

# Coronary Calcium Flags CAD Risks in Diabetics

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NEW YORK — A coronary calcium score was an effective, initial screen for coronary artery disease in asymptomatic patients with type 2 diabetes in a study of 510 patients.

Coronary calcium “may be the most cost effective and feasible way” to screen patients with diabetes, Vijay Anand, M.D., said at the annual meeting of the American Society of Nuclear Cardiology.

Physicians are currently seeking the best way to identify coronary artery disease in asymptomatic patients with diabetes, because they know that coronary disease is highly prevalent in this group but often progresses to a severe stage before any clinical symptoms appear.

Myocardial perfusion imaging (MPI) has also shown value as a noninvasive way to identify asymptomatic coronary disease in patients with diabetes, but “we can’t do MPI on every diabetic—we could not afford it,” said Avijit Lahiri, M.B., director of cardiac imaging and research at Wellington Hospital in London and a collaborator in the new study. In the study, MPI was used to confirm the presence of coronary disease. “We were horrified to see that almost half of the asymptomatic patients with diabetes had coronary calcification,” he added.

“Coronary calcium is potentially a good way to screen patients with diabetes, but we need more data,” commented Frans J. Th. Wackers, M.D., director of the cardiovascular nuclear imaging and exercise laboratory at Yale University, New Haven. “Coronary disease is common in patients with diabetes and can form quickly.”

The study included patients aged 30-65 years who had been diagnosed with type 2 diabetes for at least 1 year who were under treatment at any of four community clinics in the United Kingdom. Of 927 patients initially assessed for the study, 510 met the enrollment criteria and were willing to participate. Their average age was 53 years, and they had been diagnosed with diabetes for an average of 8 years. Their average serum glycosylated hemoglobin was 8.2%.

An initial examination by electron beam CT showed that 46% had a score of 10 or higher, which was defined as significant coronary calcification: Twenty percent had a score of 10-99, 15% had a score of 100-399, and 11% had a score of 400 or

more. There was no correlation between calcium scores and serum levels of either C-reactive protein or interleukin 6, two markers of inflammation, said Dr. Anand, a cardiologist at Wellington Hospital and Royal Free Hospital in London.

All 235 patients with a significant calcium score, as well as a random sample of 50 patients from those with a score of less than 10, underwent MPI using a stress-rest protocol with technetium 99m sestamibi

1,000 or greater, said Dr. Anand. The majority of perfusion defects seen with MPI were reversible.

In a multivariate analysis that controlled for a variety of clinical and metabolic variables, the strongest predictors of myocardial perfusion defects on MPI were high calcium scores.

Patients with scores of 400-999 had a 5.3-fold increased risk of having MPI defects, compared with those who had scores of less than 100. Patients with scores of 1,000 or higher had a 7.1-fold increased risk of having myocardial perfusion defects. Patients with calcium scores of 100-399 had a 40% increased risk compared with patients with scores of less than 100.

The only other predictors of perfusion defects were male gender, which raised the risk 2.75-fold compared with women, and the presence of peripheral neuropathy, which doubled the risk, compared with patients without peripheral neuropathy.

Additional analysis showed that including coronary calcium scores with other, conventional risk factors resulted in the identification of 75% of the patients’ risk of having perfusion defects on MPI. Conventional risk factors alone accounted for 62% of the risk.

“The addition of coronary calcium scores added incremental, predictive information,” Dr. Anand said. ■

Coronary Calcium Score	Prevalence of Myocardial Perfusion Defects
0-9	0
10-99	18%
100-399	23%
400-999	48%
1,000	71%

and dipyridamole and maximum treadmill exercise.

Among the 50 patients with calcium scores of less than 10, none had myocardial perfusion defects detectable by MPI. In contrast, perfusion defects were detected in 18% of patients with calcium scores of 10-99, 23% of those with scores of 100-399, 48% of those with scores of 400-999, and 71% of those with scores of

## Cardiovascular Risk Profiles Improve Statin Compliance for Diabetic Patients

BY DAMIAN McNAMARA  
Miami Bureau

ORLANDO, FLA. — Giving patients with diabetes printed reports with individualized cardiovascular risk profiles helped the patients improve their cholesterol levels in a randomized study.

