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COMMENTARY

New American Heart Association/American College of Cardiology Guidelines on Cardiovascular Risk: When Will Fitness Get the Recognition It Deserves?

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During the American Heart Association (AHA) Scientific Sessions in November 2013, the AHA and the American College of Cardiology (ACC) jointly released new guidelines for the prevention and treatment of coronary artery disease (CAD). The guidelines focused on the assessment of cardiovascular risk[1] and the treatment of blood lipids[2] and received a great deal of attention from both the media and professional journals. These organizations are among the most experienced and qualified to develop guidelines, and their guidelines and scientific statements set the standard for clinical practice. Most of this attention focused on an updated cardiovascular *risk calculator*, using an equation developed from community-based populations that includes established risk factors such as race, sex, age, total cholesterol level, blood pressure, high-density lipoprotein cholesterol level, diabetes mellitus, and smoking status. The risk calculator is designed to estimate the 10-year risk of myocardial infarction and stroke among individuals aged 40 to 79 years. Tools such as these are valuable in that they allow a health care professional to roughly estimate a patient's likelihood of a cardiovascular event and to direct treatment accordingly.

With the release of the guidelines, a vigorous debate among medical professionals and the lay press immediately ensued regarding the effect of the guidelines on the use of medications to treat heart disease. The new guidelines recommend statins for people with a *lower* risk of cardiovascular disease (CVD) than in previous guidelines (a 7.5% risk during 10 years compared with a 10-year risk of 10% to 20% according to the previous guidelines) and for those at risk for stroke. In addition, they eliminate the earlier criterion that a patient's low-density lipoprotein cholesterol (LDL-C) level be at or above a certain level to warrant treatment, with the exception of those with extremely high LDL-C levels (>190 mg/dL [to convert to mmol/L, multiply by 0.0259). Although statins are no longer recommended for patients taking the drugs only to lower their LDL-C level, eliminating the LDL-C criterion will mean a vast increase in statin prescriptions overall, including millions of individuals who have no heart disease but meet the 10-year risk criterion of 7.5%. Several reports estimated that implementation of these guidelines will increase the number of healthy individuals for whom statins are recommended by as much as 70%.[3]

During the past 2 decades, statins have been reported to reduce the risk of cardiovascular events by roughly 20% to 25%.[4] However, this decrease in risk is highly dependent on the degree of risk in the population being considered. Individuals without a diagnosis of CVD would lower their yearly risk of having a cardiac event from approximately 1.8% to 1.4% if they take a statin. This 0.4% reduction in risk, when balanced against the cost of taking statins (estimated to be up to $1 per day per person for nongenerics[5]) and the total cost of statin use in the United States (approximately $20 billion annually), not surprisingly caused significant consternation among some health care professionals. Others have calculated that the new guidelines considerably overestimate the 10-year risk of cardiovascular events. After the release of the new guidelines, Ridker and Cook[6] from Brigham and Women's Hospital in Boston, Massachusetts, calculated the 10-year risks of cardiac events in 3 large-scale primary prevention cohorts: The Women's Health Study, the Physician's Health Study, and the Women's Health Initiative Observational Study.

They reported that the new algorithm overestimated risk by 75% to 150%.

The guidelines generated another spirited controversy relevant to preventive medicine. Although most clinicians and the lay press focused on the controversy related to the potential overuse of statins, what frustrated many in the exercise and prevention field is the fact that what is arguably the most powerful predictor of risk, fitness, was excluded from the new risk calculator. More than 20 years ago, the AHA designated physical inactivity as the fourth *primary* risk factor for CVD, elevating it from *secondary* risk factor status.[7] There have been numerous recent calls for the recognition of fitness as a risk factor to be routinely considered along with the conventional factors such as smoking, hypertension, and lipid abnormalities. However, despite numerous epidemiologic studies reporting the critical role of fitness and physical activity patterns in predicting risk of adverse health outcomes, only a minority of health care professionals counsel patients on physical activity.[8,9] The concept that people without CVD might lower their risk of a cardiac event by four-tenths of a percentage point by taking a statin while an individual's fitness or physical activity pattern is not considered has not sat well with many health care professionals. A number of provocative questions have been raised, including the following:

1. What would an individual's risk be if he or she did not take statins and instead quit smoking or started exercising?
2. Is lifelong use of statins a better investment of our health care dollars than a few months of sessions with an exercise physiologist and/or a nutritionist to encourage healthier nutrition, weight loss, and an improvement in fitness?
3. When will fitness gain legitimacy as a risk factor as deserving of consideration as hypertension or hyperlipidemia? When will it be fully incorporated into the health care paradigm, as numerous epidemiologic studies[10] and commentaries from researchers[9,11-14] suggest that it should?

Regarding the first question, studies have found that in high-risk individuals, statin therapy reduces the risk of future cardiac events. For example, 3 recent meta-analyses reported approximately 20% to 25% reductions in cardiac events after statin therapy, and the results were similar for men and women.[4,15,16] The number needed to treat (NNT) to prevent one death with statin therapy during 5 years in low-risk individuals has been reported to be as high as 1000,[3] and the 5-year NNT to prevent a cardiac event (myocardial infarction or stroke) is approximately 140.[17] Among higher-risk populations, the NNT is much lower but ranges widely (10 to approximately 100).[18,19] The level of evidence in support of statin use from clinical trial data is undeniably strong. However, well-documented adverse effects of statins include a higher incidence of diabetes, liver damage, muscle pain, inflammation, myopathy, and an attenuation of the effects of exercise training.[17] The high NNT and potential for harm support the contention that statins are not appropriate for low-risk (5-year risk of <10%) individuals.[17,18] Moreover, many have expressed the view that statins provide false reassurances that may discourage patients from making the lifestyle changes that reduce cardiovascular disease.[3,20] Physicians and patients have been taught to be overly focused on lipids rather than behavior modification to prevent heart disease, and statins may give the illusion of protection to many patients who might be better served by a healthier diet, incorporating a modest amount of exercise into each day, and quitting smoking.

On the basis of data from major trials, such as the Nurses Health Study,[21] the Interheart Study,[22] and estimates from the World Health Organization,[23] 80% or more of CVD cases can be attributed to smoking, lack of exercise, and an unhealthy diet. Undeniably, more active individuals have been consistently found in many epidemiologic studies to have significantly lower cardiovascular event rates than those who are habitually inactive. There are many examples in the recent literature, and a meta-analysis by Nocon et al[24] is reflective of these studies. On the basis of an analysis of nearly 900,000 participants, physically active individuals had pooled risk reductions of 35% for cardiovascular mortality and 33% for all-cause mortality when compared with inactive individuals. As documented in a recent meta-analysis and review of 305 trials involving more than 339,000 individuals by Naci and Ioannidis,[25] exercise was statistically