



HIV and the Brain

Starting antiretroviral treatment and staying mentally active can improve your neurological health.

February 10, 2025 By [Liz Highleyman](#)

Severe neurological manifestations of HIV are less common today thanks to effective antiretroviral treatment, but many people living with the virus still have mild or moderate neurological and cognitive problems, collectively known as HIV-related neurocognitive disorder (HAND). What's more, the aging HIV population is prone to age-related cognitive decline.

In the early years of the epidemic, HIV-related neurological problems—including AIDS dementia—were a major concern. HIV can enter the brain, and studies have shown that this may happen within days after initial infection. The virus can damage the brain directly, and opportunistic infections can cause serious neurological disease.

Yet even when viral load is undetectable, HIV can cause chronic immune activation and inflammation that take a toll on the brain. In the era of effective treatment, HIV-positive people may experience problems with thinking, concentration, memory, learning, verbal fluency, mood, sleep and, in some cases, physical coordination and mobility. Often, these deficits are subtle enough that they do not affect daily life and can only be detected with special tests.

More than half of people living with HIV are age 50 or older, meaning age--related neurocognitive problems—from increased forgetfulness to Alzheimer's disease and other forms of dementia—are a growing concern. Some evidence indicates that HIV-positive people may experience age-related cognitive decline earlier than their HIV-negative peers. But age-related changes in cognition and memory are normal, and it can be hard to tease out the specific effects of HIV. It is not yet known whether people with mild cognitive symptoms are at greater risk for developing dementia.

Many factors can contribute to neurological and cognitive problems among people living with HIV, including a high viral load, a low CD4 count, AIDS-related illnesses, non-AIDS comorbidities and depression or other mental health issues. Alcohol and drug use can also play a role. Some antiretrovirals—especially efavirenz (Sustiva)—and medications for other conditions can cause neuropsychiatric side effects, such as brain fog (slowed thinking and poor concentration), mood

changes and sleep problems.

While it may not be possible to prevent HAND entirely, you can take steps to improve your neurological health. The first is starting and staying on antiretroviral treatment to keep your viral load undetectable. Although it was once considered important to select medications that cross the blood-brain barrier, modern antiretrovirals can control HIV throughout the body.

Managing other conditions that can contribute to worsening brain function is also key. This includes treating coexisting diseases, such as hepatitis C, and controlling high blood pressure and elevated blood sugar and lipid levels. If you smoke, try to quit, and limit use of alcohol and drugs. Exercising, eating a balanced diet and getting enough sleep are all important for overall health, including the health of your brain.

Research shows that staying mentally active throughout life can help stave off cognitive decline. This includes doing puzzles, playing memory games, reading or learning a new language—anything that keeps your brain sharp. Social engagement is also important.

Let your health care provider know if you experience changes in thinking, concentration, memory, mood or other neurocognitive symptoms, especially if they are getting worse over time. It may be helpful to document such symptoms in a diary. Your doctor will try to rule out other causes before settling on a diagnosis of HAND.

There are many tips for coping with poor concentration and memory. These include writing reminder notes or recording memos on your phone, keeping weekly and monthly checklists to help you remember important errands and bills you need to pay, and using a pill organizer to sort your medications. Don't hesitate to ask friends or family members for support and assistance.

Despite decades of research, much remains to be learned about neurological and cognitive problems among people living with HIV. The picture will likely become clearer with more research as the HIV population ages. Ask your provider or visit ClinicalTrials.gov to find studies that aim to learn more about HIV-related neurocognitive problems and develop new treatments.