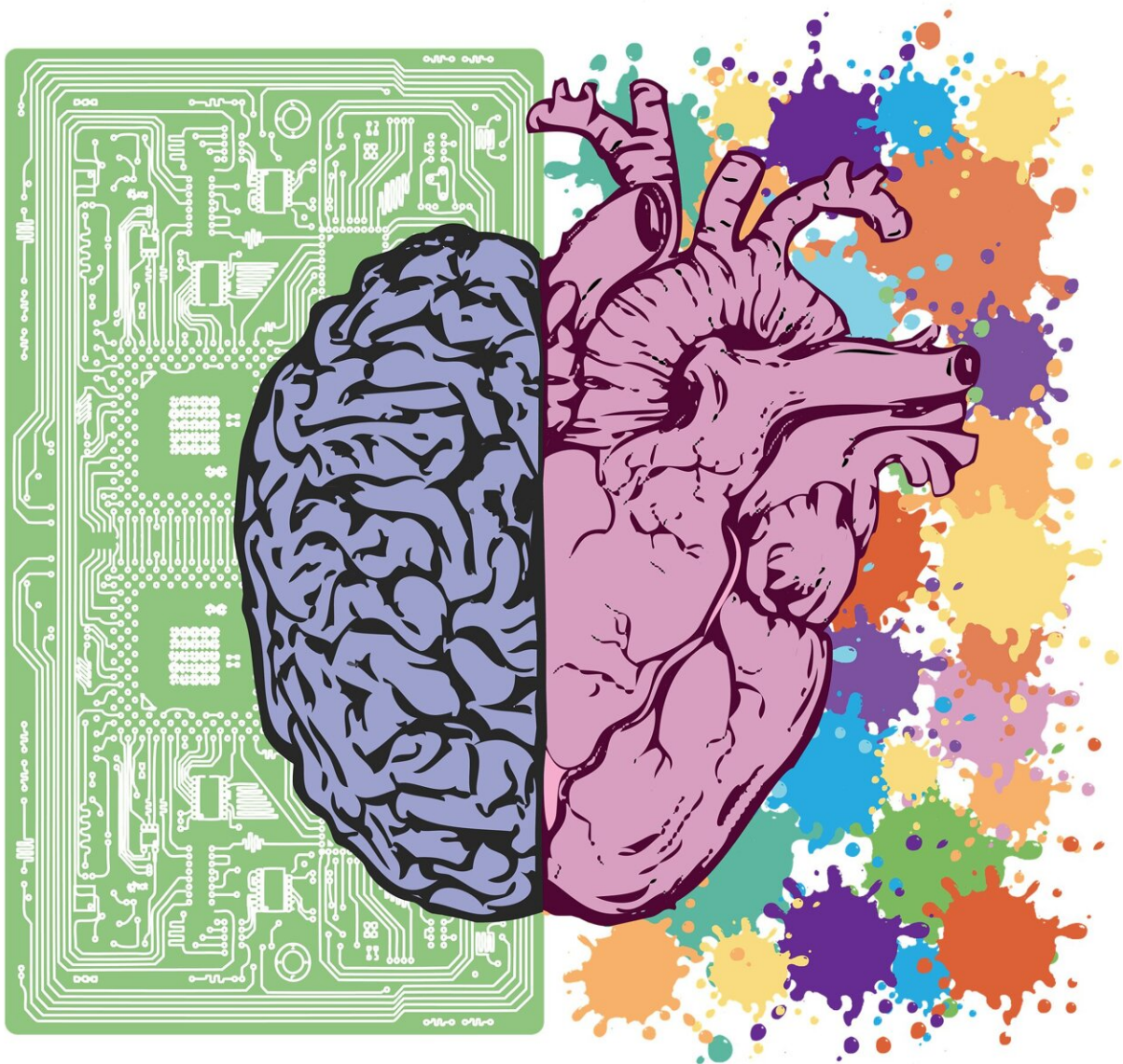


# Study suggests replacing the term 'race' with underlying factors that increase risk for heart attacks, strokes

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Why should two individuals with exactly the same risk factor profile for developing heart attacks or strokes be treated differently based purely on their race? Is it race that alters risk of these people or is race a surrogate for other factors that may be elevating risk? And how large can these race-related differences in the risk predictions actually be?

These are the question being asked in a new study in *Lancet Digital Health*.

"If other factors (instead of [race](#) itself) determine the risk differences, then the prediction equations should incorporate those factors that *cause* the differences in predicted risk between the races, rather than race itself. If we do not change our prediction strategy, there is a risk of labeling (stereotyping) Black people as high risk purely based on the color of their skin," explains corresponding author Vasan Ramachandran, MD, FACC, the Jay and Louise Coffman Professor in Vascular Medicine at Boston University School of Medicine (BUSM).

The American Heart Association/American College of Cardiology have formulated and endorsed equations that can be used to predict the risk (probability or chance) that a person will develop heart attacks or stroke over the next 10 years. Physicians can plug in their patients' values for seven [risk factors](#), age, sex, race, values of blood pressure, cholesterol (good and bad components), diabetes, and smoking status to generate this 10-year probability of developing heart or brain attacks.

In the current form of the prediction equations, Blacks and whites with

exactly the same risk factor values will have different probabilities of developing heart attacks and strokes. "In these situations when the predicted risks are so different, doctors may treat their Black and white patients differently even when they have identical risk factors purely because of their race," says Ramachandran, who also is Principal Investigator and Director of the Framingham Heart Study.

Ramachandran and his colleagues examined 50,000 theoretically possible risk factor combinations using the risk factors noted above. They asked, if Black and white patients had exactly the same (identical) risk factor combinations, by how much does the probability of heart and brain attacks predicted by the equations diverge so as to result in different treatment decisions across the two race groups. This analysis was done in men and women separately.

They observed that for 20 percent of the risk factor combinations in men and 22 percent of the risk factor combinations in women, Black-white differences in risk predicted by these equations can result in different treatment decisions. For example, they found more often blacks would be prescribed a statin because they are deemed to be at higher risk. The difference in predicted risk (Blacks vs. Whites with identical risk factors) can be as large as 22.8 percent for men and 26.8 percent for women.

Ramachandran believes that by not treating the actual factor causing these differences, physicians are at risk of medically treating the incorrect factor in the hope of lowering risk of [heart](#) attacks and strokes. "Since the equations are derived from historical cohort data, the Black-white differences in predicted risk probabilities may reflect underlying race-related differences in health care access, structural racism or social determinants of health," he says.

According to co-author Edwin van den Heuvel, Ph.D., professor of

statistics in the department of Mathematics and Computer Science at the University of Technology Eindhoven, the use of prediction equations to guide medical treatment should be based on causal factors only.

"Furthermore, more research is needed to be able to determine if such causal prediction equations remain accurate after those at high risk are treated. In other words, we should investigate whether we can use the same prediction equations when risk factors are altered with interventions, adds van den Heuvel, adjunct professor of medicine at BUSM.

**More information:** Differences in estimates for 10-year risk of cardiovascular disease in Black versus White individuals with identical risk factor profiles using pooled cohort equations: an in silico cohort study, *Lancet Digital Health*, 2021.

Provided by Boston University School of Medicine

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