



BY ROGER S. BLUMENTHAL, M.D.

GUEST EDITORIAL Get Better Cardiac Risk Estimates

A noninvasive screening tool, such as coronary artery calcium score, may be quite helpful for deciding whether to start lifelong therapy with aspirin and a lipid-lowering drug in people who are otherwise "on the fence" for this treatment.

The Framingham risk score (FRS) is usually used alone to estimate an asymptomatic person's risk for a future coronary heart disease event and identify the people who could benefit from a daily regimen of aspirin and a lipid-lowering drug, such as a statin.

But the FRS has some serious limitations when it's the only tool used. It does not take into account a family history of coronary heart disease, and it relies on a person's chronological age rather than their biologic age. The focus on chronological age means that while the FRS works reasonably well for

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most men who are middle-aged, it's less effective for identifying young adults and middle-aged and older women who face a significant lifetime risk of cardiovascular disease. Also, the FRS doesn't fully account for gender differences. Men are more likely than women are to present with a myocardial infarction as the first manifestation of cardiovascular disease, while women are more likely to have other presentations, such as stroke or angina that requires revascularization. The FRS was designed to predict only the risk of coronary heart disease events, such as myocardial infarctions, rather than total atherosclerotic, vascular disease events.

Another problem with the FRS is that it's designed to estimate the risk of a coronary disease event over the next 10 years, a feature that might underestimate risks that develop over a longer period of time.

If people hear that their risk of a heart attack is only 1% or 2% over the next 10 years, it may give them and their physicians a false sense of security about the need to reduce their risk factors, even though their longer-term risk may be much higher.

Results from several studies reported during the past few years indicate that measurement of coronary calcium using cardiac CT and expressed as an Agatston or volumetric score is an effective way to gauge cardiovascular disease risk and provide information that can complement the FRS and refine decision making about pharmacologic treatment and more ag-

gressive lifestyle changes. Plus the cost for obtaining a coronary artery calcium score has dropped dramatically. Today in Baltimore, I can order one of these tests for \$95-\$200.

Most middle-aged adults do not need to know their coronary artery calcium score. People with an FRS that identifies a 10-year risk of more than 10% for a coronary event are already good candidates for starting a daily, lifelong regimen of aspirin and

a statin to get their serum level of low-density lipoprotein cholesterol to less than 100 mg/dL. In most people with an FRS of less than 5%, their absolute cardiovascular risk over the next 10-15 years is low enough that a calcium score is also not needed.

It's the people in between, the ones with an FRS that translates into a 5%-10% 10-year risk of an event, who might benefit by having their risk fine-tuned by a coronary artery calcium score. In general, people in this gray zone who might benefit the most are selected men aged 40-65 and selected women aged 50-70, especially those with a family history of coronary disease in whom the decision to treat with lifelong aspirin and statin therapy is unclear.

The limitations of assessing risk exclusively with the FRS were documented in a study that I collaborated on with Dr.

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Source: pH >4 range from 12.2 to 18.6 hours on Day 7.

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Khurran Nasir, Dr. Elin Micho, and Dr. Paolo Raggi. We analyzed the coronary artery calcium scores for 2,000 asymptomatic men and women with an average age of 53.

About 10% of the subjects had a coronary calcium score of 400 or more, which indicates severe atherosclerotic plaque burden.

In this subgroup, 60% of the people did not qualify for aspirin and statin therapy based on their FRS (J. Am. Coll. Cardiol. 2005;46:1931-6).

Another 12% of the study group had a calcium score of 100-399, denoting a moderate coronary plaque burden. In this sub-

group, 65% didn't qualify for drug therapy based on their FRS.

Vary few women younger than 65 have enough risk factors to produce a FRS of more than 10%, but some of these women, especially those with a family history of premature coronary heart disease and components of metabolic syndrome, have relatively high levels of coronary calcium and could benefit from knowing their score and starting more aggressive lifestyle changes as well as considering a regimen of aspirin and a statin.

Many health care professionals don't consider ordering a cardiac CT because of the ionizing radiation used, but techno-

logic improvements are imminent that will lower the radiation exposure.

Up to now, a single coronary calcium score examination required radiation exposure equivalent to the radiation exposure of about 15 chest x-rays, but by early next year, technology improvements will probably be in place that will further lower the exposure for a calcium-score examination.

Other tests have been proposed that could avoid the radiation exposure from a cardiac CT, such as measuring serum levels of high-sensitivity C-reactive protein, or measuring atherosclerotic deposits in the carotid artery by an ultra-

sound examination of carotid intimal-medial thickness.

However, in middle-aged people, calcium scores appear more reliable for predicting future coronary disease events than do serum levels of high-sensitivity C-reactive protein. In addition, calcium scores are easier to measure in a reproducible way than is carotid intimal-medial thickness, which depends more on the skill of the person making the measurement. ■

DR. BRUWENTHAL is director of the Johns Hopkins Ciccarone Center for the Prevention of Heart Disease in Baltimore.



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Please see brief summary of full Prescribing Information on the following page.

References: 1. Casati D. Review of immediate-release omeprazole for the treatment of gastric acid-related disorders. *Expert Opin Pharmacother* 2005;6:2401-2510. 2. ZEGERID Prescribing Information. Sanofius Inc, February 2006. 3. Katz PO, Koch FK, Ullrich ED, et al. Comparison of the effects of immediate-release omeprazole oral suspension, delayed-release lansoprazole capsules and delayed-release esomeprazole capsules on nocturnal gastric acidity after bedtime dosing in patients with night-time GERD symptoms. *Aliment Pharmacol Ther* 2007;25:197-205. 4. Casati D, Bogni R, Galdieri S, Majori J, Hapburn B. Comparison of the effects of immediate-release omeprazole powder for oral suspension and pantoprazole delayed-release tablets on nocturnal acid breakthrough in patients with symptomatic gastro-oesophageal reflux disease. *Aliment Pharmacol Ther* 2005;21:1467-1474.

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