Risk factors in adults with cardiovascular disease are worsening over time despite advances in secondary prevention

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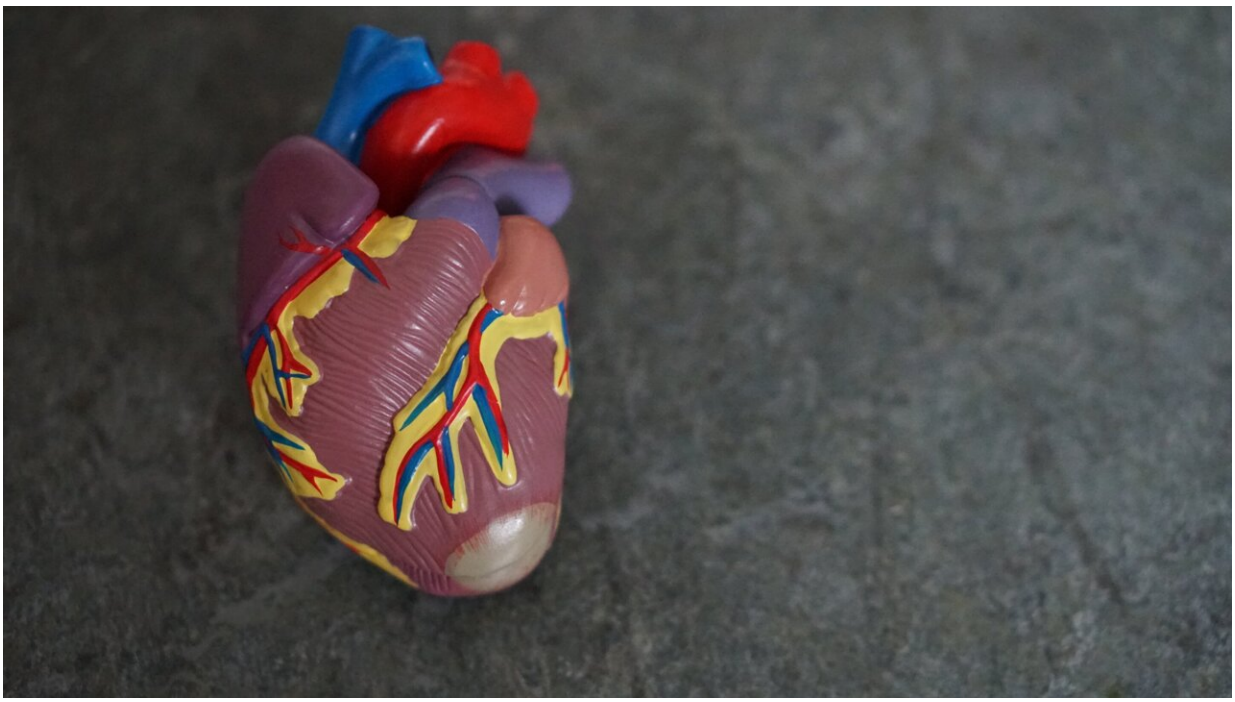

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In an analysis of medical information of more than 6,000 American adults with a history of cardiovascular disease (CVD), researchers at Johns Hopkins Medicine conclude that CVD risk "profiles" in secondary prevention have failed to improve over the last two decades.

Secondary prevention refers to prevention of recurrent cardiovascular events such as heart attack or stroke in individuals who already have CVD. Despite recent advancements in safe and effective therapies reflected in guideline recommendations, trends in CVD risk profiles in adults with the condition were not ideal from 1999 through 2018. An ideal risk profile is based on targets that health professionals agree to be considered desirable. The study was published July 4 in the *Journal of the American College of Cardiology*.

Risk-factor profiles analyzed included blood glucose, blood pressure, cholesterol, body mass index, smoking, physical activity and diet. All factors showed a worsening or unchanged trend, except for cholesterol, which showed a modest improvement. However, only 30% of adults with CVD had an ideal cholesterol profile in 2015–2018.

"We're not really moving the needle on these risk factors, and that's leaving a lot of people at risk for recurrent events," says corresponding author of the study, Seth S. Martin, M.D., M.H.S., associate professor of medicine in the division of cardiology at the Johns Hopkins University School of Medicine. He called for "re-engineering preventive care."

"Our numbers are disappointing and alarming," says co-first author of the study Yumin Gao, Sc.M., premedical student and biostatistician at the Johns Hopkins Digital Health Innovation Lab.

"Our study shows that there remains a critical need and opportunity to effectively translate established guidelines into patient care," says co-first author of the study Nino Isakadze, M.D., M.H.S., Cardiac Electrophysiology Fellow at the Johns Hopkins Hospital. "We have to get innovative about how to reach diverse groups of patients, and to improve secondary prevention in everyone with cardiovascular disease."

The study also revealed persistent racial and ethnic disparities in heart-

related health. Isakadze says access to healthcare, patient education and affordability of medications are likely the main drivers of disparities seen in high-risk populations.

Researchers evaluated trends in cardiovascular risk factor profiles among 6,335 U.S. adults from data gathered by the National Health and Nutrition Examination Survey from 1999–2018. About 50% of participants were male, with an average age of 64.5, and 13% of them were Black, 10% were Hispanic and 3% were Asian.

Specifically, the new analysis showed:

- Blood glucose: ideal profile trends fell from 59% in 1999–2002 to 52% in 2015–2018, with the worst profiles found among Asian adults.
- Blood pressure: ideal levels fell after 2010, with 49% having an ideal profile in 2015–2018, with the worst profiles found among Black adults.
- Cholesterol: ideal profiles showed an overall increase from 7% in 1999–2002 to 30% in 2015–2018—likely due to widespread use of lipid lowering medications—but with a worsening trend among Hispanic adults.
- Body mass index (BMI): this measure of relative weight saw an overall worsening ideal profile from 24% in 1999–2002 to 18% in 2015–2018.
- Smoking, physical activity and dietary profiles showed no significant changes over time overall, but the analysis found worsening smoking trend among Black adults, and improving trend for physical activity among Hispanic adults.

The researchers cautioned that their study had some built-in caveats, including the fact that the history of CVD was self-reported, and therefore might have missed identifying some individuals with the

condition.

Martin directs the Johns Hopkins Center for Mobile Technologies to Achieve Equity in Cardiovascular Health (mTECH) and Digital Health Lab. He works with a multidisciplinary team to find creative solutions with a focus on technology to help improve prevention of cardiovascular disease. He emphasizes that things like telemedicine and devices such as smartphone apps known as digital health interventions will help engage and motivate patients with a history of CVD to live a more heart-healthy lifestyle.

"We're really good at hospital-based care, but our health system needs to improve in an optimal way to deliver preventive care as patients navigate the transition from the hospital to the home, and then long-term chronic care," says Martin. "That's where we think technology can help fill gaps seen with traditional episodic care, because it could be something that lives in our patient's hands and on their wrists, enabling a deeper understanding of their condition and facilitating more continuous and active engagement in preventive care outside the doctor's office at home and in the community."

Martin adds it can't be up to technology alone. He and his colleagues believe it's going to take the collaborative creativity of multiple stakeholders to continue efforts to redesign health systems and reimbursement, and health care professionals around the world to further develop fresh approaches to health care delivery and public health education to eliminate racial and ethnic disparities, and improve implementation prevention guideline recommendations.

More information: Yumin Gao et al, Secular Trends in Risk Profiles Among Adults With Cardiovascular Disease in the United States, *Journal of the American College of Cardiology* (2022). DOI: 10.1016/j.jacc.2022.04.047

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