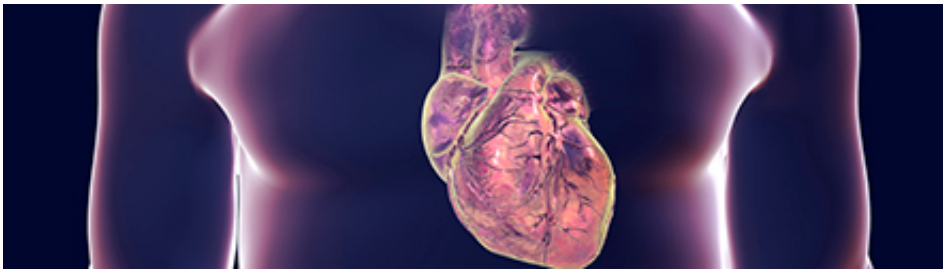# GPs' heart disease prediction tool narrows search for at-risk patients

May 24 2017, by Emma Thorne

Credit: University of Nottingham

A prediction tool that allows GPs to spot patients most at risk from heart disease and stroke before illness strikes is now more accurate than ever before, a study from the University of Nottingham has shown.

Smaller groups of patients who would previously have slipped through the net can now be picked up as 'at risk', thanks to the new updated version of the QRISK computer algorithm, reveals research published in the *BMJ*.

Like its predecessors, the QRISK3 computer algorithm used millions of patient records to look for factors which may put some at greater risk of developing heart disease or having a stroke in the next 10 years.

However, it now takes into account additional risk factors including migraine, the autoimmune disease lupus, severe mental illness, erectile

dysfunction and variations in blood pressure to focus in on even more at-risk groups of patients.

It is an important development for the 15 million people in England who are eligible for an NHS Health Check every five years, which uses the Q-Risk calculator.

Advice and prevention

Professor Julia Hippisley-Cox in the University's Division of Primary Care, lead author on the study and one of the academics who developed the original QRISK tool, said: "This publication in the *BMJ* coincides with the 10-year anniversary of the publication of the original QRISK score and much has been achieved since then.

"QRISK is now the leading tool in the UK to assess cardiovascular risk and is in national guidance and has been implemented into all GP surgeries and many pharmacies across the UK, as well as in the occupational health functions of large organisations including the BBC, National Grid, Scottish Water, RNLI and Jaguar.

"The QRISK website has been used 2.6 million times worldwide over the last five years in every single country apart from the Sahara Desert and Central African Republic.

"Independent research has shown that it even works better in the United States than tools developed there.

"Patients can feel reassured that more people than ever who are most at-risk of developing heart disease in the future are being identified and offered lifestyle advice and preventative treatment."

In 2007, the *BMJ* published research showing that the new QRISK score

was a more accurate measure of how many UK adults were at risk of developing heart disease and stroke compared with long-established Framingham model, which at the time was recommended by NICE.

It was followed in 2008 by an updated version—QRISK2—which included ethnicity and additional risk factors such as type 2 diabetes, rheumatoid arthritis, atrial fibrillation and chronic renal disease.

QRISK2 is now used across the NHS in England and recommended in the Quality and Outcomes Framework, guidance from National Institute of Clinical Excellence (NICE) and NHS Health checks.

However, a NICE guideline on lipid modification and cardiovascular risk assessment was published in 2014, which highlighted a number of conditions associated with increased cardiovascular risk which may not be fully captured by QRISK2.

The researchers therefore decided that a new version of QRISK needed to be developed and tested to decide whether these factors should be incorporated into the algorithm in order to improve cardiovascular risk prediction for patients.

They used GP practice computer records to study data from 7.89 million patients aged 25-84 to develop the new version of the score and a further 2.67 million patients to test its performance.

The study showed that all the new risk factors that were included performed well enough to be incorporated into a new version of the QRISK tool.

Accurately identifying risk

The paper, Development and Validation of QRISK3 Risk Prediction

Algorithm to Estimate Future Risk of Cardiovascular Disease: Cohort Study, is published in the *BMJ*.

Dr Mike Knapton, Associate Medical Director at the British Heart Foundation, said: "It is now easier to accurately identify people most at risk of heart disease than ever before.

"The inclusion of new risk factors, such as migraine and mental illness, will enable doctors to better spot those most at risk of heart disease and recommend treatment or behavioural change.

"With advances such as this and more investment in medical research, we will be able to save more lives."

  More information: Julia Hippisley-Cox et al. Development and validation of QRISK3 risk prediction algorithms to estimate future risk of cardiovascular disease: prospective cohort study, *BMJ* (2017). [DOI: 10.1136/bmj.j2099](https://doi.org/10.1136/bmj.j2099)

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