HIV and COVID-19: What Do We Know Now?

Larger studies suggest people living with HIV might have a modestly higher risk of severe COVID-19, but much remains to be learned.

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In the early days of the pandemic, POZ published a roundup of What People With HIV Need to Know About the New Coronavirus. Many HIV-positive people were concerned about their risk because immune suppression is linked to more severe COVID-19. What's more, nearly half of people living with HIV are over 50 and many have underlying health conditions associated with worse COVID-19 outcomes.

At the time, small studies and anecdotal reports suggested people living with HIV were not more likely to test positive for the SARS-CoV-2 coronavirus or to develop severe COVID-19 or die from it. In fact, there were some early hints that antiretrovirals used for HIV treatment or prevention might offer some protection against the new virus or could be used to treat it; this was not confirmed in follow-up studies.

But as time went on, larger studies began to show that people with HIV and COVID-19 indeed might have a modestly increased risk for poor outcomes, including death.

James Tesoriero, PhD, of the New York State Department of Health, and colleagues recently reported in a preprint that during the initial wave in New York City, people with HIV and COVID-19 had a higher rate of hospitalization than HIV-negative people. Between March and June 2020, the researchers identified 2,988 cases of COVID-19 among people with HIV. After adjusting for age, sex and region, HIV-positive people did not have a significantly higher likelihood of being diagnosed with the coronavirus. People with HIV and COVID-19 did have about a 40% higher likelihood of hospitalization, but once they were hospitalized, mortality rates for people with and without HIV were similar.

As described in The Lancet HIV, Krishnan Bhaskaran, PhD, of the London School of Hygiene and Tropical Medicine, and colleagues analyzed data from OpenSAFELY, which collects information about COVID-19 risk factors and outcomes from the National Health Service in England. Of the more than 17 million adults in the database, 27,480 were HIV positive; most people with HIV in England are on treatment with viral suppression. A total of 14,882 COVID-19 deaths were reported through June, including 25 among people living with HIV. After adjusting for age and sex, people

with HIV had nearly a threefold higher risk of death than HIV-negative people; the difference appeared to be even larger for Black people, who had more than a fourfold higher risk. However, the disparity appeared to be greater early in the pandemic and then diminished

“Our findings suggest that people living with HIV might be a high-risk group for COVID-19 death, indicating a need to consider targeted policies for this group,” the study authors wrote. “People living with HIV might also need priority consideration if and when a vaccine against SARS-CoV-2 becomes available.”

In another study from the United Kingdom, published in Clinical Infectious Diseases, Anna Maria Geretti, MD, PhD, of the University of Liverpool, and colleagues analyzed data from more than 47,000 patients hospitalized with COVID-19 the International Severe Acute Respiratory and Emerging Infections Consortium (ISARIC) database; 122 were living with HIV, most of whom were on antiretroviral treatment. Of note, 70% of the HIV-positive people hospitalized with COVID-19 were under age 60, compared with just a quarter of the HIV-negative patients. After controlling for age, sex, comorbidities and other factors, people with HIV had a 69% higher risk of dying from COVID-19—and among those under 60, the risk nearly tripled.

In June, Mary-Ann Davies, MBChB, PhD, of the Western Cape Department of Health, and colleagues first reported findings from a study of people diagnosed with COVID-19 in South Africa; follow-up data were presented at the International AIDS Conference in July and published in Clinical Infectious Diseases. Among the 22,308 people with COVID-19, a total of 625 died; older age and uncontrolled diabetes were the strongest mortality risk factors. As in the study described above, people with HIV were more likely to die at a younger age (39% versus 13% under age 50). After adjusting for age, sex and other comorbidities, HIV-positive people—even those on antiretroviral treatment with viral suppression—were more than twice as likely to die from COVID-19, and 8.5% of COVID-19 deaths were attributable to HIV. Among hospitalized patients, however, HIV conferred a more modest added risk.

While these reports are concerning, other studies continue to see little or no association between HIV status and COVID-19 outcomes.

For example, an analysis of data from the Veterans Aging Cohort Study—the largest U.S. cohort of people living with HIV—did not show higher rates of testing positive for SARS-CoV-2, hospitalization for COVID-19, intensive care admission or death among people with HIV, according to a report by Lesley Park, PhD, MPH, of Stanford University School of Medicine, at the International AIDS Conference.

Another study by Keith Sigel, MD, PhD, of the Icahn School of Medicine, and colleagues identified 88 HIV-positive people diagnosed with COVID-19 in the Mount Sinai hospital system in New York City during March and April; all were on antiretroviral treatment and most had viral suppression. Compared with a group of HIV-negative COVID-19 patients matched for age, sex and race/ethnicity, the HIV-positive group had more comorbidities (including higher rates of chronic

lung disease, liver cirrhosis and cancer) and were more likely to smoke. Nonetheless, although poor outcomes were common during the height of the city's COVID-19 crisis—18% of the HIV-positive people were put on ventilators and 21% died—rates did not differ according to HIV status.

COVID-19 Risk Factors

Across studies, HIV-positive people who were older and had common comorbidities such as obesity or diabetes had worse COVID-19 outcomes, as is true for the population as a whole.

