Most Americans Have High Lifetime CV Risk

BY BRUCE JANCIN

ORLANDO — The majority of U.S. adults—87 million people—have a low 10-year predicted risk for cardiovascular disease but a high lifetime predicted risk, according to the first-ever such analysis of the American population.

Many such individuals may be lulled into complacency after learning from their physician of their favorable 10-year cardiovascular risk. Very few are aware of their high lifetime risk because physicians don't routinely estimate it.

But that could soon change, according to predictions made at the annual scientific sessions of the American Heart Association. Investigators are developing a calculator tool for lifetime predicted risk of cardiovascular disease akin to the widely used Framingham Risk Score for 10-year predicted risk. A patient's risk factors would be plugged in, and a lifetime risk level would be calculated. There is strong interest in incorporating such a tool into national guidelines for primary prevention.

"Physicians are told in the ATP III guidelines to consider lifetime risk in primary prevention, but they're not really told how to go about doing that. Our thought is to make a tool that physicians can easily use. The real goal here is to use it for patient communication. It would be really terrific if we could identify more people as being at high lifetime risk and get them to understand that even though they might be at low risk now, they need to do something more," explained Dr. Amanda K. Marma, an intern in pediatrics at Children's Hospital, Boston.

She presented an analysis of 10-year and lifetime predicted risks for cardiovascular disease in U.S. adults based on extrapolation from 6,329 cardiovascular disease-free participants in the National Health and Nutrition Examination Survey for 2003-2004 and 2005-2006.

The purpose of the study, which she worked on while a medical student at

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DR. MARMA

Northwestern University in Chicago, was to demonstrate the need for greater public health efforts addressing lifetime risk.

The study showed, for example, that among Americans aged 40-59 years—a group of particular interest in terms of cardiovascular prevention efforts—80% have a low short-term predicted risk—that is, less than a 10% chance of developing coronary heart disease or diabetes within the next 10 years.

But three-quarters of those in this low-short-term-risk group have a high lifetime predicted risk as defined by a 39% or greater estimated likelihood of developing cardiovascular disease, including stroke.

Lifetime risk was estimated using an algorithm previously developed by Dr. Marma's coinvestigators and validated in the Framingham Study population (Circulation 2006;113:791-8). The algorithm showed, for example, that the predicted lifetime risk of a 50-year-old, nonsmoking, nondiabetic man with optimal blood pressure and a total cholesterol below 180 mg/dL was a mere 5%, but with one major risk factor his lifetime risk would soar to 50%.

Similarly, a 50-year-old woman with optimal risk factors had an 8% lifetime risk, climbing to 39% in the presence of one major risk factor, the analysis showed.

The investigators are now working on making the algorithm easier to use in clinical practice across a wide range of patient ages.

As an example of how knowledge of lifetime estimated risk might serve as extra motivation for risk factor modification, Dr. Marma cited the example of a 50-year-old, nondiabetic, nonsmoking woman with a total cholesterol of 240 mg/dL, an HDL of 58 mg/dL, and an untreated systolic blood pressure of 160 mm Hg. Her 10-year predicted risk of myocardial infarction or coronary death using the ATP III algorithm is 2%, but her lifetime risk of cardiovascular disease is 50%.

Among other key findings from the national analysis of lifetime cardiovascular risk:

► Just 18% of adults—28 million Americans—are at high short-term predicted risk, defined as 10% or greater in the next 10 years.

► Only 11.4% of adults have both low short-term and low lifetime predicted risk.

► Two-thirds of all individuals at low short-term risk are at high lifetime predicted risk.

► Many women and younger men identified as low risk using the ATP III tool turn out to be at high lifetime predicted risk. That's important in light of prior criticism that the ATP III tool does a relatively poor job of determining risk in those groups.

In an interview, Dr. Raymond J. Gibbons, a former president of the AHA, said he strongly favors incorporating routine assessment of lifetime risk into prevention efforts.

"There are many patients who you would think of differently if you looked at them from a lifetime risk standpoint versus a 10-year-risk standpoint," said Dr. Gibbons, professor of medicine at the Mayo Clinic, Rochester, Minn. "If we just look at 10-year risk in, say, a 40-year-old, we're in effect saying it's okay if you die at 52. That's not acceptable to my 40-year-old patients."

He noted that he sits on a National Heart, Lung, and Blood Institute–sponsored panel charged with providing guidance in revising national guidelines for high blood pressure, lipids, and obesity.

