

## PREVENTION

## Guidelines with high statin eligibility target risk and are cost-effective

The 2013 ACC–AHA guidelines for cholesterol management make millions more people eligible for statin therapy than previous guidelines. The results from two studies show that these guidelines are effective for the identification of those at risk of atherosclerotic cardiovascular disease (CVD), and that they are cost-effective.

The ACC–AHA eligibility criteria include atherosclerotic CVD, diabetes mellitus, elevated LDL cholesterol, and  $\geq 7.5\%$  10-year risk of atherosclerotic CVD. These guidelines could overestimate risk, leading to overmedication. Conversely, the more-inclusive criteria, if they are accurate, should lead to avoidance of a large number of adverse cardiovascular events.

Pursnani and colleagues compared the efficiency and accuracy of identification of individuals at risk of atherosclerotic CVD with the ACC–AHA guidelines and with the NCEP’s 2004 update of the Adult Treatment Panel III (ATP III). In total, 2,435 statin-naïve, asymptomatic individuals aged 40–75 years, with coronary artery calcification (CAC) assessment and complete risk profiles, were followed up for a median of 9.4 years. Statin eligibility was 39% by the ACC–AHA and 14% by the ATP III guidelines. With the ATP III guidelines, 24 of 348 eligible individuals (6.9%) developed atherosclerotic CVD, compared with 50 of 2,087 who were not eligible for statins (2.4%; HR 3.1). With the ACC–AHA guidelines, 59 of 941 eligible individuals (6.3%, including 5.7% of those newly eligible), and only 15 of 1,494 who were not eligible for statins (1.0%; HR 6.8), developed atherosclerotic CVD.

A CAC score of 0 was seen in 58% of individuals overall, and in 33% who were statin-eligible by the ACC–AHA guidelines, of whom only 1.6% developed atherosclerotic CVD. “Among those eligible for statins under the new guidelines, those without CAC have a similarly low risk to noneligible patients,” explains corresponding author Udo Hoffmann, suggesting that these patients could avoid medication. “Although the recommendation to not put patients on statins even though they could have increased LDL cholesterol is provocative, this is a feasible option for patients concerned about life-long statin therapy.”



Pandya *et al.* applied different 10-year atherosclerotic CVD risk thresholds to the ACC–AHA guidelines to find the optimal level, from the perspective of the cost per quality adjusted life-year (QALY) gained. They modelled 1 million hypothetical individuals aged 40–75 years and ‘followed’ them through their lifetimes, estimating rates of atherosclerotic CVD and mortality, and modifying atherosclerotic CVD risk according to statin use. Adverse effects of statins, such as muscle-pain and diabetes, were included in the model. “Using conventional willingness-to-pay estimates for health (US\$50,000–150,000 per QALY), we found the  $\geq 7.5\%$  atherosclerotic CVD risk threshold was cost-effective,” says Pandya, “and optimal thresholds could be pushed as low as  $\geq 3.0\%$  risk, at which level two-thirds of the population aged 40–75 would be eligible for statin treatment.”

The model was sensitive to statin price, the level of statin-induced diabetes, and acceptance of daily pill-taking. The  $\geq 7.5\%$  threshold equated to \$37,000 per QALY with a mix of generic and branded statins, but \$15,000 per QALY for generics alone.

The ACC–AHA guidelines will prevent many ASCVD events compared with ATP III, and reducing the risk threshold would avert yet more. Progress toward the optimal guidelines moves ever onwards.

Robert Phillips

**Original articles** Pursnani, A. *et al.* Guideline-based statin eligibility, coronary artery calcification, and cardiovascular events. *JAMA* doi:10.1001/jama.2015.7515 | Pandya, A. *et al.* Cost-effectiveness of 10-year risk thresholds for initiation of statin therapy for primary prevention of cardiovascular disease. *JAMA* doi:10.1001/jama.2015.6822