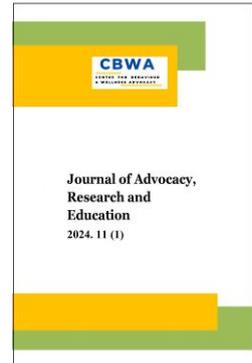




Publisher: Centre for Behaviour and Wellness Advocacy, Ghana  
Co-publisher: Cherkas Global University, USA  
Has been issued since 2014  
ISSN 2410-4981. E-ISSN 2508-1055  
2024. 11(1): 61-65

DOI: 10.13187/jare.2024.1.61

Journal homepage:  
<http://kadint.net/our-journal.html>



## **Integrating Neurocognitive Support into HIV/AIDS Management in Ghana: A Position Statement**

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### **Abstract**

Despite significant progress in HIV/AIDS management in Ghana, some critical gaps remain in the diagnosis and treatment of HIV-related neurocognitive problems. As Ghana strives to provide comprehensive care for HIV clients, it is critical to look beyond viral suppression and address the disease's neurological implications. This position statement aims to provide a general overview of HIV-Associated Neurocognitive Disorders, gaps in its management, and the role of integrating neurocognitive screening and neurorehabilitation in existing HIV care services in Ghana. It is imperative that integrating neurocognitive support into HIV management in Ghana is not only a matter of improving quality of life but also a critical step toward providing comprehensive HIV/AIDS care services.

**Keywords:** Ghana Health Service, Ghana, HIV/AIDS, HIV-Associated Neurocognitive Disorder, Ministry of Health, position statement.

### **1. Overview of HIV-Associated Neurocognitive Disorders**

Historically, systemic symptoms of AIDS were the main focus of early research (Greene, 2007). However, as the HIV epidemic spread, there were increased concerns about the virus' effects on the central nervous system, resulting in neurological symptoms. A few studies began to document cognitive and motor deficits among people living with HIV, and in the late 1980s and early 1990s, further studies expanded the scope of understanding by providing evidence on the direct impact of HIV on the cortex and subcortical regions of the brain (Berger, 2007; Brew et al., 1988; Gendelman et al., 1994; Navia et al., 1986). These observations led to the coining of the term "AIDS Dementia Complex (ADC)", which describes dementia-like manifestations with severe cognitive features (Brew et al., 1988; Navia et al., 1986; Price et al., 1988).

As efforts intensified and knowledge expanded about the impact of HIV on the brain, researchers and clinicians began to consider a diagnostic criterion that differentiates milder forms of neurological symptoms from severe ones. Later, in 2007, a consensus panel of experts coined the term "HIV-Associated Neurocognitive Disorders (HAND)" in replacement of ADC (Antinori et al., 2007). The HAND criteria, also known as the Frascati criteria, characterised HAND as "Asymptomatic Neurocognitive Impairment (ANI), Mild Neurocognitive Disorder (MND), and HIV-Associated Dementia (HAD)" (Antinori et al., 2007). Given this classification, the diagnosis of

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Received: 02 February 2024 Revised: 22 March 2024 Accepted: 22 March 2024 Published: 31 April 2024

HAND is based on an individual's performance in the cognitive domains of "verbal/language, attention/working memory, abstraction/executive, memory (learning; recall), the speed of information processing, sensory-perceptual, motor skills" in addition to their daily functioning ability (Antinori et al., 2007).

Currently, there are advancements in research on HAND with varying scopes of study. Studies have hypothesised that the advent of combination antiretroviral therapy (cART) would have positively impacted HAND. Nonetheless, empirical evidence suggests that the severe form of HAND has declined in the era of cART, but the milder forms of HAND still persist (Smail, Brew, 2018). It is important to present this overview to clarify the ambiguities regarding the use of the term HAND and other related terms while also providing clarity on the term, its definition, and criteria for diagnosis to inform clinical and research decisions.

## 2. Epidemiology of HAND in Ghana

To the best of my knowledge, coupled with evidence from the literature review, only two published studies have been conducted in Ghana in the area of HAND. First, Asiedu et al. (2020) examined the neurocognitive performances of a Ghanaian sample of 104 people on ART using the Trail Making Test Part A (TMT A), Stroop Colour-Word (SCW) and International HIV Dementia Scale. The study found 48 % of people living with HIV to have met the criteria for risk of neurocognitive impairment. Also, Sarfo et al. (2021) conducted a secondary analysis of the dataset from a case-control study involving 256 people on cART, 244 people living with HIV not initially on cART, and 246 HIV-negative individuals who served as controls for neurocognitive assessments. Using the Frascati criteria, findings revealed the overall prevalence of HAND to be 25 %, with the prevalence of ANI, MND, and HAD found to be 21.5 %, 3.5 % and 0.0 %, respectively. Factors such as age (Asiedu et al., 2020), educational level (Asiedu et al., 2020; Sarfo et al., 2021), stage 4 disease (Sarfo et al., 2021), hypertension and the use of nevirapine (Sarfo et al., 2021) were found to be associated with HAND. Clearly, epidemiological studies in the area of HAND within the Ghanaian domain are insufficient.

## 3. Current Landscape of HIV Management in Ghana

Ghana has made significant strides in the provision of HIV/AIDS care, particularly to those living with HIV, their partners, unborn children of HIV-pregnant women and the general population. For instance, Ghana embraced the 90-90-90 initiative, aligning with UNAIDS's directive aiming to ensure that 90% of individuals are aware of their HIV status, 90% of them receive cART, and that viral load reduction of 90% is achieved among people living with HIV by 2020. However, by the end of 2018, Ghana fell short of this target, registering a performance of 66-37-64 across the three categories. Various factors, including suboptimal HIV health-seeking behaviours, challenges in ART adherence, limited ART accessibility, and a 60% unmet demand for ART, contributed to this shortfall (Ghana Health Service [GHS], 2019; Ogunbajo et al., 2018; Sefah et al., 2022).