Also on the panel is Dr. Donald M. Lloyd-Jones, chairman of preventive medicine at Northwestern University, and the senior investigator in the study presented by Dr. Marma. The panel is eager to encourage more emphasis on lifetime predicted risk for cardiovascular disease, according to Dr. Gibbons.

The data were published simultaneously with the meeting presentation, appearing online in Circulation Cardiovascular Quality and Outcomes (doi:10.1161/circoutcomes.109.869727). The work was funded by the NHLBI. ■

More Calcification in Younger Women on Bisphosphonates

BY BRUCE JANCIN

ORLANDO — Bisphosphonate therapy was associated with a reduced prevalence of cardiovascular calcification in older women but a paradoxical increased prevalence in women under age 65 years, compared with bisphosphonate nonusers in the Multi-Ethnic Study of Atherosclerosis.

Since MESA is an observational study, this novel finding has to be considered hypothesis generating rather than definitive. It's unclear whether the unexpectedly higher prevalence of cardiovascular calcification in younger bisphosphonate users in MESA is the result of their likely shorter duration of treatment, differential drug effects, age-related differences in the pathogenesis of calcification, indication bias related to osteoporosis, or even chance, Dr. Sammy Elmariah said at the annual scientific sessions of the American Heart Association.

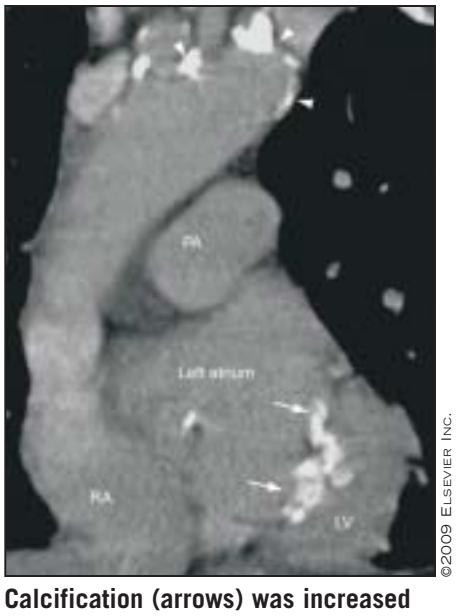
Replication of these new MESA findings should be sought in other large data sets, added Dr. Elmariah of Mount Sinai School of Medicine, New York.

MESA is an ongoing National Heart, Lung, and Blood Institute–funded longitudinal study of an ethnically diverse group of 6,814 men and women aged 45-84 years in six U.S. communities. All were free of cardiovascular symptoms at baseline.

Dr. Elmariah and his coworkers analyzed baseline data on bisphosphonate use and cardiovascular calcification in 3,636 participating women, 2,181 of whom were under age 65. MESA included 214 women on baseline bisphosphonate therapy. Cardiovascular calcification was assessed via multidetector row helical CT or electron-beam CT.

Among women aged 65 or older, bisphosphonate use was associated with a significantly lower prevalence of cardiovascular calcification at nearly all anatomic sites assessed.

For example, aortic valve calcification was 33% less common in the older bisphosphonate users than in nonusers in multivariate analyses adjusted for age, body mass index, ethnicity, socioeconomic variables, cardiovascular risk factors, statins, and hormone replacement therapy. Aortic valve ring calcification was 35% less common. Calcification of the mitral annulus was 46% less common in older bisphosphonate users, and thoracic aorta calcification was 32% less prevalent.



Calcification (arrows) was increased in younger bisphosphonate users.

The only anatomic site where calcification wasn't significantly less common in older bisphosphonate users than nonusers was in the coronary arteries, where the adjusted 10% reduction in favor of bisphosphonate users fell short of statistical significance, Dr. Elmariah said.

The story was very different in women under 65 years of age. Younger bisphosphonate users were an adjusted four times more likely to have aortic valve calcification than were bisphosphonate nonusers, 1.9 times more likely to have aortic valve ring calcification, and 2.4 times more likely to have calcification of the mitral annulus. They also had 2.2-fold and 1.2-fold higher rates of calcification of the thoracic aorta and coronary arteries. All of these differences achieved statistical significance.

When the women were grouped in 10-year age subsets, a gradual reduction in the adjusted prevalence of cardiovascular calcification accompanied increasing age among bisphosphonate users.

The increased prevalence of cardiovascular calcification in younger bisphosphonate users came as a surprise in light of the known pharmacologic actions of the nitrogen-containing bisphosphonates, including several statinlike effects, according to Dr. Elmariah.

Dr. Elmariah's work was funded by the New York Academy of Medicine, the GlaxoSmithKline Research & Education Foundation for Cardiovascular Disease, and the NHLBI. ■