Even Measures Designed for People With HIV Underestimate Cardiovascular Risk

An HIV-specific model underestimated the risk for heart attacks and other cardiovascular events.

September 8, 2021 By Heather Boerner

A metric suggested by the American Heart Association for predicting cardiovascular events among HIV-positive people underestimated the actual rate of heart attacks, strokes and bypass surgeries in a cohort of people living with HIV in Texas, according to a paper published in HIV Medicine.

Researchers have been trying for years to figure out why people with HIV tend to have higher rates of heart disease and how to predict—and prevent—the condition in HIV-positive people who otherwise seem healthy. Traditional scores for predicting heart disease in the general population, like the Framingham risk score, notoriously underestimate heart disease risk for people with HIV, who develop physiological changes associated with cardiovascular risk, such as increased arterial plaque buildup, despite not meeting other criteria, like older age and abnormal lipids. Even young people with HIV are prone to heart disease.

The long-running Data Collection on Adverse Effect of Anti-HIV Drugs (D:A:D) study has been exploring this connection since 1999. The study found that specific HIV medications, like Prezista (darunavir) and abacavir, areassociated with increased risk for heart attack and stroke.

The study developed a model, updated in 2016, that clinicians can use to augment traditional risk scores. The D:A:D model was based on data from nearly 33,000 people living with HIV in Europe and Australia. It includes not just traditional risk factors, such as cholesterol levels and hypertension, but also factors such as a person's CD4 count and which HIV drugs they've been exposed to. But it turns out that, since 2016, the D:A:D model hadn't been validated very often.

So Ifedioranma Anikpo, MD, an epidemiologist at JPS Health Network in Fort Worth, Texas, and colleagues looked at data from 1,029 people living with HIV who received care at a JPS safety net clinic between 2013 and 2019. About half were covered by public insurance, such as Medicaid, and 38% were uninsured.

The participants had no previous history of a cardiovascular event, such as a heart attack, stroke or heart bypass surgery. Researchers then applied the D:A:D model and looked to see whether it

did a good job of predicting who would eventually have a cardiac event in the following years.

In total, there were 78 cardiovascular events during the study period: 38 heart attacks, 30 strokes, six invasive heart surgeries and four deaths. But those events weren't spread evenly throughout the population. The D:A:D model predicted that the five-year cardiovascular event risk would be 3%. But the actual cardiovascular event rate was three times that, at 9%.

While the overall study population was 30% female and half Black, women accounted for 33% and Black people accounted for 56% of those who experienced a cardiovascular event. By contrast, while 33% of total participants were white, they accounted for 30% of cardiovascular events. People who experienced events were also slightly older than those who didn't (51 versus 45 years).

Interestingly, total cholesterol and high-density lipoprotein (HDL), or good cholesterol, levels were roughly the same between the groups with and without cardiovascular events. Participants were nearly three times as likely to have a cardiac event during follow-up if they had diabetes than if they didn't (31% versus 11%). Current and former smokers were about equally likely to have cardiac events as nonsmokers. And people with a family history of cardiovascular disease had a substantially higher risk for events than those with no such history (50% versus 29%).

While CD4 counts weren't vastly different between the groups, those who had cardiovascular events had a median current CD4 count of 429, compared with 482 among those who didn't experience an event.

The study authors suggested that insurance status might be a predictor of poor cardiovascular disease outcomes. Texas has not expanded Medicaid, leaving a large proportion of the study population uninsured. "The D:A:D model was miscalibrated for [cardiovascular disease] risk among [people living with HIV] engaged in HIV care at an urban safety-net HIV clinic," Anikpo and colleagues concluded.

"Our results suggest that the reduced D:A:D model is better than randomly ranking individuals' risk of incident [cardiovascular disease] events among [people living with HIV] and engaged in care at an urban safety-net HIV clinic," they wrote. "More importantly, the D:A:D model severely underpredicts five-year [cardiovascular disease]risk in this population." Nevertheless, the researchers suggested, the D:A:D model may be useful for making decisions about cardiovascular disease interventions for high-risk patients.

Click here to read the full study.

Click here to read more news about HIV and cardiovascular disease.

© 2026 Smart + Strong All Rights Reserved.