



Viral Rebound Chance Is Low for Those on Successful HIV Treatment

For those who achieve viral suppression within nine months of starting meds, the rebound risk declines steadily over seven years.

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People who start antiretroviral (ARV) treatment for HIV and reach an undetectable viral load within nine months have a low chance of experiencing a viral load greater than 200, considered a viral rebound. The new analysis that reached this conclusion included in its definition of viral rebound an HIV treatment interruption of a month or longer as well as those viral loads above 200 that occur when someone is still on ARVs.

The analysis of a trove of data about British people taking ARV charts a declining risk of viral rebound over the first seven years of HIV treatment, one that hits an average 3 percent per year from the seventh year on.

This finding has important implications for HIV-related public health because it supports the considerable prevention benefits of getting people living with the virus on successful treatment. A considerable body of research suggests that having a viral load below 200 means that there is an extremely low risk that someone with HIV can transmit the virus; the risk may in fact be zero.

According to the new study's lead author, Andrew N. Phillips, PhD, an epidemiologist and biostatistician at University College London, the research highlights a "small but real risk" that people taking ARVs who have not interrupted treatment may develop a viral load greater than 200 at some point between viral load tests. (Specifically, the study group experienced such rebounds at an overall annual rate of 6 percent and a rate of 2.3 percent from year seven of treatment onward.) Such individuals could potentially spend weeks or months unaware of the fact that they no longer have a fully suppressed virus. So it is possible that individuals may become significantly infectious during such a period without knowing it.

Speaking only of those rebounds that occurred outside of the context of an official ARV treatment interruption of a month or greater, Phillips said, "I suspect, but don't know, that most of the rebounds observed in our study occurred in people who did not have consistent high adherence in the recent period before the rebound."

In other words, individuals taking ARVs arguably have considerable control over preventing viral

rebound by sticking to their daily drug regimen. Self-awareness of recent adherence patterns may help reduce any doubt surrounding an individual's viral load between viral load tests.

Publishing their findings in *The Lancet*, Phillips and his colleagues studied data on 16,101 HIV-positive participants—all of whom were receiving care at clinics in the United Kingdom—in the UK Collaborative HIV Cohort (UK CHIC) Study, an ongoing multicenter cohort study. Included in the study were individuals who began treatment for the virus with three or more ARVs and who achieved full viral suppression (a viral load below 50) within nine months of starting treatment.

The earliest treatment start date was January 1, 1999; the latest was February 21, 2014. The latest date of participants' end of follow-up was November 22, 2014.

The study authors defined a viral rebound as a viral load test result of greater than 200 or a one-month or greater interruption in treatment (during which the viral load would presumably rebound above 200).

A total of 4,519 of the participants experienced a viral rebound for the first time during a cumulative 58,038 years of follow-up, meaning that overall, the study group experienced a first viral rebound at a rate of 7.8 percent per year. Of these viral rebounds, 3,105 (69 percent) amounted to a viral load greater than 200, and 1,414 (31 percent) were a documented treatment interruption.

Of the 3,105 people who had a viral load greater than 200, 2,999 (97 percent) had a subsequent viral load test result available. Of those 2,999 people, 1,377 (46 percent) returned to having a fully suppressed viral load according to their subsequent test, and 1,322 (44 percent) achieved that fully suppressed viral load without changing their ARV regimen. That group of 1,322 constituted 29 percent of all those with viral rebound.

Unfortunately, Phillips and his team's paper did not provide data on individuals' viral load test results at the time they first discovered their rebound. Nor does the paper provide data about the elapsed time between such a test and a subsequent test. Phillips said he may be able to provide such information at a future date.

Phillips noted that the viral load threshold of 1,500, the point above which some in the HIV community consider an individual significantly infectious, "is really not based on very much data at all, so we should not imply that this is a well-evidenced threshold." Even if research did support that viral load as the dividing line between negligible and significant infectiousness, Phillips nevertheless stresses, "Viral load can certainly rise quite rapidly above 1,500 copies in a person who has periods of lack of adherence."

Of the 1,622 people (54 percent of the 2,999 for whom there were subsequent test results) who experienced a viral load greater than 200 and did not have a fully suppressed viral load according to a subsequent test result, the median result of that subsequent viral load test was 906, with a 25th to 75th percentile range of 209 to 13,461. A total of 792 people (49 percent of the 1,622 who

did not re-suppress their virus) had a viral load above 1,000; 436 (27 percent) had a viral load above 10,000; and 157 (10 percent) had a viral load above 100,000.

As people stayed on treatment longer, their rate of viral rebound declined. For their first year on treatment, the viral rebound rate was 12.6 percent; that annual rate declined to 2.5 percent during years 10 to 15. Some demographic groups saw a viral rebound as low as 1 percent per year after the seven-year point. Overall, the viral rebound rate from the seventh year of treatment onward was 3 percent.

When factoring out treatment interruptions, the study authors found that the viral rebound rate was 6 percent overall and 2.3 percent from year seven of treatment onward. The rate of individuals experiencing two consecutive viral load measures greater than 200, including those experienced during treatment interruptions, was 4.9 percent overall and 2 percent from year seven of treatment onward.

Being older and starting ARVs more recently were both associated with lower rates of viral rebound. Compared with men who have sex with men (MSM), men and women of African descent had higher rates of viral rebound.

Starting HIV treatment with a regimen other than a non-nucleoside reverse transcriptase inhibitor (NNRTI)-based regimen or a Norvir (ritonavir)-boosted protease inhibitor-based regimen was associated with a lower risk of viral rebound after five years of treatment.

The study authors concluded: “In people starting [ARV treatment] who have achieved viral load suppression on a first-line regimen started after 2008, rates of viral rebound are low and decline over seven years to a low plateau.”

In MSM older than 45, the estimated viral rebound rate at that plateau is 1.4 percent per year. Factoring out the rebounds that amounted to a single viral load measurement of greater than 200 followed by a subsequent fully suppressed viral load measurement, the researchers concluded that the viral rebound plateau rate was about 1 percent per year.

“These results,” the investigators wrote, “suggest that many people on [ARV treatment] will not have viral rebound over their lifetime.”

When discussing the study’s limitations, the researchers noted, “Our results are based on people who have not had previous viral rebound.” Thus, their results “should not be extrapolated to people who do not manage to achieve a good initial virological response to [ARV treatment] in a suitable time frame or who are receiving second or subsequent lines of [ARV treatment].”

To read the study, [click here](#).