“It’s like a report card. It makes a difference when you present information visually and you discuss it—shared decision making is more effective,” Ilka Lowensteyn, Ph.D., said during a poster presentation at the annual scientific sessions of the American Diabetes Association.

Patients with diabetes from 230 primary care offices were randomized to receive printed, individualized risk profiles (691 participants) or usual care (697 participants). Each one-page report included a bar graph showing the patient’s 10-year risk of cardiovascular disease based on Framingham equations, as well as the estimated benefits of risk factor reduction. The report also includes a table that calculates cardiovascular age based on risk factors.

Patients can easily see how a reduction in each risk factor translates to years of life saved, said Dr. Lowensteyn, director of clinical research, Arcadie Health Assessment Associates Inc., Montreal.

“It’s very impressive for patients. And it allows physicians to get a ‘buy-in’ from patients,” he said. An individual profile might show that a patient with diabetes needs to change three things: smoking, cholesterol, and lipids. A physician discussing the risk profile could then ask, “Which one do you want to tackle first?” he said.

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The participants, aged 30-70 years, were demographically similar between the two groups.

Exercise and dietary changes were prescribed for 3 months if cardiovascular risk was moderate at baseline, and could be continued thereafter if risk did not increase.

Patients were eligible for statin treatment if their LDL cholesterol level was 100 mg/dL or more or their total cholesterol/HDL cholesterol ratio was 4 or greater.

Physicians were free to prescribe any statin and patients were responsible for filling the prescription, so the study was a relatively real-world assessment compared with a clinical trial. The study was sponsored and jointly developed by Pfizer Canada Inc.

Profiles were updated every 3 months for up to 1 year, providing participants in the intervention group with regular feedback and trend data regarding their efforts to reduce risk factors.

“The big impact was on cholesterol,” Dr. Lowensteyn said. After 12 months of statin therapy, patients in the risk profile group had significantly greater reductions in total cholesterol (26.3%, vs. 23.8% with usual care), LDL cholesterol (36.6%, vs. 33.6% with usual care), total cholesterol/HDL cholesterol ratio (27.2%, vs. 24.9% with usual care), and projected 10-year cardiovascular disease risk (33.8%, vs. 30.8% with usual care).

Cardiovascular risk profiles are worthwhile even if they confer only a modest improvement in statin compliance among diabetic patients, Dr. Lowensteyn said. “Even if it’s an extra 10% still on medication at the end of the year, that is great.” ■

## Acarbose Cost Effective In Delaying Diabetes

MUNICH — Treating patients with impaired glucose tolerance who also have a high risk of cardiovascular disease with acarbose is cost-effective when balanced against the savings in terms of cases of type 2 diabetes and its cardiovascular complications avoided, Thomas Evers, M.D., said at the annual congress of the European Society of Cardiology.

His cost-benefit analysis, based on data from the Study to Prevent Non-Insulin-Dependent Diabetes Mellitus (STOP-NIDDM), concluded that it cost 772 euros in medication costs and physician office visits under the German fee scale to prevent a single case of diabetes over a 3.3-year period.

STOP-NIDDM was an international randomized trial in which 1,368 patients with impaired glucose tolerance were randomized to acarbose—an alpha-glucosidase inhibitor that delays glucose absorption—or placebo. The trial showed that acarbose resulted in a significant delay in development of type 2 diabetes (Lancet 2002;359:2072-7) and reduced incidences of cardiovascular events and hypertension (JAMA 2003;290:486-94).

In a subgroup analysis restricted to the one-quarter of STOP-NIDDM participants at highest cardiovascular risk according to Framingham risk score, prescribing acarbose routinely in such a population would actually save a health care system money.

That is to say, juxtaposing the cost of acarbose therapy and the related physician office visits against the estimated cost of caring for the additional events—diabetes, acute MI, stroke, angina, heart failure, hypertension, and peripheral artery disease—occurring in the placebo group, prescribing acarbose in patients in the high-risk subgroup saved 674 euros per patient, according to Dr. Evers of Bayer Vital GmbH in Leverkusen, Germany, the manufacturer of acarbose.

—Bruce Jancin