An analysis from the TriNETX research network, which included more than 51,000 people with COVID-19, of whom 404 were HIV positive, found that while people with HIV had a higher mortality rate than HIV-negative people (5.0% versus 3.2%), this difference was driven by a higher burden of comorbidities. However, people with HIV were more likely to be hospitalized with COVID-19 even after accounting for comorbidities (19.3% versus 10.6%).

What's more, the socioeconomic and racial/ethnic disparities of COVID-19 also apply to people with HIV, with lower-income and Black and Latino people being more likely to contract the coronavirus and develop severe disease.

A recent study by Monica Gandhi, MD, MPH, of the University of California at San Francisco (UCSF), and colleagues found that people with HIV were more likely to test positive for the coronavirus than HIV-negative people in San Francisco (4.5% versus 3.5%), although clinical outcomes were similar. Of the 193 HIV-positive people diagnosed with COVID19 through early September, 38% were Latino and 12% were Black—roughly twice their proportions in the city's population—and nearly half were homeless or marginally housed.

Another analysis by the New York City Department of Health and Mental Hygiene identified 2,410 HIV-positive people diagnosed with COVID-19, accounting for about 1.1% of all COVID-19 diagnoses in the city (the city's estimated HIV prevalence is 1.5%). People with HIV and COVID-19 had higher rates of hospitalization, intensive care admission and death. Compared with all HIV-positive city residents, and all those diagnosed with COVID-19, people with both HIV and COVID-19 were more likely to be Black or Latino and to live in high-poverty neighborhoods.

People with poorly controlled HIV and low CD4 T-cell counts also appear to be at greater risk for worse COVID-19 outcomes.

In a recent study published in HIV Medicine, Christian Hoffman, MD, PhD, of the ICH Study Center Hamburg, and colleagues found that among 175 people with HIV and COVID-19 in Germany, Italy and Spain, most of whom were on antiretroviral treatment with an undetectable viral load, having a current CD4 count below 350 was associated with about a threefold higher risk of severe COVID-19, while having ever had a count below 200 was linked to a higher risk of death.

About a third of people diagnosed with HIV in the United States do not have viral suppression. These findings underscore the importance of starting and staying on antiretroviral treatment

despite restrictions imposed to reduce the spread of the coronavirus.

Impact on HIV Care

Early in the pandemic, people were advised to stay home and minimize contact with the health care system. In many cases, telemedicine replaced in-person visits. HIV testing, viral load monitoring and pre-exposure prophylaxis (PrEP) prescribing and monitoring have all declined this year.

“People with HIV went into hiding, but we need to get them back into the clinics,” Steven Deeks, MD, of UCSF, said in an interview for POZ’s July-August feature on COVID-19 and HIV. “We need to say there’s a balance between staying out of the health care system and engaging with the health care system.”

In San Francisco, HIV testing decreased by 54% in April, a month after the city imposed its shelter-in-place order, according to Hyman Scott, MD, of the San Francisco Department of Public Health. While testing has since increased, the number of tests in October was still 15% below last year’s level. Viral load testing declined by 57% in April, and in October it remained 20% below last year’s level, Scott told POZ.

Gandhi’s team recently reported that among people with HIV receiving care at Zuckerberg San Francisco General Hospital’s Ward 86 HIV clinic, the likelihood of viral suppression fell by 31% compared with pre-COVID levels after the clinic shifted to telephone visits. Telehealth “may lead to less access to clinic-based social support services essential to achieving viral suppression among vulnerable groups,” the study authors wrote.

While COVID-19 cases and deaths continue to surge across the country, the arrival of the first vaccines means there’s light at the end of the tunnel. Many people with HIV are wondering whether the vaccines are safe for them and where they’ll end up in the queue.

The first two vaccines authorized by the Food and Drug Administration, from Pfizer/BioNTech and Moderna/National Institutes of Health, were 95% and 94% effective at preventing symptomatic illness in Phase III trials.

Advocates successfully pushed for people with stable HIV to be included in these trials. Subgroup analyses of these participants have not yet been reported, but no unusual safety concerns have arisen. However, it’s possible that people with immune suppression may not respond as well to the vaccines.

“There is no reason to believe that people with HIV should not get the vaccine,” Gandhi told POZ. “I will be encouraging my patients with HIV, especially those on antiretroviral treatment, to get the vaccine.”

Now that vaccination is well underway for health care workers and residents of long-term care facilities (Phase 1a), the debate continues about whether the next round should prioritize people

ages 75 and older, who are most likely to die of COVID-19, or frontline essential workers who are at greatest risk of exposure. A Centers for Disease Control and Prevention (CDC) advisory committee included both groups in Phase 1b.

Phase 1c will include people ages 65 to 74 and those under 65 with high-risk health conditions that put them at higher risk for severe COVID-19. The CDC's list of high-risk conditions includes cancer, chronic kidney disease, chronic obstructive pulmonary disease, Down syndrome, type 2 diabetes, heart conditions, obesity, sickle cell disease, smoking and pregnancy. Having an immunocompromised state due to a solid organ transplant is included, but not HIV.

Advocates have argued that HIV-positive people should be considered a priority group. This is especially important for those with a detectable viral load, a low CD4 count or AIDS-related illnesses. But even people with well-treated HIV who have a near-normal CD4 count may still have subtle immune deficiency and chronic inflammation that could raise the risk of COVID-19 complications.

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