

# Interventional radiologists examine simple test that might predict heart attacks

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The prevalence of abnormal ankle-brachial index (ABI) test results among individuals tested for peripheral arterial disease (PAD)—and who are not considered at high risk of a coronary heart event by Framingham-based risk factors—is high and provides another way to identify those who may be at risk for future heart attacks, say researchers at the Society of Interventional Radiology's 35th Annual Scientific Meeting in Tampa, Fla.

"Any methods to improve identification of individuals who are otherwise not considered at high risk for [heart attack](#)—based on Framingham risk factors—would have significant public health impact," said Timothy P. Murphy, M.D., FSIR, an interventional radiologist and director of the Vascular Disease Research Center at Rhode Island Hospital in Providence. "With the help of the simple ankle-brachial index (ABI) test, a comparative blood pressure reading in the arm and ankle that is used to screen for peripheral arterial disease, thousands of lives can possibly be saved," he added. "This type of novel risk factor can positively impact public health by improving risk prediction," said Murphy. Interventional radiologists can partner with primary care doctors, who may not be aware of—or able to administer—noninvasive tests like the ABI in managing patients' vascular disease, he explained. "Since ABI screening is not routinely performed, a large number of individuals are not being identified as high risk and, thus, not being treated for their risk factors. Interventional radiologists can work with primary care doctors in evaluating patients' risk for cardiovascular disease as well as by managing established PAD," added Murphy.

[Coronary heart disease](#) is the leading cause of death in the United States. About 1.1 million Americans suffer heart attacks each year and almost one-third of those heart attacks result in death. Risk factors such as smoking, diabetes, [high blood pressure](#), high blood cholesterol and obesity are associated with increased risk of heart attack and are routinely monitored by doctors to identify at-risk patients. However, about two-thirds of coronary events occur in individuals not known to be at high risk of such events. Methods to improve identification of individuals who are otherwise not considered at high risk based on Framingham risk factors would have significant public health impact. "Early detection is paramount. Primary preventions, such as initiating lifestyle changes and medical intervention directed at modifying risk factors (smoking cessation, blood glucose and blood pressure control, lowering cholesterol and exercise)—can be started before costlier and more intensive interventions are needed," said Murphy, co-author of "Prevalence of Abnormal Ankle-Brachial Index Among Subjects With Low-intermediate Framingham Risk Score."

Traditional risk-scoring algorithms, such as Framingham risk score, are known to have low sensitivity for predicting risk of fatal or nonfatal cardiovascular events. Abnormal ABI, which is indicative of underlying PAD, has been shown to be associated with a higher risk of cardiovascular disease. "In our study, we found abnormal ABI to be highly prevalent; 10 percent of our study population—who were otherwise not known to have coronary heart disease, stroke, diabetes and are not considered at high risk based on Framingham risk assessment—have underlying PAD," said Murphy.

Researchers reviewed the results from the PEDAL study, a population-based, cross-sectional study of 822 participants (women, 69.7 percent; non-Hispanic white, 89.7 percent) conducted at 23 Legs for Life® sites nationwide. PEDAL was conducted in 2007-2008 during SIR's Legs for Life® PAD national public-health screening program. The participants

(average age, 64 years) did not have known cardiovascular disease or diabetes and were screened for PAD with an ABI test. Variables to compute Framingham risk scores of the participants were available to calculate 10-year risk of coronary heart disease. Risk was determined to be low, intermediate or high, per Framingham categories. A low Framingham risk score was observed in 256 participants (31.1 percent); of these, 11.3 percent had an abnormal ABI. Of the 414 participants (50.4 percent) with an intermediate Framingham risk score, 12.8 percent had abnormal ABI test results.

Last year, researchers analyzed information from the 1999-2000 National Health and Nutrition Examination Survey (NHANES)—a nationally representative cross-sectional survey of the U.S. population for 6,292 men and women ages 40 and older without known history of heart disease, stroke, diabetes or atherosclerotic vascular disease—along with available data on standard cardiovascular risk factors and screening tests (including the ABI). They found that novel [risk factors](#) (those not traditionally considered in the Framingham risk score) are abnormal in up to 45 percent of those not considered high risk for coronary heart events. It was the first time researchers determined the prevalence of PAD in a large population of women and men who were not considered at high risk for cardiovascular disease.

The ABI, a comparative blood pressure reading in the arm and ankle, is used to screen for [peripheral arterial disease](#). It is a direct measure of fatty plaque buildup in leg arteries and an indirect gauge of plaque accumulations throughout the entire cardiovascular system. Because atherosclerosis is a systemic disease, women and men developing plaque in their legs are likely to have plaque building up in the carotid arteries, which can lead to stroke, or the coronary arteries, which can lead to heart attack. Early detection of PAD is important because these individuals are at significantly increased risk, and preventive measures can be taken.

Provided by Society of Interventional Radiology

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