# People Who Start HIV Treatment Early Have a Normal Life Expectancy

But even starting antiretrovirals with a high CD4 count doesn't close the wide gap in years lived without major health problems.

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The good news is that the gap in life expectancy between people with and without HIV has steadily narrowed in recent years, falling to nine years. Furthermore, those who initiate treatment for the virus when their CD4 count is at least 500 have a normal life expectancy.

The sobering news is that even when people with HIV begin antiretroviral (ARV) treatment soon after contracting the virus while their immune system is still robust, they are expected to live substantially fewer years before they experience major health problems.

Julia Marcus, PhD, MPH, of Harvard Medical School, presented findings this week at the 2020 Conference on Retroviruses and Opportunistic Infections in Boston from a study of people with and without HIV who received care and insurance coverage from Kaiser Permanente.

A previous study Marcus published in 2016 found that between 2008 and 2011, people with HIV were projected to live 13 fewer years compared with HIV-negative individuals and that the gap was nine years for those who started treatment with a high CD4 count.

In her new study, Marcus and her colleagues sought to determine whether life expectancy has since improved for the HIV population and if so how many of the years of expected additional life are projected to be free of major health problems.

The study included Kaiser Permanente members in Northern California (4.4 million people), Southern California (4.6 million people) and the Mid-Atlantic region (750,000 people).

The investigators assembled a cohort of people 21 years old and older who were served by Kaiser Permanente, which provides both insurance coverage and medical care to its members, between 2000 and 2016. Every one person with HIV was matched with 10 people without the virus, based on age, sex, race, year and the medical center where they received care.

The study looked at six major health problems:

chronic liver disease, defined by an inpatient or outpatient diagnosis in the medical records; chronic kidney disease (CKD), defined by at least two estimated glomerular filtration rate (eGFR) lab test results below 60 milliliters per minute at least 90 days apart;

- chronic lung disease, defined by an inpatient or outpatient diagnosis;
- diabetes, defined by a diagnosis of or prescriptions for the condition;
- cancer, according to cancer registries;
- cardiovascular disease (CVD), defined by inpatient or outpatient diagnosis.

Life expectancy was defined as the number of years an individual was expected to live past age 21. So if the life expectancy were 60 additional years, an individual would be expected to live until they were 81 years old.

There were 39,000 people with HIV in the cohort and 387,767 people without the virus. Key demographics were identical between the two groups. The average age was 41 years old. Eighty-eight percent were men, 45% were white, 25% were Black, 24% were Latino and 5% were Asian.

In the HIV-positive group, the likely means by which they contracted the virus included sex between men (70%), heterosexual sex (20%) and injection drug use (8%). Eighteen percent of the cohort members had taken ARVs prior to entering the Kaiser Permanente system, and 64% started ARVs for the first time during the follow-up period. Twenty-nine percent of the cohort had a CD4 count of at least 500 when they started HIV treatment.

Marcus and her colleagues broke down the study period into four-year increments: 2000 to 2003, 2004 to 2007, 2008 to 2010, 2011 to 2013 and 2014 to 2016.

Across those time periods, overall life expectancy for HIV-negative people rose from 60 additional years at age 21 during 2000 to 2003 to 65 additional years during 2014 to 2016. People with HIV, meanwhile, started with just 38 years of additional expected years during the first four-year period and then experienced a rapid increase in life expectancy over time, such that by the last four-year period, they were expected to live 56 additional years after age 21.

This meant that during 2014 to 2016, HIV-negative 21-year olds were expected to live to age 86 and their HIV-positive peers were expected to life to age 77. The 22-year gap in life expectancy seen during 2000 to 2003 narrowed to nine years by that latter four-year period.

However, the study saw essentially no change in the number of years that people with HIV were expected to live past age 21 without any of the major health problems included in the analysis. During 2014 to 2016, HIV-positive 21-year-olds were expected to develop major health problems after just 15 years, compared with 31 years among their HIV-negative peers—a 16-year gap.

Over the study period, there was a persistent, substantial gap based on HIV status in expected life spent without major illness when it came to chronic liver disease, CKD and chronic lung disease.

The expected number of years a 21-year-old during 2014 to 2016 would live before developing chronic liver disease was 34 years among people with HIV and 58 years among people without the virus. For CKD, the corresponding figures were an additional 41 years and 58 years. And for chronic lung disease, the respective figures were a respective additional 26 years and 41 years.

That said, for the three other major health problems included in the analysis, the gap in expected years lived without them did narrow during the study period. During 2000 to 2003, people with and without HIV were expected to live a respective 31 and 46 additional years after age 21 free of diabetes; during 2014 to 2016, the corresponding figures were an additional 44 years and 52 years. During the first period, people with and without HIV were expected to live a respective 34 and 54 additional years free of cancer; during the last period, the corresponding figures were 50 years and 59 years. And during the first period, people with and without HIV were expected to live a respective additional 36 years and 54 years free of CVD; by the last period, the corresponding figures were 53 years and 61 years.

While the HIV-positive cohort as a whole had a life expectancy at age 21 of an additional 55 years, this figure was 66 years among those who started ARVs with a CD4 count of 500 or above. This meant that those treated for the virus early in the course of their infection had essentially the same life expectancy as their HIV-negative peers, who were expected to live an additional 64 years after age 21.

However, starting HIV treatment early was associated with no difference in the expected number of additional years that HIV-positive 21-year-olds were expected to live without major health problems. HIV-positive people overall were expected to live an additional 14 years, and those who started ARVs early were expected to live an additional 13 additional years free of major health problems, compared with 29 additional years among those who did not have the virus.

When the study authors parsed the data by individual major health problems, however, they found that among people with HIV, starting ARVs with a CD4 count of at least 500 did in fact improve the number of years they were expected to live past age 21 without cancer or CVD. Early treatment did not boost the number of expected additional years lived without diabetes or liver, kidney or lung disease.

In sum, there remains a nine-year gap in life expectancy between those with and without HIV—unless people with HIV begin ARVs early, in which case they have a normal life expectancy. And people with HIV are expected to live 16 fewer years without major health problems compared with their HIV-negative peers.

The study’s findings, Marcus asserted, are generalizable to the broader population of insured people with HIV. That said, people who receive care and insurance from Kaiser Permanente tend to be more affluent than the general population. So this study may not be generalizable to people receiving Medicaid, Medicare or other sources of public insurance, such Ryan White CARE Act coverage, or those who are uninsured.

The study is also limited by the fact that the cohort analyzed consisted predominantly of men and

no data on gender identity were available.

Marcus concluded that more attention must paid to preventing major health problems among people with HIV.

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