—one second to say each. Then ask the patient to recall all four after you have said them.
4	( )	**Attention** Antisaccadic eye movements: 20 commands. _____ errors of 20 trials. [≤ three errors = 4; four errors = 3; five errors = 2; six errors = 1; > six errors = 0] *Instructions for attention score: Hold both hands up at the patient's shoulder width and eye height, and ask the patient to look at your nose. Move the index finger of one hand, and instruct the patient to look at the finger that moves, then look back to your nose. Practice until the patient is familiar with the task. Then, instruct the patient to look at the finger that is NOT moving. Practice until the patient understands the task. Perform 20 trials. An error is recorded when the patient looks toward the finger that is moving.*
6	( )	**Psychomotor speed** Ask patient to write the alphabet in uppercase letters horizontally across the page and record time: _____ seconds. [≤ 21 seconds = 6; 21.1 to 24 seconds = 5; 24.1 to 27 seconds = 4; 27.1 to 30 seconds = 3; 30.1 to 33 seconds = 2; 33.1 to 36 seconds = 1; > 36 seconds = 0]
4	( )	**Memory: recall** Ask for the four words from memory registration (above). Give one point for each correct recall. For words not recalled, prompt with a semantic clue, as follows: animal (dog); piece of clothing (hat), color (green), fruit (peach). [one-half point for each correct recall after prompting]
2	( )	**Construction** Copy the cube below; record time: _____ seconds. [< 25 seconds = 2; 25 to 35 seconds = 1; > 35 seconds = 0] 
Total score	__/16*	

NOTE: *This scale requires training to administer and may not be preferable for use in a clinical setting. The Modified HIV Dementia Scale*[11] *omits the attention category and may be more suitable for administration by a physician. In the modified scale, the maximum possible score would be 12; < 7.5 points indicates possible HIV-associated dementia.*

HIV = human immunodeficiency virus.

**—A score of less than 10 points indicates possible HIV-associated dementia.*

Strategies to support brain health in PLWH



Cysique LA, Levin J, Howard C, et al; NeuroHIV and Aging Advocacy Group. Fostering healthy cognitive ageing in people living with HIV. Lancet HIV. 2025 Jan;12(1):e71-e80. doi: 10.1016/S2352-3018(24)00248-0. Epub 2024 Nov 29. PMID: 39615509.

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