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Performance of the Pooled Cohort Equations and D:A:D Risk Scores among Individuals with HIV in a Global Cardiovascular Disease Prevention Trial: A Cohort Study Leveraging Data from REPRIEVE

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Background

The risk of heart disease is increased approximately 2 times among people with HIV (PWH) as compared to people without HIV. Estimating heart disease risk among PWH is an important step towards the goal of preventing heart disease. However, past studies evaluating the performance of traditional heart disease risk scores among PWH have shown mixed results. Further, no study to date has assessed the performance of heart disease risk scores among a large, representative population of PWH.

Goals of the Study

The goal of the present study was to understand how well heart disease risk scores perform among a subset of participants in The Randomized Trial to Prevent Vascular Events in HIV (REPRIEVE). REPRIEVE enrolled PWH between ages 40-75 with low-to-moderate traditional heart disease risk, randomized these participants to a statin medication called pitavastatin or to placebo (a pill that contains no medication), and followed these participants for, on average, 5 years, to see if they developed heart disease events like a heart attack or stroke. Main findings from REPRIEVE were that [statin therapy reduced heart disease events among PWH by 36%](#), prompting guideline changes recommending statin use in PWH. In this new analysis, we studied how well the ACC/AHA Pooled Cohort Equations (PCE) risk score and the HIV-specific Data-collection on Adverse Events of Anti-HIV Drugs (D:A:D) score performed among REPRIEVE participants not on statin therapy. We assessed how well these heart disease risk scores performed with respect to discrimination (how well a risk score can determine who goes on to have – vs. not have – a heart disease event) and calibration (how well a risk score accurately predicts actual disease risk).

➤ The participants:

- 3,893 participants (not on statin) within the REPRIEVE cohort of PWH with low-to-moderate traditional heart disease risk
 - Median age at enrollment: 50 years
 - Median duration of follow-up: 5.6 years

➤ The findings:

- The PCE risk score showed moderate discrimination and good calibration overall.
- However, when participants were divided by region, the PCE risk score over-predicted heart disease events among participants in LMICs and under-predicted events among subgroups of participants living in high-income countries (HICs).
- Calibration of the PCE risk score in HIC improved when the score was multiplied by specific correction factors for various participant groups.
- Overall, similar trends were observed when assessing the performance of the D:A:D risk score.

In Summary: Among a subset of the REPRIEVE cohort of PWH not on statin therapy, heart disease risk scores performed well overall, but they overestimated heart disease risk among PWH in LMICs and underestimated heart disease risk among PWH in HICs. Further research is needed to understand how to accurately predict heart disease risk among PWH so that we can develop and effectively implement strategies to reduce risk.

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