Furthermore, in 2019, a collaborative effort between the GHS and the National AIDS/STI Control Programme resulted in the publication of the Consolidated Guidelines for HIV Care in Ghana. This guideline is an adaptation of the World Health Organization's Consolidated Guidance, tailored specifically for reviewing and enhancing HIV care and ART protocols in Ghana. The document's main purpose was to "provide guidelines for use by care providers within the continuum of HIV prevention, treatment and care for all age groups and populations in Ghana." These guidelines touched on critical issues such as HIV testing and counselling services; linkage to care and other services; initiation into HIV care; antiretroviral therapy; elimination of mother-to-child transmission; monitoring of clients on ART; changing interrupting therapy; opportunistic infection management and prophylaxis for HIV-related infections among adults, adolescents and children; pre-and post-exposure prophylaxis; supply chain management and rational use of HIV commodities; and HIV data management. To date, these guidelines are being rolled out despite challenges to their achievement. Nevertheless, Ghana remains optimistic about achieving the 95-95-95 objective by 2030.

#### **4. Gaps in Management of HAND in Ghana**

HAND remains a 'hidden endemic' in HIV care in Ghana, partly due to insufficient empirical evidence on the topic, limited surveillance, and asymptomatic cases. Furthermore, the management of HAND as an integrated component of care for people living with HIV/AIDS remains a major challenge, partly due to undiagnosed cases. Without establishing a diagnosis of HAND, it is inevitable that management of HAND is virtually impossible. Although diagnosing HAND is essential, the absence of standardised diagnostic criteria and the limited availability of neuropsychological testing and biomarkers pose significant challenges in Ghana. Various diagnostic criteria, including the Frascati criteria and the global deficit score, rely on neuropsychological testing to evaluate cognitive impairment.

Additionally, criteria like the Memorial Sloan Kettering (MSK) criteria incorporate biomarkers such as cerebrospinal fluid and neuroimaging findings alongside neuropsychological testing. However, the implementation of these criteria in Ghana is hindered by the shortage of trained professionals and resources, particularly in remote areas. Neuropsychological testing may be unavailable or culturally inappropriate, and biomarkers such as cerebrospinal fluid biomarkers and neuroimaging face challenges due to limited equipment and expertise access. These challenges expand beyond the scope of Ghana to other countries within the Sub-Saharan African Region ([Aderinto, 2023](#)).

#### **5. The Role of Neurocognitive Screening and Neurorehabilitation in Ghana's HIV Care**

In light of the numerous setbacks to the diagnosis and management of HAND, conscious efforts are required to integrate neurocognitive support into existing care services for people living with HIV in Ghana. The integration of neurocognitive screening and neurorehabilitation holds immense significance in addressing the multifaceted challenges faced by individuals living with HAND in Ghana. As Sarfo (2014) indicated, the Ghanaian health system needs to build stronger neurocognitive care structures to enhance healthcare delivery.

There is an urgent need to develop and validate culturally appropriate diagnostic criteria and techniques for HAND in Ghana, considering the population's diversity and the resource constraints. Achieving this entails cooperation among researchers, healthcare practitioners, and policymakers to bridge knowledge and resource gaps, enhancing the diagnosis and treatment of HAND across Ghana. Standardised screening protocols can be integrated into routine HIV care visits in Ghanaian ART centres to enable healthcare providers to assess cognitive function, identify impairments, and initiate timely interventions. Furthermore, creating distinct channels for referring patients with neurocognitive impairments to mental health professionals and neuropsychologists will facilitate thorough assessments and individualized interventions to improve their cognitive function and general well-being.

Also, neurorehabilitation is essential to Ghana's HIV care continuum because it will provide focused interventions to boost functional independence, improve cognitive function, and lessen the impact of neurocognitive impairments on day-to-day activities. Using a variety of multidisciplinary techniques such as social support, psychoeducation, and cognitive rehabilitation programs, people with HAND can get comprehensive care that is customised for their needs. By utilising technology-assisted interventions, neurorehabilitation services can be provided to underserved and remote areas, increasing treatment outcomes and improving access to care. Examples of these interventions include telemedicine and mobile health applications.

Furthermore, the role of neuropsychologists in conducting neurocognitive screening and neurorehabilitation in ensuring the provision of effective neurocognitive support for people living with HIV cannot be understated. Legislation and policy reforms are necessary to mandate the acknowledgement, assessment, and oversight of neuropsychologists or clinically trained psychologists with sufficient expertise in HIV neuropsychology within Ghana's healthcare system ([Sarfo, 2014](#)).

#### **6. Conclusion**

Neurocognitive support remains an unexplored and under-utilised component of care for people living with HIV in Ghana. It is morally required, not just an option, for HIV management in Ghana to incorporate neurocognitive support. Ghana can improve treatment outcomes, raise the

standard of living for all HIV-positive people, and achieve the goal of comprehensive healthcare by acknowledging and addressing the neurological aspects of HIV/AIDS. While Ghana continues the fight against HIV/AIDS, it is time to look beyond the virus and adopt a holistic strategy that treats the body and the mind.

## 7. Declarations

### Ethics approval and consent to participate

Not applicable.

### Consent for publication

Not applicable.

### Availability of data and materials

Not applicable.

### Conflict of interest statement

The author reports no conflicts of interest.

### Funding

Not applicable.

## 8. Acknowledgements

We are grateful to the Centre for Behaviour and Wellness Advocacy's editorial staff for their free editing support.

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