

# ART in acute infection limits viral reservoirs



This study from the vaccine and gene therapy institute in Florida looked at the effect of early treatment on viral reservoirs in rhesus macaque monkeys infected with SIV, a primate virus similar to HIV, when antiretroviral therapy (ART) is started either prior to peak viral replication, at or near the time of peak viral replication, or during early chronic infection. In the very earliest stages of infection, HIV replicates in cellular reservoirs including long-lived memory T-cells as well as anatomical reservoirs such as the brain and intestines. As part of the research towards a cure for HIV, researchers have explored whether antiretroviral therapy started very soon after infection can limit this process. To this end some studies have suggested that reservoirs established early on in infection, before viral replication peaks, may be quantitatively and qualitatively different from reservoirs established later in chronic infection and may be more amenable to cure. Previous research in monkeys indicated that the size of the SIV reservoir in peripheral blood mononuclear cells (PBMCs) and tissues increases significantly between day 7 and day 10 after infection. This study therefore looked at monkeys that were started on multidrug therapy at day 7, day 10, or day 42 after being intravenously exposed to SIV. ART consisted of tenofovir and emtricitabine the integrase inhibitor dolutegravir, and ritonavir-boosted darunavir. SIV viral load was then measured in blood plasma, bone marrow, small intestine mucosa and lymph

nodes. The results showed that early ART, initiated prior to peak virus replication, limits systemic virus dissemination and seeding of the reservoir in peripheral and extra-lymphoid mucosal compartments. But a delay, even as short as three days, can result in 1-2 logs higher tissue-based reservoir size, capable of inducing rapid viraemia. Concluding that waiting 7 days is probably too long. Instead aggressive monitoring for acute infection should take place within 36 hours, as the immediate introduction of ART could profoundly influence treatment outcomes and enhance viral eradication strategies.

[Mascolini, M. 2014. ART in Acute Infection Limits Viral Reservoirs in Three-Group Monkey Comparison. 21st Conference on Retroviruses and Opportunistic Infections.](#)