

A new way to look at diabetes and heart risk

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People with diabetes who appear otherwise healthy may have a six-fold higher risk of developing heart failure regardless of their cholesterol levels, new Johns Hopkins Bloomberg School of Public Health research suggests.

In nearly 50 percent of people with [diabetes](#) in their study, researchers employing an ultra-sensitive test were able to identify minute levels of a protein released into the blood when heart cells die. The finding suggests that people with diabetes may be suffering undetectable – but potentially dangerous – [heart muscle damage](#) possibly caused by their elevated blood sugar levels.

Cardiovascular disease is the leading cause of death among those with diabetes, and much of that has been blamed on atherosclerosis, or hardening of the arteries. The new research, reported online last month in the journal *Circulation*, suggests that a large subsection of people with diabetes are at increased risk of heart failure and cardiac death unrelated to the common culprits of cholesterol and atherosclerosis.

"It puts what we know about [heart damage](#) in diabetes on its head," says study leader Elizabeth Selvin, PhD, MPH, an associate professor of epidemiology at the Johns Hopkins Bloomberg School of Public Health. "It looks like diabetes may be slowly killing heart muscle in ways we had not thought of before."

She says a test for even slightly elevated levels of troponin, the protein released into the blood only when heart cells die, could some day be used

to screen for very early chronic heart damage.

Because of the link between [cardiovascular disease](#) and diabetes, people with newly diagnosed diabetes are typically prescribed a statin, one of a hugely popular class of cholesterol-lowering drugs. This study, Selvin says, suggests that there may be people with diabetes whose heart risk may have nothing to do with cholesterol.

"Statin treatment may not be sufficient to prevent damage to the heart in people with diabetes," she says. "Even though there may be no symptoms yet, our research suggests there is microvascular damage being done to the heart which is leading to heart failure and even death."

When someone comes to a hospital's emergency room with chest pains, a standard blood test checks for troponin leaking from heart cells into the blood. Elevated troponin levels suggest a heart attack. The assay Selvin and her colleagues used to look for troponin is 10 times more sensitive and picks up very low levels of the protein, identifying previously undetected subclinical chronic damage to the heart.

The ultra-sensitive test is not currently available commercially in the United States.

For the study, the researchers measured troponin concentrations using the highly sensitive assay in blood samples from more than 9,000 participants in the Atherosclerosis Risk in Communities Study (ARIC) at two time points, six years apart. Those with diabetes were two and a half times more likely to have elevated [troponin levels](#) than those without. Then the researchers looked at 14 years of follow-up data from ARIC. Diabetics with elevated troponin were six times more likely to develop [heart failure](#) and four times more likely to have a [heart attack](#). Those with pre-diabetes, a condition associated with a high risk of progressing to diabetes, were also at increased risk.

More research is needed, Selvin says, to determine the exact mechanism for how diabetes may be causing the [heart](#) damage. But the findings underscore yet another reason to do what it takes to prevent diabetes, she says.

More information: Diabetes, pre-diabetes and Incidence of Subclinical Myocardial Damage, *Circulation*, 2014.

Provided by Johns Hopkins University Bloomberg School of Public Health

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