

Mind your head

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Let's start by saying that if you ever notice any changes in your cognitive functions such as an increasing difficulty remembering things or concentrating (especially when the task is demanding or you have to multi-skill) or you have problems with fine hand motor coordination (while typing or writing, for example) it is important to raise this with your doctor. Early diagnosis is important because many of these conditions can now be managed and treated.

After [combination therapy](#) [1] Highly Active AntiRetroviral Therapy ??? aggressive treatment of HIV infection using several different drugs together. came along, the incidence of neurocognitive disorders in the HIV community dropped off dramatically. Extreme cases are now relatively rare, however, milder forms are not.

The reason why these milder neurocognitive disorders are still around is thought to be due to our increase in life expectancy. Sometimes co-morbidities such as hepatitis C or cardio-vascular disease play a part. Sometimes it's substance use. And often it's simply because some HIV treatments do not control the [virus](#) [2] A small infective organism which is incapable of reproducing outside a host cell. in the central nervous system (CNS) as well as they do in the rest of the body.

The CNS is separated from the rest of the body by the blood brain barrier which is there to stop infections from entering your brain. After you start combination therapy, the [viral load](#) [3] A measurement of the quantity of HIV RNA in the blood. Viral load blood test results are expressed as the number of copies (of HIV) per milliliter of blood plasma. in your CNS usually drops to undetectable levels both in your blood and in your cerebrospinal fluid (the clear fluid that surrounds the brain). However, over the long-term, HIV sometimes starts to replicate in the CNS while remaining undetectable in the blood. This is associated with the likelihood of developing neurocognitive difficulties. And it's also why a lumbar puncture is sometimes used to see if HIV is replicating in the cerebrospinal fluid.

It's important to emphasise that we're not just talking about HIV associated dementia (HAD). While this advanced form does occur, specialists now recognise a range of neurocognitive disorders from the very mild (with no evident impact on everyday functioning) through to the moderate (with impacts that you can usually notice). All these different forms are grouped under the broad term: HIV-associated neurocognitive disorder (HAND). Mild forms in particular don't usually progress. But down the line they may cause at least a moderate level of difficulties.

Because we are living longer we are also ageing. This is an important achievement of combination therapy. Yet some recent data says that both the length of time you've had HIV combined with how old you are may have something to do with your susceptibility to developing HAND.

A Buenos Aires study, for example, enlisted only people with CD4 cell counts above 350 to find who had an increased risk of neurocognitive impairment. They concluded that the only relevant characteristic within this group was if they were aged above 45. [1](#) Another study has found that both age and HIV disease duration are associated with HAND. [2](#)

There is new hope that combination therapy can be optimised by selecting drugs that are better at controlling HIV in the brain.

The original AIDS drug, zidovudine (AZT), is still one of the best at crossing the [blood-brain barrier](#) [4] A selective barrier (obstacle) between circulating blood and brain tissues that prevents damaging substances from reaching the brain. Certain compounds readily cross the blood-brain barrier; others are completely blocked.. Others include stavudine (d4T), abacavir, lamivudine, and nevirapine. Efavirenz, didanosine, and lamivudine cross it to a lesser degree. As a class, protease inhibitors (PIs) do not have the best blood-brain barrier penetration, with the exception of indinavir, lopinavir-r and amprenavir-r. (Note: the small 'r' means 'boosted with ritonavir'.)

There is significant research showing that optimising drug regimens does improve the neurocognitive functions of

people with HAND.³ There is also research, using a much smaller sample size, that doesn't. ⁴ More definitive research is forthcoming.

A simple tool to help detect whether you are at risk was discussed recently at the Australasian HIV/AIDS Conference in Brisbane. There are plans that this three-minute algorithm will soon become available on the web, so doctors can use it to identify who may need further neurological evaluation.

If you are concerned about your 'brain health' then perhaps suggest to your HIV doctor that they utilise this Neuro-algorithm. Your doctor may then refer you to see a neurologist for further evaluation. If you do have some neurocognitive difficulties, the neurologist will refer you to a [clinical](#) [5] Pertaining to or founded on observation and treatment of participants, as distinguished from theoretical or basic science. neuropsychologist to help minimise any difficulties you may have. In addition, the neurologist may modify your [antiretroviral](#) [6] A medication or other substance which is active against retroviruses such as HIV. regimen.

Remember, the earlier you catch this and the milder the level, the better chance there is of success.

Special thanks to Dr Lucette Cysique for help with this article. She, Professor Bruce Brew and other researchers at the University of NSW and St Vincent's Hospital developed the Neuroalgorithm, the validation of which is pending publication. They are also currently conducting a research study into the neurocognitive effects of HIV and whether HIV infection may cause an increased risk for developing memory and attention difficulties in middle-aged people. Positive patients of St Vincent's Hospital in Sydney can get involved in the study. HIV negative volunteers who are aged 45 or above are also needed. If you fit either bill and would like to help, contact Doctor Cysique on (02) 8382 4104 or by email at lcysique@unsw.edu.au [7]

1. [1](#). Lopardo GD et al. Good neurocognitive performance measured by the International HIV Dementia Scale in early HIV-1 infection. J Acquir Immune Defic Syndr (online edition), 2009
2. [2](#). Bhaskaran K, Mussini C, Antinori A, Walker AS, Dorrucchi M, Sabin C, et al Changes in the incidence and predictors of human immunodeficiency virus associated dementia in the era of highly active antiretroviral therapy. Annals of Neurology 2008, 63:213-221.
3. [3](#). Cysique LA, Vaida F, Letendre S, Gibson S, Cherner M, Woods SP, et al. Dynamics of cognitive change in impaired HIV-positive patients initiating antiretroviral therapy. Neurology 2009, 73:342-348.
4. [4](#). Marra CM, Zhao Y, Clifford DB, Letendre S, Evans S, Henry K, et al. Impact of combination antiretroviral therapy on cerebrospinal fluid HIV RNA and neurocognitive performance. AIDS 2009, 23:1359-1366.

- [neurological conditions](#)

Links:

- [1] <http://www.napwa.org.au/glossary/term/96>
[2] <http://www.napwa.org.au/glossary/term/125>
[3] <http://www.napwa.org.au/glossary/term/416>
[4] <http://www.napwa.org.au/glossary/term/415>
[5] <http://www.napwa.org.au/glossary/term/475>
[6] <http://www.napwa.org.au/glossary/term/122>
[7] <mailto:lcysique@unsw.edu.au>