

■ HEALTH

New findings in HIV research

Researchers say they have new understanding of how the virus behaves, a tiny step towards cure for HIV

TRIBUNE REPORTER

A NEW study of nine women from South Africa has revealed that a disproportionately high number of their viruses at the time of antiretroviral (ARV) initiation went into a hidden state in their bodies to evade treatment, providing new opportunities to develop a cure for HIV.

These findings from a study by UCT, the Centre for the Aids Programme of Research in South Africa (Caprisa) and the University of North Carolina – Chapel Hill were published this week in the journal *Science – Translational Medicine* and featured as the cover article.

With ARV treatment, HIV becomes undetectable in the blood but it remains deep within certain

cells (known as viral reservoir) where treatment cannot reach these viruses (known as latent viruses). People living with HIV have to take ARV treatment for life because strains of HIV hidden in the long-lived viral reservoirs return quickly into their blood if treatment is stopped, even briefly. Until now, this viral reservoir was believed to form continuously over many years starting from the onset of infection.

This new study investigated nine women on ARV treatment and have had no detectable virus for at least four years. These women had been studied over the last 10 to 15 years as part of the Caprisa 002 cohort study in KwaZulu-Natal. In these women, the joint SA-US team of researchers found, surprisingly, that most of the viral strains in the reservoir were those

circulating in the blood at the time of ARV treatment initiation. This new information creates the opportunity to develop new approaches to curing HIV as this discovery indicates that the reservoir could be changed markedly through additional interventions at the time of ARV treatment initiation. The viral reservoir is currently the biggest barrier to a cure for HIV.

Professor Salim Abdool Karim, director of Caprisa and co-lead Investigator of the Caprisa 002 study, said, “The hidden viruses that evade antiretroviral treatment and the body’s immune response are key to developing a cure. This study’s findings take us just one more small step forward in the search for a cure for HIV.”

Dr Melissa-Rose Abrahams, a UCT researcher and primary author of the

findings said, “Our finding is important not only because it informs new strategies and interventions to restrict the latent viruses in the viral reservoir, but also because it was identified in a key population, African women, who are among the worst affected in the global HIV epidemic.”

“Our work suggests that if we could understand the reservoir-forming process better, we might be able to intervene at the start of treatment to reduce the majority of the reservoir that forms at this time,” said co-senior author Professor Ronald Swanstrom of the UNC School of Medicine.

The UCT team at the Department of Virology led by Professor Carolyn Williamson collaborated with Professor Swanstrom’s UNC team to analyse the genetic sequences of HIV from

the Caprisa 002 cohort women over a period of several years before and after they began ARV treatment, in order to compare the latent viruses during treatment with the viruses each year prior to treatment initiation. The researchers used genetic information on the pre-treatment strains and the reservoir strains to decipher clues to when and how the viral reservoir formed. For the nine women in this study, most of their viral reservoirs – about 71% on average – consisted of viral strains that were closely related to the strains circulating just before they started ARV treatment.

The UN estimated that in 2018, there were about 38 million people living with HIV, 22 million people on life-long ARV treatment and almost 1 million HIV-related deaths.