

People on Modern HIV Treatment Can Have a Near-Normal Life Expectancy

However, those with a very low CD4 count have a substantially shorter life expectancy, emphasizing the need for prompt treatment.

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People with HIV who use effective modern [antiretroviral therapy](#) (ART) and maintain a high CD4 T-cell count can expect to live nearly as long as HIV-negative people in the general population, according to study results published in [The Lancet HIV](#). But those with a low CD4 count do not fare as well, underscoring the need to start treatment before serious immune system damage occurs.

“For people with HIV on ART and with high CD4 cell counts who survived to 2015 or started ART after 2015, life expectancy was only a few years lower than that in the general population, irrespective of when ART was started,” the study authors wrote. “However, for people with low CD4 counts at the start of follow-up, life-expectancy estimates were substantially lower, emphasizing the continuing importance of early diagnosis and sustained treatment of HIV.”

[Antiretroviral treatment has come a long way](#) since the first antiretroviral drug, AZT (Retrovir), was approved in 1987. In the late 1990s, combination regimens became widely available in high-income countries, leading to a dramatic increase in life expectancy. Today, treatment is convenient, well tolerated and highly effective. But even people with an undetectable viral load can have ongoing immune activation and inflammation that contributes to a host of health problems, raising concern that HIV could shorten their life span.

Adam Trickey, PhD, of the University of Bristol, and an international team of colleagues estimated life expectancy among adults living with HIV in North America and Europe who were on ART for at least one year from 2015 onwards. That was the year the World Health Organization changed its treatment guidelines to recommend ART for everyone diagnosed with HIV regardless of CD4 count, after the [START trial](#) showed that initiating treatment early leads to better outcomes. The United States made this change sooner, in 2012.

The researchers used data from the Antiretroviral Therapy Cohort Collaboration and the U.K. Collaborative HIV Cohort Study. The analysis included 206,891 people who either started ART as adults between 1996 and 2014 and had been on treatment for a year or more by 2015 or started ART between 2015 and 2019 and survived for at least a year thereafter. From 2015 onward, 5,780 deaths from any cause were recorded.

About three quarters of the cohort were men. Over time, the proportion of white people fell, while the proportions of Black and Latino people rose. People who started treatment before 2015 were older, and they had been on ART for a median of about eight years. More of them had received an AIDS diagnosis, they had a lower nadir (lowest-ever) CD4 count and some had used less effective and less well tolerated older antiretrovirals. The group that started treatment for the first time in 2015 or after were more likely to be recently diagnosed, and they had a lower current CD4 count and a higher viral load, on average.

The researchers estimated the remaining years of life left at age 40 and looked at variables associated with mortality. These estimates were then compared with estimated years of life remaining in a multicountry general population.

For men, remaining life expectancy at age 40 was estimated at 34.5 years (for a total of 74.5 years) if they started ART before 2015 and 37.0 years (total 77.0) if they started treatment after that point. For women, the corresponding estimates were 35.8 years (total 75.8) and 39.0 years (total 79.0), respectively.

Life expectancy was longer for people with a CD4 count of 500 or higher at the start of follow-up—the low end of the normal range for HIV-negative people. Men at age 40 with a high CD4 count could expect to live 38.0 more years (total 78.0) if they started treatment before 2015 and 39.2 more years (total 79.2) if they started later. For women with a similarly high CD4 count, the corresponding estimates were 40.2 more years (total 80.2) and 42.0 more years (total 82.0), respectively. These estimates are in line with life expectancy for people of a similar age in the general population: about 81 years for men and 86 years for women.

But life expectancy was around 20 years shorter for those with a CD4 count below 50 at the start of follow-up. Men at age 40 with a very low CD4 count could expect to live 18.2 additional years (total 58.2) if they started treatment before 2015 and 23.7 more years (total 63.7) if they started later. For women, the corresponding estimates were 19.4 more years (total 59.4) and 24.9 more years (total 64.9), respectively.

Mortality Risk Factors

After adjusting for other factors, current age and extent of immune deficiency had the greatest impact on life expectancy.

People with a CD4 count below 50 had about a fivefold higher risk of death than those with a level above 500, while those with a count of 100 to 199 (meeting the criteria for an AIDS diagnosis) had about a threefold higher risk. Even those with less severe immune suppression—a CD4 count between 200 and 350—had about twice the risk of death as those with a count above 500.

Older people had a lower life expectancy than younger individuals, as expected, and men had a slightly higher risk of death compared with women. People who acquired HIV through injection drug use had about a 2.5-fold higher risk of death and those who acquired HIV via heterosexual sex had a slightly higher risk than men who have sex with men.

People who started treatment after 2015 fared somewhat better. Those who started treatment between 1996 and 1999 had about a 30% greater risk of death compared with those who started in 2015 or later, and those who started between 2000 and 2014 had an intermediate risk.

People with a viral load above 50 at the start of follow-up had about a 30% greater risk of death than those with an undetectable level, and people with hepatitis C coinfection had about a 40% greater risk. But other factors—including lowest-ever CD4 count, prior treatment with a single drug (monotherapy) and previous use of poorly tolerated early antiretrovirals, such as AZT—had a smaller effect.

This study looked only at life expectancy, not health-related quality of life. Even HIV-positive people on effective ART with a high current CD4 count tend to experience more health problems at an earlier age than their HIV-negative peers. What's more, people with HIV have comparatively more additional risk factors, such as hepatitis C or smoking.

Most deaths among people with HIV on ART in high-income countries are now due to non-AIDS causes, such as cancer and cardiovascular disease, the authors noted. “[T]reatment and prevention of comorbidities in people with HIV is important to ensure the quality of remaining years of life,” they wrote. Starting ART promptly—which means less time with active viral replication that damages the immune system—can reduce the risk for poor health as well as death.

The researchers said they expect that their findings should be generalizable to HIV-positive adults on ART in other high-income countries, but might be less relevant in low- and middle-income countries or in settings where access to treatment is restricted or costly.

“A normal life expectancy brings hope: that one can reach life’s milestones, contribute to society, dream—in short, live,” Marina Klein, MD, of McGill University Health Centre in Montreal, wrote in an [accompanying commentary](#). “Ending the stigma associated with HIV requires ending the fear of infection. The knowledge that the life span of people with HIV is nearly the same as that of the general population could help to alleviate this fear and could encourage people to come forward for HIV testing and care and to disclose their HIV status to their partners. Simple things like being able to access life insurance and plan for retirement could help to normalize living with HIV.”

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