Knowing the score: Calcium score screening grows in usage as means to detect heart risks

Bill Haag of Mountain is the picture of good health. But when the 62-year-old retired architect recently had his annual physical he found out his cholesterol levels had risen by more than 30 percent over last year.

While not excessively dangerous, Haag’s physician passed along information on the coronary artery calcium screening with a CT (computed tomography) scanner. Haag decided to take the test.

Sylvia Seibold, 55, who, like Haag, exercises regularly and eats right, also opted to have the calcium score test on the recommendation of her doctor after being informed her cholesterol was off the charts. "It was a no-brainer," Siebold said.

A new study of the coronary artery calcium screening released in April in the Journal of the American College of Cardiology found the simple, noninvasive test gives patients baseline information about plaque in the coronary arteries, allowing them to make heart-healthy lifestyle changes to lower heart disease risk factors. The test costs patients between $50 and $100, based on the extent of the test.
Although the CAC is rarely covered by insurance, consistent studies show it detects heart disease in patients more accurately than standard blood tests. Health officials say the test wasn’t given serious credence in past years because 30 or so years ago the test was marketed before enough data had been collected, and the company that created the scanner also marketed the test, which created understandable bias.

But in recent years the medical community — if not the insurance industry — has become more taken with the value of the CAC scan. And so are area residents.

According to Keith Ende, director of cardiac diagnostics at ThedaCare, when the hospital began offering the test in January 2006, the average monthly volume of patients being tested was about four a month.

“Now we’re averaging about 210 a month,” Ende said.

Getting the word out about the value of the test has improved those numbers, he said. And there are more hospital facilities offering the test.

“It’s a very good baseline exam for the physicians to use regarding treatment of cholesterol,” said Anna Christian, cardiology nurse practitioner at the Affinity Heart, Lung and Vascular Center. “This is a yes or no test. When you leave you either have coronary artery disease or you don’t. It’s a black and white test.”

**What is a CAC scan?**

A coronary artery calcium or CAC scan identifies the buildup of cholesterol in the heart arteries that can lead to heart disease or heart attack. Coronary artery plaque hardens, reducing the artery’s size and the amount of blood that can flow to the heart. The amount of plaque in the heart arteries is related to a person’s risk for a heart attack.

Unfortunately, the first symptom of heart disease in most people is death.

“They don’t know they have the disease,” said vascular internist Glenn Huth, medical director of the cardiovascular imaging program who also works in preventative cardiology at Appleton Medical Center.

Although the low-dose radiation CAC scan does not look for blockage, which is a big misconception, it does look for underlying disease that puts a person at risk for blockage or heart attack.

Calcium scoring, which began about 30 years ago, said Huth, came on the heels of the national Framingham Heart Study, which began in 1948. It was an ambitious project in health research to find out why Americans were getting cardiovascular disease. The study followed a large group of participants from Framingham, Mass., over an extended period of time.

“It was a classic epidemiological study,” Huth said. “And pulled out the risk factors to use for all Americans to determine who is at risk for a heart attack.”
But the study proved successful only if risk factors were very high or very low. “However, most people turned out to be an intermediate risk and it's almost like a flip of the coin, 50 or 60 percent accurate, which was the best we had but not very good,” Huth said. “Other markers have been tried to improve on the risk and nothing has worked.”

Not only was the test marketed by its manufacturer, which was questionable, the early studies weren’t too well done either, Huth said. “It took time for well-run studies like the MESA trial.”

The MESA (Multi-Ethnic Study of Atherosclerosis) Study began in 2000 and studied 6,800 people, 45 to 84 years old, including white, black, Hispanic, and Chinese participants from six communities around the U.S. It was funded by the noncommercial and publicly funded National Heart, Lung, and Blood Institute. The MESA study, Huth said, found the calcium score scan was 70 to 80 percent accurate.

And an article in 2009 in the New England Journal of Medicine found screening in people with no symptoms modestly improved the prediction of risk for coronary heart disease events such as heart attacks, based on elevated blood cholesterol, high blood pressure and cigarette smoking. Risk prediction is valuable in deciding how aggressively risk factors should be treated.

How is it done?

Shawna Epping and Sheri Krueger, cardiovascular CT technologists at AMC, which has performed more than 11,000 scans, explained the simple procedure. Patients lie comfortably on their backs on the scanner table; a pillow is placed beneath the knees. The technicians attach three soft, sticky patches called electrodes to the chest in order to help the scanner get in sync with a patient’s heartbeat.

Patients pull their arms above their heads for the test, and then obey breathing commands. The actual scan takes only two to three minutes to complete.

“It was a piece of cake,” said Siebold, who admits to being slightly claustrophobic. After the scan patients receive an Agatston score in the mail within a week; if referred by a physician, the doctor also receive the results. If no calcium is found, the score will be zero and the risk of heart attack in the next two to five years is low.

If calcifications are found in the arteries it’s a sign of atherosclerosis and coronary heart disease. The higher the Agatston score the more severe the atherosclerosis.

“This test does make a difference,” Huth said. “People who have a high calcium score change their lifestyle; their physicians change their goals for cholesterol management and no longer accept borderline high cholesterol levels. Calcified plaque in your heart arteries, you need to change things so you don’t have a heart attack.”
The results

So how did Haag and Siebold fare?

Having had the procedure and reviewing the results, Haag said it was an enlightening experience. “I am somewhat surprised by the results because I am a very active person,” he said. “I do watch what I eat, but I’m not radical. … And I do a lot of physical activity and I weigh the same as I did when I was in high school. I was fully expecting to get all zeros. I didn’t get all zeroes.

“I’m really glad I did it. There are very few things in the heart healthcare system today that are such a high value as this. Yes, insurance doesn’t cover it. But for $50, heavens’ sakes, I would recommend anybody get it.”

Although Siebold’s cholesterol levels were very high, her calcium score was zero. She discovered that cholesterol levels rise 30 to 40 points when a woman goes through menopause. She also learned she no longer needs to be on a statin drug, which lowers blood cholesterol levels.

Siebold still will fine-tune her diet, and made an appointment to see a dietician.

“We’re so used to doing the blood work,” she said. “And women always do the mammograms and pap smears, and when you turn 50 a colonoscopy.

“To me, (the CAC) is just have it done and see. I can’t fight genetics and I can’t get any younger. So the next best thing is I can be as informed as I can be.”

Still, following up with a physician after receiving a higher calcium score remains the most important factor in the process, Christian said.

Getting tested

- Affinity Health System offers a heart scan for $100, which includes a heart risk assessment including family and personal history and diet, a blood pressure check, Body Mass Index (BMI), cholesterol, blood sugar levels, review of current medications, weight/height, evaluation and assessment by an Affinity specially trained health care provider and follow-up care plan recommendations. To schedule an evaluation, call 920-730-6700. For a free HeartAware Risk Assessment, go to www.affinityhealth.org/page/services-specialty-cardiology. The calcium score test goes hand-in-hand with the HeartAware online questionnaire. If a person scores high enough on the HeartAware, the test results are passed on to a cardiac triage nurse who reviews the data and decides if the person needs to be contacted based on risk factors.

- To schedule an appointment for a scan alone at Appleton Medical Center, call 920-731-8900. Cost is $50. For an additional $35, a radiologist will review anatomy around the heart to screen for non-cardiac abnormalities.