

Rapid progression in cardiovascular disease risk factors can reveal high-risk individuals

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Current American Heart Association, European Society of Cardiology, and UK National Health Service guidelines recommend a 5-yearly health checks for screening of individuals at high cardiovascular disease risk.

These health checks include measurement of major risk factors, such as systolic blood pressure, cholesterol profile, blood glucose, and smoking status.

If lifestyle interventions are unsuccessful in reducing risk factor levels, prevention guidelines recommend initiation of preventive medication therapies such as statins. However, current guidelines advise only using the latest risk measurement and do not use information from individual's risk factor history.

Faster risk progression should be identified in health checks

According to a Finnish-English study published in *The Lancet Digital Health*, individuals whose risk levels increase faster than expected based on aging should be identified to inform decisions on preventive interventions. If the initiation of preventive interventions was delayed, these individuals can lose two to six [cardiovascular disease](#) free life-years, depending on their risk progression rate.

"Our study shows that individual risk history may provide important information for primary care to better identify individuals at high risk of cardiovascular diseases. Similarly, information allows to identify individuals who manage to reduce their risk levels between the health check and thus are at lower risk of cardiovascular diseases. In the UK, approximately 160,000 die from cardiovascular disease every year and it has been estimated that 80% of them would be preventable by timely interventions, so even small improvements in the prevention system can have large impact," says lead author Joni Lindbohm MD, Ph.D. at University College London and University of Helsinki.

The study was based on the Whitehall II cohort of 7000 British adults.

Following current guidelines, their risk factor levels were screened every five years over a 22-year follow-up. The participants were linked to electronic health records from NHS registries including records on cardiovascular disease events. The investigators found that accelerated risk progression was most detrimental among the youngest participants aged between 40 and 50. Similarly, the benefits of risk reduction were highest in this group.

Based on their results the researchers developed an online tool that can be used to study how risk history modifies estimated cardiovascular disease risk.

"These results are promising, but national guidelines are rarely changed based on a single study. The benefits of using additional information on risk history in [health](#) checks should be further studied in randomized control trials, says Professor Mika Kivimäki, University College London, who is director of the Whitehall II study and one of the study authors.

Currently, UK residents can determine their individual cardiovascular [disease](#) risk with the QRISK3 calculator that includes questions about age, sex, smoking, total cholesterol, HDL-cholesterol, [systolic blood pressure](#), antihypertensive medication, diabetes status, and variety of medical conditions.

A prototype of the new risk calculator, including risk history, can be tested from github.com/ninamars/Change-in-CVD-risk-scores.

More information: Joni V Lindbohm et al, Association between change in cardiovascular risk scores and future cardiovascular disease: analyses of data from the Whitehall II longitudinal, prospective cohort study, *The Lancet Digital Health* (2021). [DOI: 10.1016/S2589-7500\(21\)00079-0](#)

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