

# Uncontrolled diabetes can advance heart failure from early stage to late stage

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Among older adults with early stage—also known as preclinical—heart failure, uncontrolled diabetes can substantially increase the risk of heart failure progression, according to a new Johns Hopkins-led study.

Researchers found that controlling diabetes early in the heart failure process has immense potential to significantly prevent the progression to later stage, or overt, heart failure.

The study was published in the June 14 issue of the *Journal of the American College of Cardiology*.

The research team gathered its data from the Atherosclerosis Risk in Communities (ARIC) Study, an ongoing study that looks at the medical outcomes of plaque buildup on artery walls. Researchers selected more than 4,700 ARIC participants and examined their [clinical data](#), which was gathered at the study's most recent visit. All participants had preclinical heart failure, meaning they were either in stage A or stage B of heart failure as defined by the American Heart Association and the American College of Cardiology. Stage A is the existence of at least one clinical heart failure risk factor, such as hypertension or obesity, without structural heart disease. Stage B is the presence of structural heart disease or elevated cardiac biomarkers without signs or symptoms of heart failure.

The findings showed that uncontrolled [diabetes](#) was associated with the advancement of heart failure for participants in stages A and B of heart failure. Participants with uncontrolled diabetes in stage A were 1.5 times more likely to progress to overt heart failure, while those in stage B were 1.8 times more likely. Additionally, among participants in stage B, those with uncontrolled diabetes experienced overt heart failure at a younger age (80 years) than their counterparts with controlled diabetes (83 years) or no diabetes (82 years).

"Our results demonstrate the vulnerability of [older adults](#) with co-occurring diabetes and stage A or B heart failure," says Justin Echouffo Tcheugui, M.D., Ph.D., the study's first author and an associate professor of medicine at the Johns Hopkins University School of

Medicine. "We believe that such people may greatly benefit from preventive therapies including lifestyle modification and medication. There are three to four times more individuals with preclinical heart failure than with overt heart failure; many lives can be prolonged by addressing diabetes in those early stages."

The research team has plans to continue studying this issue and determine why diabetes has this effect on patients with preclinical [heart failure](#).

"We know that diabetes and [heart failure](#) are highly prevalent and strongly interrelated," says Echouffo Tcheugui, "but as far as we know, this is the first study to assess their relationship through this specific lens. We want to continue exploring that relationship."

**More information:** Justin B. Echouffo-Tcheugui et al, Diabetes and Progression of Heart Failure, *Journal of the American College of Cardiology* (2022). [DOI: 10.1016/j.jacc.2022.03.378](https://doi.org/10.1016/j.jacc.2022.03.378)

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