

Assessing the real risk of heart disease in young people with low short-term risks

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Risk stratification has become central to strategies for the prevention of coronary heart disease, with the implication that priority is given to those at highest risk (ie, those with established heart disease). However, such stratification using the conventional risk estimation models may not be accurately achieved in individuals without symptoms, especially those in younger age groups whose 10-year "short-term" estimated risk seems low.

For example, while the Framingham Risk Score is acknowledged as "a great advance" in the estimation of risk (and thus in the primary prevention of CHD), most younger individuals and virtually all women are defined as low risk, despite apparent and significant differences in their actual risk factor burden.

Now, a new study reported online by *Circulation* suggests that many younger individuals defined as low risk by conventional risk stratification methods may not remain at low risk throughout their lives.

The study included 2988 individuals under 50 years of age from the Coronary Artery Risk Development in Young Adults (CARDIA) study and 1076 from the Multi-Ethnic Study of Atherosclerosis (MESA). Short-term (10-year) risk was assessed according to the Framingham Risk Score, but added to this risk assessment model were other factors indicative of a longer lifetime risk.(2) Combination of the two risk assessment models allowed risk stratification in three groups: low 10-year/low lifetime risk; low 10-year/high lifetime risk; and high

10-year risk or diagnosed diabetes mellitus. Baseline levels and change in levels of subclinical atherosclerosis (as represented by coronary artery calcium or carotid intima-media thickness) were then compared across the three risk groups. And results showed that those in the low 10-year/high lifetime risk group had a greater subclinical disease burden and greater incidence of atherosclerotic progression than those in the low 10-year/low lifetime risk group, even at younger ages.

"Thus, long-term risk estimates in younger patients may provide new information regarding risk prediction that is not usually available using only a 10-year risk model," said the study's first author Dr Jarrett Berry from UT Southwestern Medical Center, Dallas.

The main weakness of a conventional risk estimation model such as the Framingham Risk Score is the dominance of age, says cardiologist Professor Wolfgang König from the University of Ulm Medical Centre in Germany speaking on behalf of the European Society of Cardiology. "It means that 90 per cent of people of a relatively younger age are defined as low risk. But experience tells us that a low short-term risk in younger subjects may not reflect their true risk. We see many young patients with an apparently low short-term risk who actually have advanced heart disease. That's why young patients are still a challenge in cardiology."

Professor König adds that the study raises an attractive concept in risk stratification which may well provide a mechanistic explanation for the discrepancy between "low risk" but advanced disease in young people. In public health terms, such an approach may well allow more precise differentiation between various risk groups. "The earlier we can identify risk, the higher the chance of preventing serious disease," he says.

Reference: Berry JD, Liu K, Folsom AR, et al. Multi-Ethnic Study of Atherosclerosis Disease. Prevalence and progression of subclinical

atherosclerosis in younger adults with low short-term but high lifetime estimated risk for cardiovascular disease. The Coronary Artery Risk Development in Young Adults Study and Multi-Ethnic Study of Atherosclerosis. *Circulation* 2009; e-pub ahead of print, DOI: 10.1161/CIRCULATIONAHA.108.800235

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