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Coronary artery calcium scoring in cardiovascular risk assessment of people with family histories of early onset coronary artery disease

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Coronary artery calcium scoring in cardiovascular risk assessment of people with family histories of early onset coronary artery disease

IN REPLY: We thank Hayen and colleagues for their interest in our work assessing coronary artery calcium in patients with a family history of coronary artery disease and the implications for current Australian statin treatment guidelines.

We disagree that computed tomography (CT) coronary artery calcium scoring is an invalid outcome for estimating the comparative accuracy of the various cardiovascular disease risk scores. CT coronary artery calcium scoring is a good marker of total coronary atherosclerotic burden.[1] While our study recognised that cardiovascular events are preferable to positive coronary artery calcium scoring when comparing risk tools, in the absence of these events (recognising that they occur over decades), calcium scoring is a useful surrogate. The absolute level of risk in this situation is determined by the underlying clinical risk status of the patient, along Bayesian grounds, but nonetheless the absence of coronary calcium is a prognostically very favourable finding.[2] In contrast, Framingham Risk Score-based tools, including the Australian cardiovascular disease risk (ACVDR) calculator, overestimate risk, which can be reclassified by the incorporation of CT coronary artery calcium scoring.[3] In particular, our study highlighted that calcium scoring tends to generate lower risk estimates for short term absolute coronary heart disease and cardiovascular disease risk due to the high proportion of patients with a calcium score of zero. In this respect, we stand by our conclusions that CT coronary artery calcium scoring can personalise and improve the application of the ACVDR calculator to questions of coronary risk in patients with a family history of coronary artery disease.

We agree that primary prevention statin therapy should depend on a careful assessment of harms and benefits. This assessment is primarily dependent on accurate prediction of absolute baseline risk, as relative risk reduction from statin therapy is consistent across the risk strata. The addition of the coronary artery calcium score to clinical risk in the Multi-Ethnic Study of Atherosclerosis (MESA) score showed improved risk calibration and absolute risk prediction in American and European cohorts.[4] While a patient whose risk is reclassified from a 5-year risk of 7.5–15% based on the calcium score is still unlikely to have a coronary heart disease event, the resulting increase in expected statin-

related absolute risk reduction from 2.5% to 5% may satisfy the patient's threshold for treatment and improve allocation of health care resources.

Ultimately, supportive clinical and economic outcome data from calcium score-guided primary prevention treatment protocols will be the key to broader utilisation of CT coronary artery calcium scoring. We hope outcome data from CAUGHT-CAD (Coronary Artery calcium score: Use to Guide management of Hereditary Coronary Artery Disease; ACTRN 12614001294640) and other international trials will address this important gap.[5]

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