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Polygenic Scores and Preclinical Cardiovascular Disease in Individuals With HIV: Insights From the REPRIEVE Trial

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Background

The risk of heart disease is higher among people with HIV (PWH), including among younger individuals with lower predicted heart disease risk. Heart disease has a strong relationship to an individual's genetics, and Polygenic Risk Scores are one way to understand an individual's lifetime genetic risk for heart disease. It is not fully understood how well Polygenic Risk Scores for heart disease perform for PWH.

The Randomized Trial to Prevent Vascular Events in HIV (REPRIEVE) is a global clinical trial designed to address the increased risk of heart disease experienced by PWH. The trial showed that treatment with pitavastatin (a cholesterol-lowering medication) reduces heart disease events among PWH with low-to-moderate traditional heart disease risk. U.S. REPRIEVE participants in the Mechanistic Substudy underwent main REPRIEVE trial procedures, as well as CT scans of the blood vessels surrounding the heart (coronary arteries). Study participants at research sites in the ACTG network who consented to have genetic analyses done were included in this study.

Goals of the Study

This study explored how well Polygenic Risk Scores predict subclinical coronary artery disease (a form of heart disease that has not yet caused symptoms) among REPRIEVE participants in the Mechanistic Substudy.

➤ The participants:

- 662 REPRIEVE participants with genetic and CT measurements
 - Average age: 51 years
 - 106 (16%) were female sex
 - 277 (42%) were Black or African American

➤ The findings:

- Participants with more signs of coronary artery disease visible on a CT scan had a higher Polygenic Risk Score for heart disease.
- When compared with the Pooled Cohort Equations (PCE)—the traditional way that heart disease risk is estimated—Polygenic Risk Scores did a better job of predicting subclinical coronary artery disease. Using the PCE and Polygenic Risk Scores together led to even better prediction.

In Summary: In a global cohort of PWH, individuals with more subclinical coronary artery disease had higher Polygenic Risk Scores for heart disease. These scores may have clinical use for understanding the risk of heart disease among PWH.

REPRIEVE Trial Website: reprivetrial.org

The findings shared in this summary are from the REPRIEVE population at a specific point in time. These findings are descriptive and not intended to change clinical care. If you have questions about what you've read, please talk to members of the REPRIEVE study team at your local site or a health care provider